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Financial Distress, Earnings Management, and the moderated role of Audit Quality: Evidence from East African Countries

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Abstract

This study contributes to the current literature by providing further evidence of the relationship between financial distress and earnings management for the listed firms during economic shocks. In addition, it extends the existing literature by investigating the moderated role of audit quality in the association between financial distress and earnings management. Using the unique data set of the East African listed firms, the study analyses 303 firm-year observations of distressed firms from 2009 to 2019. Financial distress as an independent variable was measured by using the Attman Z-score. Moreover, accrued and real earnings management as dependent variables were measured using the modified Jones model and Roychowdhury model, respectively, while audit quality was measured using audit fees. The finding suggests that financial distress is negatively related to accrued-based and real earnings management. The finding also shows that audit quality moderates the impact of financial distress on real earnings management but not accrued earnings management. The finding has practical implications for shareholders, policymakers and auditors to design appropriate measures that can help to reduce the impact of financial Distress on EAC-listed firms.

Keywords: *Financial Distress, Earnings management, Accrued Earning Management, Real Earnings Management, Developing Countries and Audit Quality*

1. Introduction

Over the years, financial distress has been the subject matter of many firms' going down. Especially this time when the world has witnessed economic shock caused by the COVID-19 outbreak and the later invasion of Ukraine. Firms usually face financial distress when their financial obligations outweigh their generated cash flows, a situation caused by illiquid assets, high fixed costs and unfavourable economic trends (Choy et al., 2011). While the global economy is still struggling to recover, some East African Countries (EAC) listed firms continue to suffer from financial distress due to their debt overhang, and some are on the verge of collapsing. For instance, in Kenya, between July 2020 and June 2021, the official receiver's office published insolvency statistics (ORPIS) has received forty (40) petitions for involuntary liquidation. As a result, five firms were put under voluntary liquidation and six under administration (Lubano, Mukami & Arora, 2021). A similar situation is also reported in Uganda and Tanzania. For example, in Uganda, the National Social Security Fund (NSSF) and the Uganda Revenue Authority (URA) have agreed to defer

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payments to companies to allow them to restructure their cash flows (Otete, 2022). Furthermore, firms like Uchumi Supermarket from Kenya, Twiga Bank and Bank M from Tanzania have all been liquidated after insolvency (TanzaniaInvest, 2018; Amadala, 2019; Malanga, 2019).

Firms opt to implement an earnings manipulation strategy to cover their deteriorating condition. Financial distress has been a significant incentive for managers to manipulate their earnings to meet their set targets and mislead their investors about the actual economic value of the firms (Campa & Camacho-Minano 2015, Li, Xiang & Djajadikerta 2020). Depending on the choice of the managers, firms are reported to choose between accrual-based earnings management (AEM) and real earnings management (REM) or use them in conjunction to manipulate earnings. However, nowadays, since managing earnings by using accruals has been easily overseen by regulators such as auditors, some firms are reported to switch to REM (Li et al., 2020). Accordingly, REM, performed during the normal operation period of firms, is deemed less exposed to the scrutiny of auditors and other regulators. However, this claim is hard to hold during a period of financial distress because distressed firms are reportedly willing to take any risk to escape their situation (Li et al., 2020). Therefore, firms are indifferent to choosing between REM and AEM.

Earnings management practices in financially distressed firms have increased the importance of audit quality. Audit quality is explained as the auditor's effectiveness in detecting material errors and providing qualified opinions on financial statements that are not true and fair (Kurniawati & Panggabean 2019). Furthermore, audit quality considerably impacts earnings management because auditors are expected to oversee and constrain manipulative behaviours within the company (Sikka, 2009). Thus, the auditor has to provide high-quality audits on financially distressed firms to monitor earnings management behaviours. Therefore, the link between financial distress and earnings management makes auditing quality one of the key variables that moderate the opportunistic reporting behaviours of distressed firms (Holm & Zaman, 2012). However, despite the importance, as mentioned earlier, of audit quality, its role in moderating firms' earnings management behaviour in financially distressed firms has been limited.

This paper explores the relationship between financial distress and earnings management, highlighting the moderating role of audit quality in firms listed in the East African Community (EAC). While much of the existing research has concentrated on the effects of financial distress in developed nations, particularly the USA, China, and the UK (Avramov, Chordia, Jostova & Philipov, 2013; Li et al., 2020), there has been limited investigation in developing countries, especially within the EAC. This study aims to fill that gap by providing new insights from this region. Notably, it is timely, as the world is recovering from the economic shocks brought on by the COVID-19 pandemic and the Ukraine invasion, with EAC and other developing countries being among the most affected.

This paper also has huge policy implications. It provides policymakers, regulators, and auditors with valuable insights into the relationship between financial distress and earnings management, which could lead them to design appropriate policies to flatten the crisis curve. Notwithstanding that, appropriate financial monitoring strategies should be developed to be applied during financial distress. Moreover, this study helps the firms take significant measures to lessen the risk associated with harmful manipulation of earnings and debt overhang. Furthermore, the study enables shareholders and other stakeholders to gain a clearer understanding of the actual financial condition their firms are facing.

2. Literature Review and Research Hypothesis

2.1 Theoretical Review

2.1.1 Financial Distress

Financial distress is also referred to as financial embarrassment (Pham et al., 2018). Financial distress is explained by Hernandez and Wilson (2018) as the outcome of a process that firms face when their earnings before interest and taxes, depreciation, and amortization are significantly lower than their expenses. In addition, financial distress is when a firm encounters negative market value growth for two consecutive years (ibid.). Financial distress is one of the critical stages many firms encounter before bankruptcy. Also, financial leverage is explained by Fallahpour et al. (2017) as a situation where a business nearly ceases its operation because of having a debt ratio above one or times an interest ratio below one. Unlike bankruptcy, the final stage for the firm to cease operations, financial distress occurred before the firm turned into insolvency. Though

numerous studies have linked financial distress with bankruptcy (Hernandez & Wilson, 2013; Liang et al., 2020; Li et al., 2020), financial distress does not always cause the bankruptcy of firms (Pham et al., 2018). Also, sometimes financial distress can be detected and controlled before the firm becomes insolvent.

