

Impact of Audit Best practice on the Quality of Financial Reporting: New Evidence from an Emerging Context

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Abstract:

This study looked at how audit quality affected the quality of financial reporting for Egyptian-listed companies. Using annual data from 2011 to 2020, totaling 780 observations, we use one of the most advanced models, a system generalised method of moments (GMM) estimator, to control dynamic endogeneity issues and unobserved firm heterogeneity, thereby improving the results' validity and reliability. This is the first study to detect earnings manipulation (EM) in the Egyptian context utilising different accrual-based EM models, including a modified Jones model (1995), Kothari, Leone, and Wasley's (2005) model, Kasznik's (1999) model, and Raman and Shahrur's (2008) model. The data indicate that the Big Four audit firms have no substantial impact on improving the quality of financial reports published in the stock market. The Egyptian audit market, combined with no

litigation risk, economic bonding between auditors and their clients, lower investor protection, weak enforcement mechanisms, and firm dominance by controlling groups, encourages auditors to behave opportunistically, undermining their independence and objectivity. As a result, this analysis demonstrates that hiring Big Four auditors is insufficient to ensure financial reporting reliability and integrity. Thus, Egyptian market regulators and policymakers should unify financial reporting and auditing standards, increase enforcement mechanisms, implement legislation and norms that limit profits manipulation behaviours, and incentivize greater quality delivery.

Keywords: audit quality, quality of financial reporting, system generalised method of moment (SGMM), emerging market.

1.Introduction

The increasing number of scandals and bankruptcies (e.g., Enron, Xerox, WorldCom, Flowtex, Rite-Aid, Royal Ahold, and Tyco) at the end of the 1990s and in recent decades has resulted in a deterioration of reported earnings as well as investor confidence and trust in accounting information. Furthermore, investors' contractual outcomes and control over opportunistic managerial behaviours have weakened (Lin and Hwang, 2010). Due to the prevalence of fraudulent financial reporting and issues caused by asymmetric information between agents and principles, regulatory agencies, shareholders, stakeholders, and other contracting parties

are increasingly interested in having an effective audit process to improve the integrity of financial reporting. Independent and certified audits assist offer external parties with more accurate, reliable, timely, and credible information in financial reports, lowering the risk of misstatements (Armstrong, Guay, & Weber, 2010; Habbash, 2010).

Examining the relationship between audit quality and earnings management (EM) practice in Egypt is interesting for a number of reasons. First, Egypt's characteristics and institutional circumstances differ significantly from those of common-law countries. Egypt is a rising country that wants to politicise its accounting system. In fact, Egypt has been characterised by a lower level of its regulatory system, an inability to comply with the disclosure requirements of Egyptian accounting standards (EASs), an increasingly high reconciliation of accounting profits for taxable income, a decrease in the use of control mechanisms to validate compliance with accounting standards, and an extraneous role in the stock market to raise capital (Fawzi, 2003; Samaha et al., 2010, 2012). Second, as an emerging stock exchange, Egypt lacks other information sources, with the exception of published financial data such as profit predictions, media releases, industry financial studies, and management conference calls. As a result, financial statements can be considered the key source of information for both internal and external consumers (Al-Ajmi 2009). The majority of transactions

in Egypt's capital market rely on available accounting data, notably earnings. As a result, earnings become more important to market prices and investors than profits for valuation purposes (Ebaid, 2013). As a result, developing countries, particularly those in the Middle East and North Africa (MENA), rely more heavily on financial reporting quality than developed countries to reduce information asymmetry and improve decision-making (Afify, 2009; Sarhan, Ntim, and Al-Najjar, 2019). To increase audit quality and financial reporting accuracy, regulatory agencies have implemented a number of reforms and regulations, including the issuance of laws, CG codes, and rules (Ebaid, 2013). Reforms and legislation aimed at improving audit quality will be ineffective unless firm- and country-level governance quality is taken into account. For example, it is necessary to understand how the legal system, level of family and governmental ownership, cultural elements, and social hierarchical structure influence organisations' motivation to assure audit quality (Sarhan et al., 2019). As a result, various factors, such as political and legal framework, level of ownership concentration, and social values, may have an impact on the audit profession and, as a result, reduce audit quality. Thus, firms are not incentivized to maintain high levels of governance disclosure, openness, or audit quality (Sarhan et al., 2019).

