

Executive Compensation And Firms' Performance: Evidences From Non-Financial Companies In Sub-Saharan Africa

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Abstract: This study examines how CEOs compensation influences firm performances in sub-Sahara Africa countries. CEOs compensation was proxy with CEO stock option equity compensation granted to executives, while firm performance was proxy with ROA and ROE. The study utilised an ex-post facto research design. The research utilised a stratified random sample method to choose countries among the most robust stock exchanges in West Africa (Nigeria), Southern Africa (South Africa), and East Africa (Kenya). The information was acquired from the annual reports and accounts of the chosen companies as well as their websites. The research employed dynamic panel data analysis. To ensure clarity, the results of the study are conveyed through the designation of the firm performance proxy. The long run CEO compensation impact with firm performance proxy is not uniform. CEO compensations have strong positive influence with firm performance proxy with ROA. But negative insignificant influence with firm performance proxy with ROE in the long run. In the short run, CEO compensation reported positively significant impact with firm performance proxy with ROA. CEO compensation have significantly negative bearings with firm performance proxy with ROE in the short run. Since firm performance is a central issue in strategic management, corporations should guide against CEO's opportunistic behaviours that may be harmful in the long run.

KEYWORDS: Executives; Compensation; stock option, Equity, firms' performance.

1. Introduction

Extant literature contends that increase in corporate failure is mainly orchestrated by the abnormal executive compensations, increased earnings management practices and inefficient governance of firms. Executive compensation is both financial and non-financial. Recent times witness significant empirical studies on executive compensation with emphasis on how Chief Executive Officers' (CEOs) compensation relates to the practice of earnings management in developed countries. The majority of empirical research in this domain focused on the issue of whether executive remuneration was justifiable based on its impact on corporate performance (Mohammed, Ibrahim & Maitala, 2023; Muzata & Marozva, 2022). Based on agency and stewardship theories, CEOs often exhibit self-serving behaviour, neglecting the interests of shareholders (Omamo, K'obonyo & Muindi, 2022). Conversely, CEOs exhibit maladaptive conduct due to their multitude of choices about accounting rules and standards, including income assessment, depreciation costs, and the application of discretion in financial statement creation.

Compensation granted to executives for their contributions to a company (Appah, Tebepah and Awuji, 2020). In a comparable manner, Dias, Vieira, and Figlioli (2020) posited that executive remuneration comprises a blend of salaries, bonuses, and stock options that CEOs get. Consequently, executive compensation is regarded as the payments allocated to top executives inside an organization. The justification for remunerating executives lies in their obligation to effectively manage the equilibrium of diverse governance strategies, objectives, and initiatives (Hussam & Al-Shammari, 2021).

Initially, the concentration of ownership in Sub-Saharan African nations is lower than that in industrialised countries such as the United States, the United Kingdom, and China. Firms in industrialised nations have greater ownership concentration than those in Sub-Saharan Africa; however, the characteristics of this concentration differ, as the State often possesses significant stakes in large corporations in affluent countries (Finley, Hall & Marino, 2022). In addition, concentration of ownership is maintained by non-governmental shareholders in most nations of SSA, which makes privately-owned firms have divergent CEOs compensation and their ability to engage in earnings management (Ibrahim & Ahmed, 2020).

Second, the accounting framework appears to accord CEOs the opportunity to use private judgments in preparation of financial statements; this makes earnings management practice by listed firms relatively high. Thirdly, the mandate for disclosing executive remuneration is weaker in Sub-Saharan Africa (Mohammed, et al, 2023); so, this creates a unique environment to investigate the influence of CEO compensation and earnings management on the performance of publicly listed companies in the region.

This research enhances understanding in multiple aspects; primarily, it serves as a clarion cry for additional investigation into CEO compensation. Consequently, by examining CEO remuneration and earnings manipulation in SSA, the research provides a significant contribution to the literature on executive compensation and earnings management. In opposition to agency and stewardship

theories, we discover evidence that earnings and executive remuneration are associated with corporate success (Bouteska & Mefteh-Wali, 2021; Hosam, 2019).