Several theories have attempted to explain financial distress in corporate governance. For instance, theories such as cash management, credit risk, pecking order and trade-off have tried to cover financial distress from different perspectives. Cash management theory indicates that financial distress is generally caused by over standing imbalance between cash inflows and outflows (Aziz & Dar 2006). That implies that firms with continuing negative cash flow balance over a long period will face financial hardship and fail to meet financial obligations. The theory suggests that firms should have proper financial management that efficiently utilizes the cash inflows and minimizes immediate cash outflows (Ikpesu, Vincent & Dakare, 2019).

The credit risk theory highlights that financial distress occurs in firms because of improper handling of credit risk (Tran, Nicolou, Nayak & Verhoeven, 2021). Due to poor credit risk management, firms put themselves in a situation with a huge debt that they find difficult to settle. Therefore, the theory suggests that firms should have an appropriate credit risk management framework and credit risk policy that will help them effectively monitor and evaluate credit risk (Ikpesu et al., 2019). Meanwhile, The Pecking order theory postulates that firms should opt to use internal financing options before choosing external financing (Myers & Majluf, 1984). The over-dependence of firms on external finance exposes them to a significant risk of facing financial Distress (Wesa & Otinga, 2018). Thus, firms could avoid it by choosing internal finance with less risk than external financing.

Furthermore, the trade-off theory by Modigliani and Miller (1963) suggests that firms should limit the amount of debt financing to avoid financial distress. The theory accepts that debt is a cheap financing option for firms and, if properly utilized, will increase firm value. It is essential for the firms first to evaluate the implication of debt on their financial position before making a borrowing decision (Ikpesu et al., 2019). The OECD (2019) supports the theory, which suggests that

managers should choose the proper time to incur debt. Managers should avoid incurring debt when a firm is in insolvency.

On the other hand, financial factors such as liquidity, sales growth, financial leverage, firm size, and profitability have been named the key determinants of financial Distress (Wesa & Otinga, 2018; Idrees & Qayyum, 2018; Ikpesu et al.,2019). If the companies experience liquidity problems, they will be unable to pay off their short-term obligation on time. Thus, its consequences will lead them into financial Distress (Masdupi, Tasman & Davista, 2018). Similarly, a high leverage level places a firm under a heavy financial burden. It increases the vulnerability of the firm to experience financial distress when cash flows deteriorate (Tesfamariam, 2014; Karugu et al., 2018). At the same time, the profitability level of the firm is a key factor in determining its financial wealth. As a result, loss-making firms are at high risk of financial Distress (Ikpesu & Eboiyehi, 2018).

Furthermore, large firms have the advantage of having large total assets, which places them at less risk of financial distress than small firms (Tesfamariam 2014). Whereas small firms, criticized for having poor market experience and limited financial resources, are highly likely to face distress conditions (Isayas, 2021). Firm growth opportunity determined by sales growth is also an important determinant of financial distress. Firms with low sales growth rates usually experience cash flow problems that cause them to fail to pay financial obligations and result in financial Distress (Ikpesu & Eboiyehi, 2018). Cash flow is also another important determinant factor of financial distress. Firms with positive cash flow are reported to have a broad range of financing options that can help reduce their financial distress. Whereas firms with negative cash flow are reported to have limited financial options, and thus, they experience the worst situation during financial Distress (Isayas, 2021).

2.1.2 Earnings Management

Earnings management is among the popular manipulating practices performed by firms to alter financial statements and hide the true economic performance of the firm (Alzoubi, 2016; Li, 2019). While previous studies indicate that companies engage in earnings management to meet various reporting objectives, there is limited evidence in the literature regarding the preference between Accrual Earnings Management (AEM) and Real Earnings Management (REM) among firms. For example, accrual earnings management is performed by using flexibility in accounting choices and

estimates, such as depreciation methods of non-current assets, underestimation of bad debts and delay in writing off assets (McNichols & Wilson, 1988; Elliot & Shaw, 1988; Adams et al.,2009). Whereas real earnings management is performed using normal business operations through stock repurchases, research and development expenses and cost reduction per unit ((Burnett, Cripe, Matrin & McAllister, 2012).

Previous studies have investigated numerous incentives for earnings management; however, most common incentives are reported to occur within the classes of agency cost, information asymmetry and external economic factors such as financial crisis (Alzoubi, 2016). Market reaction is one of the essential incentives behind manipulating earnings (Agrawal & Chatterjee 2015). Since share prices tend to react proportionally to the reported earnings, managers like to manipulate earnings to attract market reaction (Agrawal & Chatterjee 2015). Besides that, managers can manipulate earnings for personal motives, such as increasing the amount of their bonus (Amidu, 2019). Studies also reveal other motives which link earnings management and financial distress, such as debt convents (Sundvik, 2016). Furthermore, managers are reported to manage earnings to undertake debt restructuring during financial Distress (Agrawal & Chatterjee 2015).

2.1.3 Audit Quality

The auditor is responsible for ensuring that financial statements are accurate and presented fairly in accordance with Generally Accepted Accounting Principles (GAAP) (Alzoubi, 2016). Consequently, audit quality is assessed based on compliance with Generally Accepted Auditing Standards (GAAS), effective planning, and the production of accurate and reliable financial reports (Dresdner & Fischer, 2020). In conducting audits, the auditor is also tasked with verifying the reasonableness and validity of the reported items (Suyono, 2018). Therefore, high-quality audits are expected to reduce manipulative behaviors and identify material misstatements in financial statements (Alzoubi, 2016). Beyond the audit process itself, the quality of an audit is influenced by the size of the firm and the economic value of the assignment (Tarmidi & Murwaningsari, 2019). Audits performed by the Big Four firms are generally regarded as having higher quality compared to those conducted by non-Big Four firms, largely due to the strong reputation of the Big Four (Yimenu & Surur, 2019). Additionally, the level of audit quality is often directly proportional to the relevance of the audit fees paid (Chen, Duong & Ngo, 2019)

The auditor is employed by management to reduce the agency's cost (Jensen and Meckling, 1976). Hence, the appointment of the auditor, apart from having empirical sustenance, also has theoretical sustenance. Due to agency problems, quality audits are anticipated to protect the interests of shareholders by reducing opportunistic managerial behaviours (Alzoubi, 2016). Sitanggang et al., (2020) asserted that the auditor would help investors to have reliable and accurate information about the firm performance by restraining fraudulent behaviours. Therefore, Nazir and Afza (2018) emphasize strictly monitoring and controlling opportunistic behaviours to safeguard the relationship between managers and shareholders.