This finding is consistent with investigations undertaken in Egypt. For example, in the Egyptian setting, most enterprises rely

on non-Big 4 auditing firms rather than the Big 4. The bulk of Egyptian companies are audited by non-Big Four accounting firms. Their research found that 54.5% of Egyptian stock market firms are audited by non-Big 4 firms, while 45.5% are audited by Big 4 firms. Ezat (2015) examines listed non-financial enterprises, with 513 firm-year observations from 2011-2013. According to Mohamed, Basuony, and Badawi's (2013) research, non-Big 4 auditing firms audit around 66% of the Egyptian listed sample firms. Bassiouny (2016) reported that Big Four organisations audited 28% of its sample between 2007 and 2011. According to El-Dyasty (2017), 34% of Egyptian firms are audited by Big 4 auditing firms, while 31% of the Egyptian market is controlled by private local auditing firms, and auditing firms linked with foreign companies (excluding the Big 4) account for around 35%. The audit market, accounting, and auditing professions are all undeveloped. Thus, regulators and policymakers have recently expressed an interest in enacting governance norms and legislative rules to improve auditing methods and defend shareholders' interests. Furthermore, the majority of the literature contends that existing or potential financial statement users in MENA countries prefer to work with the Big 4 auditing firms because they have more accounting and auditing expertise and professionalism, resources, skills, a high reputation, and ethical standards that set them apart from their competitors (Sarhan et al., 2019). They discover that audit

quality can serve as a substitute, especially in countries with poor legal, judicial, and bureaucratic institutions and little investor protection. Furthermore, audit quality can help the governance structure improve financial reporting quality and resolve agency issues between management and shareholders. Khalil and Ozkan (2016) discovered that Egyptian enterprises that focus on the Big 4 auditing firms account for 59% of the study sample. These statistical findings on the market share of the Big 4 auditing companies in Egypt are congruent with those of Sarhan et al. (2019). They confirmed that firms audited by the Big 4 have a negative relationship with EM due to the high quality of audit services they give. As a result, the purpose of this study is to determine how much audit quality lowers opportunistic EM while increasing financial reporting quality.

At this point, it may be concluded that Egypt's capital market is inefficient. This circumstance has a negative impact on the capital market's transparency, financial reporting quality, and value relevance as compared to Western countries. According to studies conducted in Egypt, such as Kamel and El-Banna (2010), Egyptian firms intentionally presented an artificial picture of their financial position and operating results in order to attract additional investment, avoid delisting, and obtain the right to issue additional shares in addition to existing shareholdings (Egyptian Capital Market Authority, 2002, pp. 47-51). Furthermore, Egyptian managers of state-owned firms (SOEs)

offering IPOs, such as privatisation programmes, may face conflicting incentives to participate in either raising income or decreasing EM behaviours (Kamal, 2012). As a result, based on the findings and data uncovered in the Egyptian capital market, this study seeks to determine whether compliance with CG norms minimises opportunistic EM practices. As a result, Egypt can be considered a typical example of a developing country encountering the same obstacles in implementing CG in its capital market.

The rest of this study is organised as follows. Section 2 provides a literature review. Section 3 covers the study's research methodology. Section 4 presents the empirical findings. Section 5 finishes the analysis with comments and recommendations.

2. Literature Review And Hypotheses Development:

Agency theory emphasises that CG is a potential solution to agency difficulties because it acts as an internal mechanism for aligning the interests and objectives of shareholders and management in order to reduce agency costs. External audits increase public confidence and trust in financial reporting while also strengthening information accountability and reliability (Habbash, 2010). Furthermore, agency theory suggests that, as an external mechanism, an external audit is critical in reducing agency difficulties caused by managers' self-interest behaviour at the expense of principals' interests. According to the notion,

external audits serve as an important monitoring mechanism that controls conflicts of interest between management and shareholders while also reducing information asymmetry. External auditing is crucial to efficient CG implementation since audit reports ensure that all shareholders receive truthful financial statements. The auditor plays an important role in ensuring an efficient and effective CG system. Furthermore, a good reporting and control system including external auditors influences CG by improving organisational functionality and preserving shareholders' interests (Alessandro, 2013).

External audits should be carried out in accordance with generally accepted auditing standards to ensure transparency and disclosure. The auditing quality of Big 4 auditing companies has a significant impact on the reliability and objectivity of information provided to external users since they have higher credentials, abilities, competence, and professionalism in detecting fraud EM practices. Furthermore, they are more concerned with keeping their reputation in the job market. Audit quality is another element that can help identify aggressive EM. High-quality auditors maintain high financial reporting standards to protect their brands and reputations from potential hazards posed by customers' erroneous financial reports (Francis and Wang, 2008). Furthermore, high-quality auditors work hard to uncover any aggressive EM and significant misreporting in order to keep their clients, brand audit fees, and avoid the danger of

lawsuit resulting from an inappropriate audit. As a result, large auditing companies receive much larger fees to strengthen their technology skills and engage trained individuals to build and implement effective methods for detecting misreporting (Khalil and Ozkan, 2016). Thus, agency theory implies that the quality and independence of external auditors are critical for ensuring a reasonable level of management oversight.