1.1 Objectives of the Study

This broad objective of the study was to investigate the extents to which executive compensation influence firms' performance in SSA countries. Firms' performance is represented with its proxies for simplicity of analysis. Thus, the specific objectives were to:

- i. assess the extent to which executive compensation affects return on assets of publicly listed non-finance firms in SSA
- ii. evaluate the extent to which executive compensation affects return on equity of publicly listed non-finance firms in SSA

1.2 Research Questions

The following research questions are raised to guide the investigation:

- i. To what extent does executive compensation affect return on assets of publicly listed non-finance firms in SSA?
- ii. To what extent does executive compensation affect return on equity of publicly listed non-finance firms in SSA?

1.3 Research Hypotheses

The following research hypotheses developed were tested at 0.05% significance level:

- i) Ho1: Executive compensation has no significant effects return on assets of publicly listed non-finance firms
- ii) Ho2: Executive compensation do not significantly affect return on equity of publicly listed non-finance firms

2. REVIEW OF RELATED LITERATURE

2.1 Executive Compensation

Executive remuneration include both financial and non-financial perks that an executive obtains from an organization in return for their contributions. The corporate board establishes an executive compensation committee to incentivise the leadership team, which significantly impacts the company's strategy, decision-making, and value creation, while also enhancing executive retention (Ahamed, 2022). Executive remuneration, as stated by Al'azhary, Suherman, and Buchdadi (2022), refers to the financial package allocated to high-ranking executives, usually chief executive officers (CEOs), in an organization. The magnitude and benefits of CEO remuneration varies from those of employee compensation.

Executive remuneration is fundamentally a crucial element of strategic human resource management, emphasising incentive strategies like as incentives tied to CEO equity, salaries, allowances, promotions, and non-monetary benefits. Consequently, Dias, Vieira, and Figlioli (2020) defined executive remuneration as a combination of CEO salary, bonuses, stock options or call options, additional payments, and in-kind benefits (BIK). According to empirical studies, the most basic executive compensation is CEO pay and favourable stock/shares options that lower the tax burden, but stock/shares options are an essential component of most executive compensations, including large basic salaries (Appah, Tebepah & Awuji, 2020).

Executives are paid because they must effectively balance a variety of company objectives, goals, and projects (Gan, Park & Suh, 2020). Interest in the compensation of executive officers has grown because of the connection between excessive or anomalous executive compensation and the demise of corporate organisations (Rath, Kurniasari & Deo, 2020; Hussam & Al-Shammari, 2021). CEO compensation is typically determined annually and is subject to changes in the market. Because CEO bonuses are determined by current year performance, executives have an incentive to either raise or lower earnings, depending on how their compensation plan is set up and whether earnings are manipulated to increase bonuses.

Additionally, another type of pay that CEOs receive that is not represented by actual cash is stock/share options. Stock/shares options, on the other hand, are a type of executive compensation that varies according to the firm's performance. Wu (2021) notes that the public is becoming more interested in CEO compensation outside of the academic setting; conversely, stock/shares options entail giving CEOs shares or bonus issues in addition to their current shares as a form of compensation, while CEO performance bonuses refer to extra or additional benefits that CEOs receive when they perform better on the job or on tasks/assignments.

Numerous empirical investigations have posited that inadequate CEO remuneration is a primary factor leading to subpar performance of corporate boards (Rehman, Tayyab, Shahzad, & Abdul, 2021; Sheikh, Bhutta, & Sultan, 2019; Sheikh, Shah & Akbar, 2018). Despite the extensive research on CEO salary, a question remains regarding its impact on performance among enterprises in Sub-Saharan Africa. Considering the aforementioned talks, the examination of CEO shares was conducted as a facet of CEO compensation to assess its potential positive or negative impact on the performance of publicly listed companies in SSA.

2.1.1 Firm Performance

The capacity of an organization to fulfil its goals in the most effective and successful way is known as firm performance. Both financial and non-financial approaches may be employed to ascertain it (Ahamed, 2022). In this research, corporate performance was evaluated by financial metrics, illustrating the correlation between factors documented in financial statements, including return on assets (ROA) and return on equity (ROE).