2.2 Development of Hypothesis

2.2.1 Financial Distress and Earnings Management

Previous studies have shown inconclusive results regarding the relationship between earnings management and financial distress (DeAngelo et al., 1994; Rosner, 2003). Several findings suggest that managers tend to manage earnings downward during periods of financial distress. For instance, DeAngelo et al. (1994) found that managers of distressed firms prefer to engage in downward earnings management, utilizing negative abnormal accruals and discretionary write-offs. Similarly, Kim and Yi (2006) noted that managers adopt income-decreasing earnings management strategies to mitigate the impact of economic shocks. Furthermore, Habib et al. (2013), in a study involving 813 firms from New Zealand, discovered that distressed firms are more likely to manage earnings downward compared to healthier firms, aiming to alter the quality of reported information and create uncertainty for investors.

Conversely, research has shown that distressed companies often employ earnings management techniques to boost their income. Rosner (2003) found that firms in the U.S. that ultimately go bankrupt tend to manipulate their earnings upward. Similarly, Chen et al. (2010) discovered that distressed firms in China engage in upward earnings management to fend off delisting risks and evade increased scrutiny from government authorities. Charitou et al. (2007) noted that managers are driven to enhance earnings to prevent declines in market share prices. Additionally, Iatridis and Kadorinis (2009) posited that managers may manipulate earnings upwards to avoid breaching

debt covenants. Based on this evidence linking financial distress to earnings management, the following hypothesis is proposed

H1: There is a relationship between financial distress and earnings management.

2.2.2 Financial Distress, Audit Quality and Earnings Management

Financial distress heightens the significance of audit quality, particularly in firms engaging in earnings management (Mollik et al., 2020). When the magnitude of financial distress and earnings manipulation is very high, an auditor-moderated role is essential to ensure firms align with required reporting standards (Krishman & Zhang, 2014). The auditor has the potential ability to monitor distressed firms to avoid or reduce earnings management practices and report the true performance (Alzoubi 2016). This argument is comprehended by Conyon (2011); Holm and Zaman (2012); Mollik et al., (2020), who highlighted the substantial impact of audit quality in limiting earnings management during macroeconomic fluctuations. Gerayli et al., (2011) found a negative relationship between audit quality measured by firm size and accrued-based earnings management. dditionally, Kim and Park (2014) found a positive link between distressed firms with elevated earnings management and the resignation of auditors, suggesting that high-quality auditors tend to have shorter tenures in companies characterized by significant earnings manipulation.

Conversely, previous research has revealed conflicting evidence regarding the effectiveness of audit quality in curbing manipulative earnings behaviors during periods of financial distress. Lawrence et al. (2011) and Rusmin et al. (2013) reported that audit quality had an insignificant impact on limiting manipulative earnings practices. However, this observation was explained by Krishnan and Zhang (2014), who contended that audit quality may be compromised in times of financial distress. Additionally, Gajevszky (2014) and Imen and Anis (2020) noted that qualified audit reports issued by auditors can negatively influence firms to manipulate discretionary accruals. These findings indicate a relationship between audit quality, financial distress, and earnings management. Consequently, the following hypothesis is proposed.

H2: The relationship between financial distress and earnings management is moderated by audit quality.

3. Research Methodology

3.1 Data Source and Sample selection

The study employs panel data, focusing on non-financial listed firms in the East African Community (EAC) from 2009 to 2019. Financial institutions have been excluded from the sample due to their unique assets and capital structures, which complicate comparisons with non-financial firms (Gunathilaka, 2014). Additionally, financial institutions were omitted because of their distinct regulatory frameworks and the challenges associated with defining earnings management proxies (Habib et al., 2013; Amidu et al., 2019). Given the study's aim to investigate earnings management practices prior to official bankruptcy, it specifically selects active non-financial listed firms for analysis.

The study subsequently excludes all firms that lack sufficient time series data. The final sample consists exclusively of companies identified as financially distressed based on the Z-score classification criteria (Altman, 1968). Following this evaluation, the study includes a total of 303 firm-year observations, encompassing both the least and most distressed firms. Table 1 below outlines the classification of firm-year observations into distressed and non-distressed categories, while Table 2 details the industry-wise distribution of the final sample

Table 1: Summary Statistics for annual observation:

Classification of annual observation			
Non-Financial Distressed Firm	Financial Distressed Firm	Total	% of Financial Distressed Firm
213	303	516	58.7%

Table 2: Industry-wise Distribution of Final Sample

Industry	No of Firms
Automobiles & Parts	1
Beverages	1
Chemicals	4
Construction and Materials	7
Electricity	2
Electronic & Electrical Equipment	2
Food & Drug Retailers	1
Food Producers	8
General Retailers	1
Household Goods & Home Construction	1
Media	5
Mobile Telecommunications	1
Oil & Gas Producers	1
Tobacco	3
Travel & Leisure	4
Total	**42**

3.2 Variables and Measures

Accrual-based earnings management (AEM): Although numerous models were developed to detect AEM (Healy 1985; Jones 1991; Dechow et al., 1995), the most widely applied model is the modified Jones model, which is estimated based on discretional and non-discretional accruals (Dechow et al., 1995). The model is most accepted for being a powerful measure of AEM (Dechow et al., 1995; Agrawal & Chatterjee, 2015; Amidu et al., 2019). Thus, the study follows other researchers (Amidu et al., (2019); Dechow (1995) and adopt the model to measure AEM.