External auditors are responsible for ensuring that financial statements adhere to GAAP and improve the integrity of the financial statements issued to stakeholders. Due to the prevalence of dishonest financial reporting, external auditing is viewed as a significant possible oversight technique in CG that can lessen agency issues between shareholders and management. Furthermore, cooperation between the AC and external audits reduces knowledge asymmetry between principles (shareholders) and agents (management), lowering the likelihood of financial statement misstatements. External auditors help to mitigate managers' lack of honesty in financial reporting to external users. As the level of external auditing improves, so do the quality, creditability, and reliability of financial statements (Basiruddin 2011).

The link between audits and financial reporting in industrialised countries yields mixed results. In the United Kingdom, Habbash (2010) discovered that relative audit fees earned by client and industry-specific auditors have a large and unfavourable influence on EMs. Thus, external audits play an

important role in improving the quality of reported earnings while lowering the number of DAs. In a similar UK setting, Basiruddin (2011) discovers that the combined role of an independent board and audit quality enhances monitoring and supervision functions. Higher-quality audits (which either demand higher audit fees or are performed by industry-specialist auditors) improve the firm's capacity to detect and limit profit manipulations, hence increasing the dependability and creditability of reporting. These data support Agency Theory's claim.

Chi, Lisic, and Pevzner (2011) used 925 observations from 2001 to 2008 to investigate the relationship between audit features and REM. The study discovered that auditor industry competence, Big Audit, and high audit fees are linked to a greater level of REM practices (reduced anomalous cash flow, high overproduction, and lesser discretionary spending). As a result, a large audit firm's client will employ more REM because high-quality auditors are more likely to uncover discretionary accrual activity. However, audit tenure is positively associated with REM. One important study in the UK institutional setting is Alhadab and Clacher (2018), which investigates the impact of audit quality on real-based earnings management (REM) and accrual-based earnings management (AEM) between 1998 and 2008. The study discovered that high-quality auditors for IPO firms have a large and unfavourable influence on DA manipulation and discretionary spending (a proxy for REM).

However, this study finds no link between high-quality audits and REM based on sales tactics for IPO corporations. In a similar vein, Chi et al. (2011) explored the impact of audit quality (proxied by the existence of major audit firms, audit industry specialisation, higher audit fees, and longer audit tenure) on AEM and REM, particularly for firms with strong incentives to manage earnings upward. However, the study found that all proxies of audit quality have an important role in limiting accrual-based manipulation. Surprisingly, the study discovered a significant correlation between audit quality and REM. One possible reason for this effect is because high-quality auditors can limit accrual manipulations, causing clients to migrate to a higher level of REM even if it is costly for the firm. As a result, high-quality auditors do not need to address all sorts of REM. Other research, however, have found that audit quality has no negative impact on EM magnitude. For example, Piot and Janin (2007) found no significant association between Big Five audit firms and EM in the French stock market, specifically the SBF 120 Index businesses for 1999, 2000, and 2001, either in terms of absolute or signed abnormal accruals. Furthermore, there is no correlation between auditor tenure and anomalous accruals.

In developing countries, most prior research agreed that large audit firms are more likely to detect aggressive EMs and significant misreporting in order to avoid the danger of litigation and maintain their market reputation (Alhadab and Clacher 2018). According to

the Generally Accepted Auditing Standards (GAAS), the quality of external auditing must be linked to the level of transparency and disclosure that is applied. Auditing quality, particularly in terms of the Big Four audit firms, industry expertise, audit fees, audit seniority, and audit tenure, can have a significant impact on providing reliable and impartial information to external consumers. Many research have found a negative association between high-quality audit clients and the size of EMs (Abata and Migiro (2016); Waweru and Prot (2018)).