Appah et al. (2020) assert that firm performance is a pivotal concern in strategic management, since the majority of strategic management research employs the concept of company performance to examine various strategic content and methodologies. The extensive suggestions presented in management literature for enhancing financial performance underscore the importance of firm performance (Chen et al., 2023). Research indicates that financial measurements considerably influence a company's performance

(Hussam & Al-Shammari, 2021). Consequently, the study utilised either market-oriented or finance-oriented indicators. The majority of individuals concur that financial measurements serve as an effective instrument for enterprises to evaluate their achievements (Mohammed et al., 2023).

The only financial parameter employed in this study was ROAs. Generally, ROAs are computed as the ratio of operating income to total assets or net income divided by total assets. To address the dilemma in management literature, where earlier research indicates either a detrimental or beneficial correlation between executive remuneration, board characteristics, and organisational performance (ROAs), this investigation incorporated return on assets, return on equity, earnings per share, and return on capital employed as indicators of corporate performance; the performance metrics utilised in the study were succinctly elaborated as follows:

2.1.2 Return on Assets (ROA)

The extent of earnings manipulation by accrual accounting is undeniably a determinant of an organization's operational success, with ROA being a major metric of performance generated by this accounting framework. The proportion of operational income to total assets, or net income divided by total assets, is commonly employed to determine ROA, or the dynamics of operating performance. Gong, Li, and Xie (2008) discovered a significant positive correlation between operating performance (ROA) and earnings management. This indicates that the administration of organisations seems to excessively extend past performance when forecasting future profits. Gong, Li, and Xie (2008) assert that instead of management's anticipatory choices reflecting their subjective evaluation of the organization's future, elevated (diminished) alchemy may result from exceptional (poor) operational performance alongside an impartial application of accounting standards.

Additionally, prior research has adopted operational performance metrics, including ROA, to evaluate reported financial performance (Kothari, Leone & Wasley, 2005; Ayers, Jiang & Yeung, 2006; Lennox & Park, 2006; Moradzadehfard & Nazari, 2013; Elshafie & Nyadroh, 2014; Dobre, Brad & Ciobanu, 2015). This study employed ROA as a documented financial performance metric to resolve the quandary in accounting literature, which implies either a negative or positive correlation between earnings management and ROA. As a result, we posited that earnings manipulation does not significantly affect the return on assets of a sample of publicly traded companies in SSA.

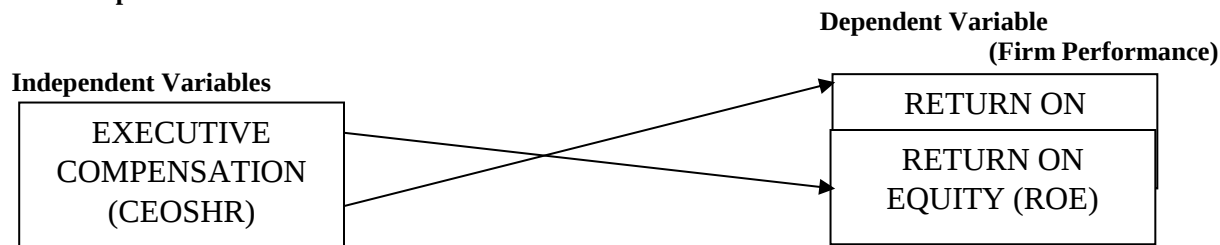
2.1.3 Return on Equity (ROE)

In comparison to debt, investors prioritise returns on equity (ROE). Shareholders evaluate an organization's long-term profitability by analysing its disclosed financial results, with a particular emphasis on the return on equity (ROE). In comparison to external funding, retained earnings are a more advantageous source of capital from the perspective of shareholders (insiders). The rationale for this is that business entities resort to debt financing when retained earnings are insufficient. ROE is a metric that indicates the financial efficiency of an organization. It is the profitability of an organization that is derived from the capital invested by its shareholders, as indicated by the ratio of net income to shareholders' equity. As a result, the ratio of net profit to shareholders' equity is used to calculate ROE.

Previous research has revealed a correlation between earnings manipulation and ROE. Rangan's (1998) research suggests that corporations that issue equity typically experience elevated positive accruals (alchemy) in the years preceding the issuance. The performance of these firms may be partially influenced by these accruals, as management may employ earnings management techniques for accruals and potentially impact ROE through accounting manoeuvres.