Total Accruals is then estimated as follows:

$$TA_t = (\Delta \mathrm{CA}._\tau - \Delta \mathrm{Cash}_\tau) - (\Delta \mathrm{CL}_\tau - \Delta \mathrm{LTD}._\tau - \Delta \mathrm{ITP}._\tau) - \mathrm{DPA}._\tau \ldots\ldots (1)$$

Where; TA_τ is the total Accruals

ΔCA_τ is the change in current assets from time t-1 to t

$\Delta Cash_\tau$ is the change in cash from time t-1 to t

ΔCL_τ is the change in current liability from time t-1 to t

ΔLTD_τ is the change in long-term debt from time t-1 to t

ΔITP_τ is the change in income tax payable from time t-1 to t

DPA_τ is the depreciation and amortization expense in time t-1 to 1

The non-discretional accruals will be estimated by using the modified Jones Model as follows

$$\frac{TAC_\tau}{TA_{\tau-1}} = \alpha_1\left(\frac{1}{TA_{\tau-1}}\right) + \alpha_2\left(\frac{\Delta REV_\tau - \Delta REC_\tau}{TA_{\tau-1}}\right) + \alpha_3\left(\frac{PPE_\tau}{TA_{\tau-1}}\right) + \mathfrak{E}_\tau \ldots\ldots\ldots\ldots (2)$$

Where; $\mathfrak{E}_\tau$ is the error term

Real earnings management (REM) is measured in accordance with the methodologies of Cohen et al. (2008) and Roychowdhury (2006), focusing on three key activities: the normal level of cash flow from operations, production costs, and discretionary expenses. These activities are estimated as follows:

1) Cash flow from Operations

$$\frac{CFO_{i,t}}{A_{i,t-1}} = \propto_{1,t} \frac{1}{A_{i,t-1}} + \propto_{2,t} \frac{SALE_{i,t}}{A_{i,t-1}} + \propto_{3,t} \frac{\Delta SALE_{i,t}}{A_{i,t-1}} + \mu_{it} \ldots\ldots\ldots\ldots (3)$$

2) Production Cost

$$\frac{PROD_{i,t}}{A_{i,t-1}} = \propto_{1,t} \frac{1}{A_{i,t-1}} + \propto_{2,t} \frac{SALE_{i,t}}{A_{i,t-1}} + \propto_{3,t} \frac{\Delta SALE_{i,t}}{A_{i,t-1}} + \frac{\Delta SALE_{i,t-1}}{A_{i,t-1}} + \mu_{it} \ldots\ldots\ldots\ldots (4)$$

3) Discretionary expenses

$$\frac{DISEXP_{i,t}}{A_{i,t-1}} = \propto_{1,t} \frac{1}{A_{i,t-1}} + \propto_{2,t} \frac{SALE_{i,t}}{A_{i,t-1}} + \mu_{it} \ldots\ldots\ldots\ldots (5)$$

In this context, CFO refers to Operating Cash Flow, PROD represents production costs, DISEXP stands for discretionary expenses, SALE indicates net sales, and A denotes total assets. Additionally, μi,t in equations 3 to 5 represents the regression residuals, which reflect the abnormal levels of cash flow from operations, production costs, and discretionary expenses, respectively. Consequently, these three regression residuals are aggregated to capture the overall impact of real earnings management (REM).

Financial distress has been assessed using the widely recognized and accepted Altman's Z-score (Agrawal & Chatterjee, 2015; Bugeja, 2015; Li et al., 2020). The Z-score is considered to provide superior results compared to other financial distress models, such as logit analysis, recursive partitioning algorithms, and neural networks, due to its precise predictions of bankruptcy (El Deeb & Ramadan, 2020). This study adopts Altman's Z-score models to evaluate financial distress,

consistent with the findings of Lakshan and Wijekoon (2013), Agrawal and Chatterjee (2015), and El Deeb and Ramadan (2020), all of whom have validated the model's robustness in delivering more accurate results than alternative models. Thus, the following model is utilized by multiplying each ratio by its corresponding coefficient and summing the products of these multiplications.

$Z= 1.2\ X_1 + 1.4X_2 + 3.3X_3 +0.6\ X_4 + 1.0\ X_5$……..….. (6)

In this context, Z represents the Altman value used to predict financial distress. X1 denotes the working capital to total assets ratio, X2 represents the retained earnings to total assets ratio, and X3 is the earnings before interest and taxes to total assets ratio. Additionally, X4 corresponds to the market value of equity to total liabilities ratio, while X5 is the sales to total assets ratio. The resulting Z-score is then classified according to the following criteria: if $Z > 2.99$, the firm is considered safe; if Z is between 1.81 and 2.99, the firm is in the grey zone; and if $Z < 1.81$, the firm is classified as being in financial distress.

Audit Quality: Prior studies have applied several methods to measure audit quality, including audit size proxied by whether the firm is a big four or non-big four and the magnitude of audit fees (Alzoubi, 2016; Hu, 2018; Chen et al.,2019). The auditing firms placed under the big four are perceived to hire competent and skilful auditors who preserve audit independence to safeguard their reputation (El Deeb & Ramadan 2020). Therefore, Big Four auditing firms are more linked to high-quality earnings than non-big four auditing firms (Hoque et al., 2017). Meanwhile, the economic value of the audit fees the auditor receives from the client is argued to influence the auditor to compromise their independence (Chen et al., 2019). Yet, previous studies have argued that there is no uniform measure of audit quality (Abdulwahed, 2018; El Deeb and Ramadan, 2020). Therefore, in line with Alzoubi (2016); Abdulwahed (2018); Kouib and Almulhim (2019), this study measures audit quality by using the magnitude of audit fees. The proxy for audit fees is calculated using the natural logarithm of audit fees.