Teoh, Welch, and Wong (1998) nonetheless assert that the inverse relationship between accruals and ROE is more apparent for current accruals than for total accruals. Additionally, to examine the correlation between earnings manipulation and disclosed financial performance indicators (specifically, ROE). Empirical data served as the foundation for the research's integration of ROE, a financial performance indicator. As a result, we contended that the return on equity of publicly traded companies in Sub-Saharan Africa is not significantly influenced by earnings management and executive remuneration.

2.1.4 Conceptual framework



Source: Researcher idea 2026

2.2 Theoretical Framework

2.2.1 Stewardship Theory

The concept of stewardship proposed by Donaldson and Davis (1991) formed the basis for this study. The approach emphasises that managers ought to place the interests of the organization over their own (Habbash, 2010). The theory emphasises managerial initiatives aimed at enhancing the organization. The notion that the incentives of CEOs or boards diverge from those of affluent

individuals lacks theoretical backing. In the near term, it is imperative for managers to synchronise their objectives with those of the organization.

2.3 Empirical Reviews

2.3.1 Executive Compensation and Firm Performance Studies

Mohammed, Ibrahim, and Maitala (2023) examine the impact of executive remuneration on the financial performance of publicly traded non-financial companies in Nigeria. The research employed secondary data from the yearly financial statements of 63 companies listed on the Nigeria Exchange Group, which were analysed using the generalised method of moments. The research suggests that the return on equity of publicly traded non-financial companies in Nigeria is negatively correlated with salary remuneration, bonuses, and equity-based incentives (indicators of executive remuneration). In contrast, the return on equity of publicly traded non-financial corporations in Nigeria is substantially impacted by executive pension claims.

Mohammed, Ibrahim, and Maitala (2023) investigated the influence of CEO compensation on the financial performance of non-financial companies listed in Nigeria. The data was analysed using the Generalised Method of Moments, and a correlational framework was implemented. Nigerian non-financial companies' return on equity was adversely affected by bonuses, equity-based remuneration, and salary payments, according to the results. In a similar vein, Yuli, Dyah, and Aulia (2023) evaluated the impact of corporate governance implementation on the performance of companies listed on the Indonesia Stock Exchange. The results of the panel regression analysis suggested that the implementation of corporate governance had a substantial and positive impact on the performance of businesses.

Chen, Fan, Wang, Fan, Chen, and Ren (2023) assessed the influence of managerial proficiency on organisational success in China by employing a fixed-effect model. The research suggests a robust and positive correlation between organisational performance and management competence. Rohaida, Kamarun, and Hasnah (2022) investigated the relationship between the performance of publicly traded Malaysian firms and corporate governance protocols and risk disclosure policies by utilising fixed and random effects regression. The results suggested that performance was significantly improved by corporate governance policies and risk disclosure. Ahamed (2022) conducted a fixed and random effects regression analysis to investigate the relationship between the performance of commercial banks in Malaysia and the remuneration of CEOs. The performance of banks is significantly improved by CEO remuneration, according to research.

Kelder (2022) investigated the variables that influence the aggregate remuneration of CEOs and the subsequent effects on corporate performance. The S&P500 was utilised to extract the sample data for the study from 2011 to 2018. It was revealed that executive compensation is positively correlated with corporate performance.

In order to investigate the influence of executive compensation structures and corporate governance procedures on organisational performance in South Africa, Muzata and Marozva (2022) implemented fixed and random effects panel regression. The investigation demonstrated that organisational performance is significantly and advantageously affected by corporate governance structures and executive compensation plans. Omamo, K'obonyo, and Muindi (2022) conducted a study in Kenya that investigates the influence of CEO compensation on internal business operations, customer satisfaction, and performance, with firm size serving as a mediating factor. Statistical methodologies, such as structural equation modelling and fixed and random effects, were implemented to demonstrate that CEO compensation has a substantial impact on internal business operations and performance, but it has a detrimental effect on customer satisfaction. In contrast, it was found that the scale of the firm is a mediator in the relationship between the CEO salary, performance, internal procedures, and customer satisfaction.