Control Variables: In line with previous studies, the following control variables have been included: firm size, financial leverage, profitability, operating cash flow, and firm growth opportunities. Firm size (SIZE) is measured as the natural logarithm of total assets (Alzoubi, 2016; Agrawal & Chatterjee, 2015). Financial leverage (LEV) is calculated as the ratio of long-term debt to total assets (Agrawal & Chatterjee, 2015; Jacoby et al., 2019). Profitability (Prof) is assessed

using return on assets (ROA) (Agrawal & Chatterjee, 2015). Operating cash flow (CFO) is determined by dividing operating cash flow by total assets (Habib et al., 2013). Lastly, firm growth opportunities (GROWTH) are evaluated as the ratio of the market value of equity to total assets (Habib et al., 2013).

3.3 Empirical Estimation Model

The relationship between financial distress as an independent variable and earnings management as a dependent, with the inclusion of audit quality as a moderated variable, is examined using a dynamic panel system (GMM). The dynamic panel system is the most famous estimation model for overcoming the weakness of the Ordinary Least Square (OLS) and the Fixed Effect Model (FEM) (Wintoki et al., 2012; Lee & Hsieh, 2013; Man, 2018).

Besides resolving endogeneity problems caused by omitted variables and measurement errors, GMM provides unbiased and efficient parameter estimations. It is also more efficient and robust to heteroscedasticity and autocorrelation (Roodman, 2009). OLS and FEM have high possibilities of encountering unobserved heterogeneity, simultaneity and measurement errors (Vintilă & Gherghina, 2014). This study also uses OLS and FEM to check the robustness and sensitivity of GMM results. Accordingly, the dynamic two steps system GMM is estimated as follows;

$$Y_{it} = \alpha + k_p y_{it-1} + \beta_i X_{it} + \gamma_i Z_{it} + \lambda_i + \varepsilon_{it} \quad \text{.....(7)}$$

Where: Y_{it} presents earnings management for firm i at time t, y_{it-1} denotes the lagged earnings management, X_{it} represent independent variables and moderated variables (financial distress and audit quality), Z_{it} denotes control variables (firm size, financial leverage, profitability, operating cash flow and growth opportunity), β_i and γ_i presents vector coefficients for explanatory and control variables respectively, λ_i firm level fixed effect and ε_{it} the error term.

4. Data Presentation and Empirical Analysis

4.1 Descriptive Statistics

Table 3 presents the results of descriptive statistics for the dependent and explanatory variables employed in the study. The results reveal a negative average AEM at 3.9%. This could imply that, on average, distressed firms in EAC exercise income-downward AEM. However, the reported maximum AEM at 23.9% indicates that some distressed firms also exercise income-upwards earnings management. Furthermore, the reported standard deviation of 11.1% suggests that the variation of AEM across the firm is slightly small.

Furthermore, the descriptive statistics indicate a positive REM average of 3.1%. This implies that, on average, distressed firms in EAC practice income upward REM. Despite this result, the minimum REM of -14, 9% indicates that some distressed firms exercise income downward REM. However, the firm variation is relatively slight, with a standard deviation of 11.7%.

The average financial distress of 1.25 indicates that firms in EAC have a very high level of financial distress according to the Z-score Altman definition of financial distress. The results show that a maximum level of 2.969 indicates firms with low financial distress, and a minimum level of -4.066 indicates high financial distressed firms. Also, the variation of the level of distress among the firm is very high, with a very high standard deviation of 119.8%.

Audit quality is shown to have an average impact of the natural logarithm of 11.019, while its variation across the firm is also very high, with a standard deviation of 121.8%. All the control variables except profitability have recorded a positive mean. The negative mean of profitability suggests that most of the distressed firms in EAC are loss-making firms, thus why they are financially struggling to meet their obligation. This is further supported by the reported maximum leverage of 112.7%, which indicate a higher debt level for the distressed firms in EAC.

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Table 3: Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
AEM	303	-0.039	0.111	-0.148	0.239
REM	303	0.031	0.117	-0.149	0.333
FD	303	1.254	1.198	-4.066	2.969
AQ	303	11.019	1.218	7.43	17.33
SIZE	303	7.934	0.72	6.39	9.6
LEV	303	0.265	0.215	0	1.127
PROF	303	-0.011	0.377	-1.085	0.501
CFO	303	0.044	0.084	-0.328	0.273
GROWTH	303	0.44	0.359	0	1.52

4.2 Correlation Matrix

The correlation matrix for the variables utilized in this study is presented in Table 4. The findings reveal notable correlations between both the dependent and independent variables, as well as among the explanatory variables. In particular, the results highlight that financial distress is significantly correlated with all control variables. Additionally, a significant correlation exists between audit quality and financial leverage. Importantly, the correlations among the explanatory variables do not present a serial problem, as none of the significant variables exceed the maximum threshold of 0.8 (Gujarat & Porter, 2009, p. 338). Furthermore, the dynamic panel system GMM model applied in this study effectively addresses the issue of multicollinearity among the variables.

Table 4: Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) AEM	1.000								
(2) REM	0.084	1.000							
(3) FD	-0.29***	-0.043	1.000						
(4) AQ	-0.196***	0.017	0.139	1.000					
(5) SIZE	0.005	-0.053	-0.255***	0.115	1.000				
(6) LEV	0.273***	-0.084	-0.366***	-0.375***	0.294***	1.000			
(7) PROF	-0.191***	-0.012	0.706***	0.037	-0.023	-0.119	1.000		
(8) CFO	-0.116	0.368***	0.231***	-0.001	0.112	-0.072	0.248***	1.000	
(9) GROWTH	0.033	0.036	0.413***	0.063	-0.423*	-0.122	0.142	0.172***	1.000

**** p<0.01, ** p<0.05, * p<0.1*

4.3 Regression Results

4.3.1 Relationship between Financial Distress and Earnings Management

Table 5 displays the regression results examining the relationship between financial distress and earnings management. It begins with the findings from the Ordinary Least Squares (OLS) and Fixed Effects Model (FEM) as preliminary models to assess the sensitivity of the results, followed by the main model of the study, the Dynamic Panel System two-step Generalized Method of Moments (GMM). As anticipated, the OLS and FEM results align closely and consistently with those from the GMM regarding the relationship between financial distress and both forms of earnings management.

The results indicate that the relationship between financial distress and earnings management in EAC-listed firms is robust, remaining unaffected by variations in estimation models. According to the GMM results, which serve as the primary model, financial distress is found to have a negative association with both accruals-based earnings management and real earnings management at a 5% significance level, with coefficients of 0.03 and 0.019, respectively. This suggests that firms in the EAC are likely to manipulate earnings downward in response to financial distress. These findings support hypothesis H1 by substantiating the connection between financial distress and earnings management.

In paricularly, the findings indicate that distressed firms in the EAC tend to manage earnings downward to mitigate the economic shocks they face, making their financial statements less predictable for investors. Additionally, it appears that managers engage in downward earnings manipulation to manage shareholder reactions. This aligns with a similar finding by Habib et al. (2013) based on a sample from New Zealand. The results also echo Ranjbar and Amonallahi (2018), who noted that distressed firms lower their earnings to evade heightened scrutiny from auditors. However, this contrasts with the conclusions of Chen et al. (2010), which suggested that distressed firms manage earnings upward to shield themselves from increased government oversight and avoid delisting risks. Furthermore, it also contrasts with Bisogno and De Luca (2015), who proposed that firms engage in upward earnings manipulation to secure bank loans, avert debt covenant violations, and prevent potential bankruptcy.

Conversely, the results for the control variables indicate that financial leverage is positively correlated with accrual-based earnings management, while operating cash flow is positively related to real earnings management. These findings suggest that both financial leverage and cash

flow from operations motivate distressed firms to manipulate earnings upward in order to conceal their financial difficulties. In essence, managers attempt to reassure stakeholders that the firm maintains a healthy liquidity position and is capable of meeting its financial obligations.

Table 5: Relationship between Financial Distress and Earnings Management

	OLS		FEM		GMM sys	
	AEM	REM	AEM	REM	AEM	REM
L.AEM/ L.REM					0.114	-0.084
					[0.113]	*[0.08]*
FD	-0.031***	-0.022**	-0.042***	-0.02**	-0.03**	-0.019**
	[0.01]	*[0.009]*	*[0.011]*	*[0.009]*	*[0.015]*	*[0.01]*
SIZE	-0.01	-0.022**	0.008	0	-0.021	-0.021
	[0.011]	*[0.01]*	*[0.04]*	*[0.032]*	*[0.018]*	*[0.017]*
LEV	0.101***	-0.051	0.108**	-0.072*	0.097**	-0.045
	[0.031]	*[0.032]*	*[0.046]*	*[0.037]*	*[0.047]*	*[0.035]*
PROF	0.016	0.009	0.061**	0	0.017	0.006
	[0.024]	*[0.025]*	*[0.029]*	*[0.023]*	*[0.034]*	*[0.023]*
CFO	-0.081	0.592***	-0.124	0.624***	-0.096	0.525***
	[0.076]	*[0.079]*	*[0.088]*	*[0.072]*	*[0.088]*	*[0.095]*
GROWTH	0.052**	-0.006	0.031	-0.009	0.038	0.003
	[0.02]	*[0.021]*	*[0.037]*	*[0.03]*	*[0.038]*	*[0.023]*
	0.035	0.224***	-0.085	0.053	0.129	0.197
	[0.081]	*[0.084]*	*[0.323]*	*[0.263]*	*[0.153]*	*[0.134]*
Number of Obs	303	303	303	303	303	303
R-squared	0.151	0.18	0.1	0.253		
AR (1) (p-value)					0.02	0.001
AR (2) (p-value)					0.65	0.347
Sargan					0.32	0.508
Hansen					0.553	0.709

Notes: The table reports regression coefficients and Standard error [in bracket]. The asterisks ***, ** and * indicates significance at 1%, 5%, and 10% level respectively. Dynamic panel data are reported with AR (1) and AR (2), which are first-order and second-order serial correlations in the first differenced residuals. Also, it reports Sargan and Hansen test in p-value. The notation: L.AEM and L. REM = lagged performance, FD= Financial Distress, SIZE = Firm Size, LEV= Financial Leverage. PROF= Profitability Ratio, CFO= Operating Cash Flow, GROWTH= Firm Growth Opportunity.

4.3.2 Moderated Role of Audit Quality

Table 6 illustrates the result for the moderating role of audit quality on the relationship between financial distress and earnings management. While the OLS and FEM results reveal an

insignificant effect of audit quality as a moderator, the GMM results indicate a significant negative relationship between audit quality and real earnings management at a 5% significance level, with a coefficient of -0.009. This finding suggests that higher audit quality reduces the likelihood of manipulative practices involving real earnings management in distressed firms within the EAC. Thus, this result partially supports hypothesis 2 (H2), as only real earnings management demonstrates a significant relationship with audit quality. In contrast, accruals-based earnings management does not show a significant relationship with the moderating role of audit quality.