In order to determine whether independent board directors moderate the relationship between CEO compensation and business performance, Edochie, Agbi, and Mustapha (2022) investigated the impact of CEO remuneration on corporate performance. Five conglomerate firms that were listed on the Nigeria Exchange Group from 2013 to 2020 were included in the study sample. The annual reports and financial statements of the sample firms were the sources of secondary data for the research. The natural logarithm of the CEO's salary is used to represent the CEO's remuneration, while ROA is used to represent the firm's proxy. It was revealed that the performance of a corporation is substantially influenced by the compensation of its executives. However, there is a tenuous negative correlation between the performance of the corporation and the independent directors.

Hussam and Al-Shammari (2021) employed agency and expectation frameworks to investigate the relationship between CEO compensation, risk propensity, and corporate success in the United States. The results of both fixed and random effects regressions demonstrated a statistically significant and substantial positive correlation between the performance (stock returns) and risk-taking (research and development expenditures and income stream risk) of CEOs.

Ekienabor, Mbaegbu, and Aguwamba (2019) examined the influence of Chief Executive Officer (CEO) compensation on corporate performance. The research employed 10 institutions listed on the Nigerian Stock Exchange, utilising both cross-sectional and time-series data (panel data) to prevent the risk of a misleading sample and enhance accuracy. The results suggest a significant correlation between the remuneration of CEOs and the success of corporations in the Nigerian banking sector.

Oyedokun (2019) evaluated the impact of corporate board characteristics on the financial performance of publicly traded commercial banks in Nigeria from 2013 to 2017. The financial performance of publicly traded commercial banks in Nigeria is substantially influenced by the characteristics of corporate boards, particularly the frequency of board meetings, board size, political connections, and gender diversity, as indicated by the results of a variety of panel regressions.

Nieman (2018) utilised data obtained from FTSE100 companies to investigate the impact of CEO compensation on corporate performance. In 2017, the CEO's compensation package included a base salary, bonuses, pension contributions, and long-term incentive schemes. The return on equity and the return on assets were used as indicators of firm performance in 2017. The research did not find a significant correlation between CEO remuneration and stock performance, nor with asset returns. The notion that increased CEO remuneration is correlated with improved company performance was found to be unsubstantiated.

Kagango (2016) conducts an investigation into the influence of CEO remuneration on corporate performance from a gender perspective, employing return on equity and return on assets as performance indicators. Corporate performance is influenced by executive compensation, as evidenced by the research. The research was unable to provide definitive evidence regarding the impact of male CEO remuneration on corporate performance in comparison to female CEO remuneration.

The prevailing belief that executive compensation should be in accordance with the performance of the company was investigated by Duffhues and Kabir (2008). The investigation does not demonstrate a favourable correlation between pay and performance, despite the fact that it employs a meticulously compiled dataset of remuneration awarded to senior directors of publicly traded Dutch firms.

In conclusion, the preceding discussion has demonstrated that prior empirical studies primarily indicate that executive remuneration influences organisational performance. However, there has been minimal attention paid to the ways in which executive compensation and corporate governance affect this performance in Sub-Saharan Africa. The subject has not been sufficiently investigated in any research, particularly in terms of the evaluation of data collected from enterprises located exclusively in SSA (South Africa, Kenya, and Nigeria) within a single study.

METHODOLOGY

3.1 Research Design

This research employed an ex-post facto design to identify the elements linked to specific occurrences or behaviours by examining historical events of pre-existing conditions.

As a result, the investigator lacks authority over these elements/variables since the occurrences are pre-existing and cannot be altered or influenced by the researcher. Moreover, the research framework allows the investigator to explore the degree to which CEO remuneration and earnings manipulation influence corporate performance in sub-Saharan African nations.

3.2 Population of the Study

The study's population is made up of all non-finance companies that are listed on recognised stock exchanges in SSA (West: Nigeria, South Africa, and East: Kenya). The Nigerian Exchange Group (NGX) reports that there are 106 non-finance companies that are traded on the stock market. There are a total of 365 publicly traded non-finance companies in the SSA countries that were chosen. Forty-two (42) of these are in Kenya (The Nairobi Securities Exchange, 2024), and two hundred and seventeen (217) are in South Africa (The Johannesburg Stock Exchange, 2024).

3.3 Sample and Sampling Technique

This study used both a stratified random sampling method to pick companies from the most successful stock exchange in each region of SSA and a judgemental sampling method for companies for which relevant data on the capital market of the chosen countries was not available.

3.4 Sources of Data Collection

Secondary sources were used to get the data needed for this study. The secondary data came from the Stock Exchange Factbooks, the Annual Reports and Accounts, and the websites of companies listed on the stock market in SSA countries.

3.4.1 Measurements of Study Variables

Table 3.1: Measurement of Variables

Variables		Measurement
Firms' performance	Return on Assets (ROA)	$\frac{\text{Operating income}}{\text{Total assets}} \times 100$
	Return on Equity (ROE)	$\frac{\text{profit before tax}}{\text{Total equity}} \times 100$

Source: Researcher's compilation, 2026

We have the following:

$$ROA_{i,t} = \alpha ROA_{i,t-1} + \beta_1 CEO_{comp,i,t} + \beta_2 DAC_{i,t} + U_i + \varepsilon_{i,t} \quad - \quad \text{eq. 1}$$

$$ROE_{i,t} = \alpha ROE_{i,t-1} + \beta_1 CEO_{comp,i,t} + \beta_2 DAC_{i,t} + U_i + \varepsilon_{i,t} \quad - \quad \text{eq. 1}$$

4 ANALYSIS AND DISCUSSION OF RESULTS

4.1 Descriptive Statistics

The study's data descriptive statistic is presented in table 4.1. For the observed data and period, the coefficient of variation (CV) for ROE (4.7286) On the other hand, CV for ROA (-17.5352), having negative value is misleading. The mean ROA is -402.1579%. It suggests that on the average, the study's data indicate that the firms were not turning their capital into profit but into loss. This is visible from the minimum ROA of -122,137.7% and just a maximum of 108.9%. The minimum ROA clearly overshadowed the maximum ROA.

Mean ROE (12.4105%) suggests on the average that the firms' management team are efficiently utilizing shareholders' funds. However, at least while one of the firms have ROE of -418.2% (minimum) which is considered an inefficient utilization of shareholders fund, the best utilization of shareholders fund has ROE of 431.71%.

Descriptive Statistics

Variables		Obs.	Mean	Std. dev.	Coef. of variation	Min	Max.
Firms' performance	Return on asset (ROA)	300	-402.1579	7051.933	-17.5352	-122137.7	108.9
	Return on equity (ROE)	300	12.4105	58.6846	4.7286	-418.2	431.71

Source: Researcher's compilation, 2026

4.2 Correlation Matrix

The correlation matrix (see section 3.9.2 for note) for each of the response variable and the explanatory and control variables are presented in table 4.2. ROA has weak negative correlation with executive compensation (-0.124*) ROE has weak negative correlation with executive compensation (-0.122*)

4.3 Skewness and Kurtosis tests for normality joint test

Variable	Obs.	Pr(skewness)	Pr(Kurtosis)	---Joint test---	
				Adj Chi ² (2)	Prob > Chi ²
resid (hypothesis 1: ROA)	299	0.0000	0.0000	92.92	0.0000
resid (hypothesis 2: ROE)	299	0.0209	0.0000	77.72	0.0000

Source: Researcher's compilation, 2026

4.4 Heteroskedasticity test

The Breusch-Pagan/Cook-Weisberg test for heteroskedasticity (see sections 3.7.4.2 & 3.10.2 for notes) was employed to examine homoskedasticity in the data (table 4.5¹). ROE (p = 0.0980), ROA (0.6694)

The Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Variable: fitted value of	Chi ² (1)	Prob > chi ²
Hypothesis 1: Return on assets (ROA)	0.18	0.6694
Hypothesis 2: Return on equity (ROE)	2.74	0.0980

Source: Researcher's compilation, 2026

Hypothesis 1 revealed that CEO compensation have strong positive impact in the short-run and long-run on return on asset. The results corroborate earlier studies that found strong positive association between CEO compensation and ROA (Ahamed, 2022; Omamo et al. 2022; Hussam & Al-Shammari, 2021; Lee et al., 2005).