Table 6: Moderated Role of Audit Quality

	OLS		FEM		GMM sys	
	AEM	REM	AEM	REM	AEM	REM
L.AEM/ L.REM					0.113	-0.061
					[0.115]	*[0.073]*
FD	-0.063	-0.01	-0.056	0.018	-0.068	0.066*
	[0.041]	*[0.043]*	*[0.049]*	*[0.041]*	*[0.05]*	*[0.04]*
AQ	-0.012*	0.005	*-0.024***	*-0.002*	*-0.017*	*-0.002*
	[0.006]	*[0.007]*	*[0.011]*	*[0.009]*	*[0.014]*	*[0.006]*
FD_AQ	0.003	-0.001	*0.002*	*-0.004*	*0.004*	*-0.009***
	[0.004]	*[0.004]*	*[0.005]*	*[0.004]*	*[0.005]*	*[0.004]*
SIZE	-0.006	-0.024**	0.028	0.008	-0.013	-0.017
	[0.01]	*[0.011]*	*[0.041]*	*[0.033]*	*[0.018]*	*[0.016]*
LEV	0.079**	-0.043	0.106**	-0.081**	0.081	-0.091**
	[0.035]	*[0.036]*	*[0.046]*	*[0.038]*	*[0.058]*	*[0.041]*
PROF	0.015	0.01	0.051*	0.001	0.01	0.017
	[0.024]	*[0.025]*	*[0.029]*	*[0.024]*	*[0.035]*	*[0.025]*
CFO	-0.096	0.598***	-0.12	0.629***	-0.105	0.537***
	[0.076]	*[0.079]*	*[0.088]*	*[0.072]*	*[0.084]*	*[0.101]*
GROWTH	0.055	-0.007	0.018	-0.003	0.041	0.013
	[0.021]	*[0.022]*	*[0.038]*	*[0.031]*	*[0.039]*	*[0.023]*
Constant	0.132	0.188*	0.021	0.011	0.258	0.214
	[0.097]	*[0.101]*	*[0.332]*	*[0.273]*	*[0.229]*	*[0.162]*
Number of Obs	303	303	303	303	303	303
R-squared	0.162	0.18	0.12	0.257		
AR (1) (p-value)					0.02	0.001
AR (2) (p-value)					0.641	0.314
Sargan					0.247	0.579
Hansen					0.542	0.644

Notes: The table reports regression coefficients and Standard error [in bracket]. The asterisks ***, ** and * indicates significance at 1%, 5%, and 10% level respectively. Dynamic panel data are reported with AR (1) and AR (2), which are first-order and second-order serial correlations in the first differenced residuals.

Also, it reports Sargan and Hansen test in p-value. The notation: AQ= Audit Quality, FD_AQ = Moderated Variable of Audit

Intuitively, this result suggests that since real earnings management is riskier to firm performance due to its persistent long-term economic consequences (Muljono and Suk, 2018), auditors have increased their focus and managed to lessen its impact. On the other side, firms are also utilizing accrual earnings management with much care to the point that auditors have failed to detect it. Another plausible explanation of these results is the one that endorsed the finding of Campa and Camacho-Minamo (2015). They postulate that distressed firms' managers have higher incentives to manage earnings through real activities for achieving short-term targets, even if it has an enormous long-term impact. However, their incentives are closely monitored by auditors through high-quality audits. Therefore, the imposition of a tight monitoring mechanism reduces managers' manipulative behaviors of real earnings management.

4.3.3 Robustness checks using Zmijewski (1984) as an alternative measure of Financial Distress

The study conducted a robustness test using an alternative measure of financial distress to enhance the reliability of the previously reported results. In this test, financial distress was assessed in a manner similar to Du and Lai (2018), utilizing the model developed by Zmijewski (1984). The financial distress index from Zmijewski (1984) is computed as follows: "ZMIJ = −4.336 − 4.513 x ROA + 5.679 x LEV − 0.004 x LIQ," where ROA stands for return on assets, LEV indicates financial leverage, and LIQ represents liquidity, calculated as the ratio of current assets to current liabilities.

As illustrated in Table 7, the coefficient for FD_2 shows a significant positive correlation with AEM and REM at the 5% and 10% levels, respectively. The coefficient's sign for financial distress in this robustness check contrasts with the findings in Table 4, as Zmijewski's model presumes a high Z-score, indicating a greater likelihood of financial distress (Campa & Camacho-Minamo, 2015). Consequently, the results from the robustness check support hypothesis H1 and validate a significant relationship between financial distress and earnings management.

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Table 7: Robustness check for the relationship between FD and EM

	OLS		FEM		GMM sys	
	AEM	REM	AEM	REM	AEM	REM
L.AEM/ L.REM					0.126	-0.095
					[0.099]	*[0.075]*
FD_2	0.045***	0.027*	0.039**	0.005	0.031**	0.032*
	[0.015]	*[0.015]*	*[0.017]*	*[0.014]*	*[0.013]*	*[0.019]*
SIZE	-0.012	-0.023**	0.033	0.009	-0.016	-0.017
	[0.01]	*[0.01]*	*[0.04]*	*[0.033]*	*[0.015]*	*[0.021]*
LEV	-0.071	-0.147*	-0.048	-0.086	-0.028	-0.19
	[0.075]	*[0.078]*	*[0.088]*	*[0.071]*	*[0.06]*	*[0.117]*
PROF	0.173**	0.094	0.165**	-0.017	0.103	0.12
	[0.073]	*[0.076]*	*[0.083]*	*[0.067]*	*[0.065]*	*[0.087]*
CFO	-0.107	0.576***	-0.148	0.616***	-0.089	0.543***
	[0.077]	*[0.079]*	*[0.09]*	*[0.072]*	*[0.078]*	*[0.094]*
GROWTH	0.024	-0.026	-0.013	-0.034	0.008	-0.005
	[0.019]	*[0.02]*	*[0.035]*	*[0.028]*	*[0.03]*	*[0.024]*
Constant	0.2*	0.314***	-0.167	-0.018	0.18	0.277**
	[0.108]	*[0.112]*	*[0.327]*	*[0.265]*	*[0.152]*	*[0.137]*
Number of Obs					303	303
AR (1) (p-value)					0.022	0.002
AR (2) (p-value)					0.664	0.492
Sargan					0.264	0.705
Hansen					0.647	0.74

Notes: The table reports regression coefficients and Standard error [in bracket]. The asterisks ***, ** and * indicates significance at 1%, 5%, and 10% level respectively. Dynamic panel data are reported with AR (1) and AR (2), which are first-order and second-order serial correlations in the first differenced residuals. Also, it reports Sargan and Hansen test in p-value. The notation: FD_2= Financial Distress measured by using Zmijewski (1984)'s model

4.3.4 Robustness checks using big 4 and non-big 4 as an alternative measure of Audit Quality

The study employs audit size as an alternative measure of audit quality to assess the reliability of the moderated effect. Following the approach of Hu (2018), audit size is represented by dummy variables, where a value of one (1) is assigned to companies audited by the Big Four firms, and

zero (0) is given to others. The "Big Four" refers to the four largest global audit firms: Deloitte Touche Tohmatsu (Deloitte), PricewaterhouseCoopers (PwC), Ernst and Young (EY), and KPMG.