Hypothesis 2 indicates that short-term CEO remuneration exerts a feeble negative impact on ROE, corroborating the assertion that executive compensation does not significantly affect the ROE of publicly traded non-financial companies. The immediate effect of CEO salary is inadequate to account for fluctuations in ROE. Over time, CEO remuneration has a significant negative effect on ROE, hence contradicting premise 2. The short run impact on ROE is larger than that of long-run impact on ROE. A unit increase (decrease) in CEO compensation in the long run will cause decrease (increase) in ROE, where other variables are held constant. The long-run relationship between CEO compensation and ROE substantiated past results which shows that CEO compensation strongly impact ROE negatively (Mohammed et al., 2023, Muzata & Marozva, 2022). Since different components of CEO compensation may likely impact firm performance differently (Mohammed et al., 2023), the study recommends firm to identify those CEO

compensation components that will impact ROE positively for use in CEO compensation. This is necessary because, shareholders want a better ROE and where ROE is dwindling, with increasing CEO compensation, such firms may not attract prospective shareholders.

5 CONCLUSIONS

CEO compensation impacted strongly and positively on ROA in the short run and long run, respectively at 1% level of publicly listed non-finance firms. Thus, increasing (decreasing) CEO compensation will probably increase (decrease) ROA in the current period and in the future.

CEO compensation in the short run has insignificant inverse association with ROE of publicly listed non-finance firms. In the long run, CEO compensation has strong inverse influence with ROE while, exerted strong direct impact on ROE of publicly listed non-finance firms

5.1 Policy Implications and Recommendations

The results of this study have managerial and policy implications. Given CEOs' opportunistic behavioural attitude and hence intentionally disregarding shareholders' interest, they may engage in dysfunctional behaviour through any of the various accounting principles and standards, and even employing judgment in the preparation of financial statement. Thus, increasing CEO compensation should not be yearly affair or whenever higher earnings are reported.

The researcher recommend CEO compensation should be based on trend from external factors such as:

- i. Comparing industries across industries and company within the same industry,
- ii. Weighted forecast of revenue and company margin growth,
- iii. Market volatility of the company compared to firms in the same industry,
- iv. Economic condition in the firms' industry, and
- v. Internally, debt to equity ratio.

A limitation of these recommendation is that it is possible the companies/industry they want to compare with are equally involved in earnings management: the bases of comparison become useless. Firms should therefore look at their policies and set up the right institutional arrangements with clear rules and procedures, as well as guidelines, to make sure they follow the guidelines and set standards for CEO pay.

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Appendix

: Linktest for model specification for hypothesis 1 (ROA)

```
. linktest
```

Source	SS	df	MS	Number of obs	=	299
Model	1.4869e+10	2	7.4345e+09	F(2, 296)	>	99999.00
Residual	87542.2985	296	295.751008	Prob > F	=	0.0000
				R-squared	=	1.0000
				Adj R-squared	=	1.0000
Total	1.4869e+10	298	49896085.7	Root MSE	=	17.197

roa	Coefficient	Std. err.	t	P> t	[95% conf. interval]
_hat	.0169047	.0069141	2.44	0.015	.0032977 .0305117
_hatsq	-8.06e-06	5.66e-08	-142.22	0.000	-8.17e-06 -7.94e-06
_cons	5.078183	.9968193	5.09	0.000	3.116432 7.039934

Appendix 4.6b: Linktest for model specification for hypothesis 2 (ROE)

```
. linktest
```

Source	SS	df	MS	Number of obs	=	299
Model	140161.525	2	70080.7625	F(2, 296)	=	23.32
Residual	889500.913	296	3005.07065	Prob > F	=	0.0000
				R-squared	=	0.1361
				Adj R-squared	=	0.1303
Total	1029662.44	298	3455.24308	Root MSE	=	54.819

roe	Coefficient	Std. err.	t	P> t	[95% conf. interval]
_hat	.9998751	.2112873	4.73	0.000	.5840595 1.415691
_hatsq	-8.34e-07	.0010171	-0.00	0.999	-.0020026 .0020009
_cons	.0020655	4.436883	0.00	1.000	-8.729768 8.733899

Appendix 4.5a:

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity with ROA

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Assumption: Normal error terms

Variable: Fitted values of roa

H0: Constant variance

chi2(1) = 0.18

Prob > chi2 = 0.6694

Appendix 4.5b: Breusch-Pagan/Cook-Weisberg test for heteroskedasticity with ROE

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Assumption: Normal error terms

Variable: Fitted values of roe

H0: Constant variance

chi2(1) = 2.74

Prob > chi2 = 0.0980