As shown in Table 8, the findings are consistent with the primary results presented in Table 5. The results indicate a significant moderated effect of audit quality on the relationship between financial distress and real earnings management, with a negatively significant coefficient at the 5% level. Thus, this outcome reinforces our main conclusion regarding the moderating role of audit quality.

Table 8: Moderated effect of Audit Quality by Using Audit Size

	OLS		FEM		GMM sys	
	AEM	REM	AEM	REM	AEM	REM
L.AEM/ L.REM					0.112	-0.068
					[0.117]	[0.092]
FD	-0.027**	-0.02*	-0.038***	-0.017	-0.026	-0.008
	[0.011]	[0.012]	[0.013]	[0.011]	[0.018]	[0.011]
AQ2	-0.023	0.006	-0.024	-0.011	0	0
	[0.019]	[0.02]	[0.03]	[0.024]	[0.025]	[0.016]
FD_AQ2	-0.004	-0.002	-0.006	-0.005	-0.005	-0.027**
	[0.011]	[0.012]	[0.015]	[0.012]	[0.016]	[0.012]
SIZE	-0.004	-0.023**	0.015	0.004	-0.021	-0.015
	[0.01]	[0.011]	[0.04]	[0.033]	[0.019]	[0.016]
LEV	0.082**	-0.048	0.103**	-0.074*	0.093*	-0.073**
	[0.033]	[0.035]	[0.047]	[0.038]	[0.052]	[0.03]
PROF	0.018	0.009	0.065**	0.002	0.018	0.007
	[0.024]	[0.025]	[0.029]	[0.024]	[0.035]	[0.026]
CFO	-0.06	0.589***	-0.119	0.627***	-0.096	0.537***
	[0.077]	[0.08]	[0.088]	[0.072]	[0.091]	[0.099]
GROWTH	0.061***	-0.007	0.035	-0.005	0.039	0.021
	[0.021]	[0.022]	[0.038]	[0.031]	[0.035]	[0.024]
Constant	0.007	0.226***	-0.122	0.029	0.135	0.165
	[0.083]	*[0.086]*	*[0.326]*	*[0.266]*	*[0.153]*	*[0.135]*
Number of Obs	303	303	303	303	303	303
AR (1) (p-value)					0.02	0.002
AR (2) (p-value)					0.667	0.277
Sargan					0.311	0.518
Hansen					0.537	0.527

Notes: The table reports regression coefficients and Standard error [in bracket]. The asterisks ***, ** and * indicates significance at 1%, 5%, and 10% level respectively. Dynamic panel data are reported with AR (1) and AR (2), which are first-order and second-order serial correlations in the first differenced residuals. Also, it reports Sargan and Hansen test in p-value. The notation: AQ_2 = Audit size by using a dummy variable of audit firm size. FD_AQ2= Moderated variable of audit quality using dummy variable of audit firm size.

5 Conclusions

The study of financial distress has garnered significant attention due to its considerable economic consequences, especially in the aftermath of the COVID-19 pandemic. However, the circumstances in the East African Community (EAC) and other developed countries are unique, as the economic shocks from various crises have had a severe impact on these regions. This research examines the influence of financial distress on earnings management and explores whether this effect is moderated by audit quality. The findings reveal that financially distressed firms in the EAC tend to manage real earnings management (REM) and accrual earnings management (AEM) downward. Additionally, the results indicate that high audit quality effectively mitigates the effects of real earnings management.

Typically, in more complex financial situations, one might expect financially distressed firms to manage earnings upward to avoid breaching debt covenants and facing potential bankruptcy. However, the situation in the EAC deviates from this norm. Instead of increasing earnings, managers of financially distressed firms in the EAC employ both more and less detectable strategies to manage earnings downward, aiming to protect themselves from litigation risks and to prevent an increase in share prices. This finding supports agency theory, suggesting that managers in financially distressed EAC firms act in their own self-interest, managing earnings to benefit themselves while neglecting shareholder interests. Furthermore, the results imply that high audit quality partially curbs these self-serving behaviours. Consequently, this finding highlights the need for auditors and regulators to intensify their scrutiny of accrual earnings management practices

The study has also contributed to trade-off theories by exploring managerial earnings behaviours towards distressed financial conditions. Since the trade-off theory considers the relevant cost related to financial distress, EAC firms are advised to control the amount of debt financing instead of managing earnings downwards. The downward earnings management is also in line with the pecking order theory. It reflects that firms in EAC choose to use internal financing before external financing because they are free from debt covenant problems. In general, the finding theoretically contributes to the existing literature by providing new evidence from the limited explored data set of EAC.

More so, by exposing the earning downward behaviours of the financially distressed firms, the study has practical implications for policymakers and regulators who have to utilize the findings by designing effective policies and regulations to monitor the reported situation. Nevertheless, the study has encountered some limitations in selecting samples by excluding financial institutions and non-listed firms. Thus, the study suggested that future research further explore the EAC data set by including financial institutions and non-listed firms. Also, the study has been limited to the period ending 2019, whereby 2019 is the year in which COVID-19 initially emerged. This means the study has partially covered the impact of COVID-19 and failed to cover the Ukraine invasion. Given the significant impact of COVID-19 and the Ukraine invasion on financial distress, the study suggests that future research extends its period to capture the effect of the mentioned outbreaks.

Declaration of Interest Statement

The author reports no potential conflicts of interest. He has not received any financial support for the preparation of this manuscript and declare that he has no financial interests related to the submitted work.

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