Bahrain is a growing country with a developed financial industry, a low-liquidity stock market, minimal turnover on the boards of directors of publicly traded companies, an inactive merger and acquisition market, and essentially no litigation. Al-Ajmi (2009) conducted a study of 300 credit and financial analysts to determine their perceptions of the relationship between AC effectiveness, audit firm size, and audit quality. Both groups found that financial statements audited by Big Four companies are of higher quality than reports certified by non-Big Four businesses. There is a favourable relationship between audit firm size, effective AC, and financial statement creditability and reliability. One possible reason for this outcome is that Big Four audit firms are better equipped to resist management pressure in the event of a deceptive statement. However, both groups discovered that non-audit services have a detrimental impact on auditor independence, hence reducing audit quality.

Kouaib and Jarboui (2014) analysed 61 listed and unlisted Tunisian enterprises from 2007 to 2011, and discovered various intriguing findings, including the fact that auditor reputation has a negative and significant effect on EMs. They also discovered that external audit quality characteristics and institutional concentration have a negative and substantial impact on EM in industrial enterprises while having a favourable and non-significant effect in the commercial sector. In the Nigerian context, Miko and Kamardin (2015) proposed that AC and audit quality help to significantly reduce EM through DAs in pre- and postcode 2011. Similarly, Saleem et al. (2016) stated that CG procedures and external audits serve as essential regulating mechanisms for improving the quality of the financial reporting process. Inaam and Khamoussi (2016) conducted a meta-analysis and discovered that audit quality had a significant and unfavourable impact on EM. However, these meta-analyses suffered from endogeneity issues. Similarly, Garcia-Meca and Sanchez-Ballesta (2009) and Lin and Hwang (2010) conducted meta-analyses and concluded that audit quality (proxied by tenure, size, independence, and industry specialisation) is positively correlated with earnings quality and negatively correlated with opportunistic EM. However, the AC does not ensure a beneficial impact on earnings quality.

Following the implementation of Jordanian CG in 2009, Alzoubi (2018) found a substantial negative relationship between

audit quality (audit size, audit tenure, audit specialty, and audit independence), debt financing (low debt), and EM. According to the study, large audit companies are more concerned with promoting audit service quality than smaller audit firms due to their experience, expertise, accounting and finance knowledge, technology, and specialised people resources (Francis and Wang, 2008; Habbash, 2010).

Few research have looked into the usefulness of the "comply or explain" CG code, especially on the African continent. For example, in Kenya and Tanzania, Waweru and Prot (2018) discovered a negative relationship between audit quality and DAs as a proxy for EM. However, there is a good and strong correlation between board independence, gender diversity, director ownership, and DAs. They discovered that CG guideline restrictions have no substantial impact on reducing EM in the stock exchange because they are applied voluntarily.

However, some investigations did not identify a significant link between audit quality and EM magnitude. For example, Haat et al. (2008) did a comparative study to investigate the effects of internal CG procedures, ownership structure, and audit quality on transparency, timeliness, disclosure, and market performance. According to the study, audit quality has a considerable and negative impact on market performance, particularly for poor-performing corporations. However, the study found that audit quality had no substantial impact on transparency, timeliness, or

disclosure quality. Furthermore, Aryan (2015) discovered a non-significant relationship between audit quality and corporate profitability in Jordan from 2009 to 2014. Abata and Migiro (2016) identified Nigeria as Africa's largest market due to its prominent influence in the region's economics and politics through ECOWAS and the African Union. Except for audit quality, the study found no significant relationship between any of the CG characteristics studied and EM. Audit quality had a positive and non-significant correlation with EM. Similarly, in Iran from 2009 to 2014, Salehi, Moradi, and Paiydarmanesh (2017) discovered a positive and non-significant association between all audit quality variables and the quality of financial statement disclosure. These findings contradict other studies, including those by DeBoskey and Jiang (2012) and Dolan (2015), which demonstrated that all of these audit quality indicators have a favourable and significant impact on disclosure and earnings.

There is little consensus on the relationship between audit quality and EM practices in Egypt. Prior research has found that the likelihood of litigation risk faced by audit firms is low in the relatively less efficient market operating in MENA countries (Sarhan, Nithm, and Al-Najjar, 2019), particularly in the Egyptian context (Fawzy, 2003), where there is no difference in audit quality provided by Big Four and non-Big Four firms. In Egypt, Bassiouny, Soliman, and Ragab (2016) investigated the impact of firm characteristics on accruals-based EM from 2007

to 2011. Their findings revealed that firm size, age, and audit quality had no significant impact on earnings manipulation tactics. However, the study discovered a strong correlation between leverage and earnings manipulation methods. As a result, managers are more prone to employ accounting practices and standards that allow them to increase earnings in order to meet lender-imposed debt covenants and avoid potential renegotiation fees.

This result is not supported by Khalil and Ozkan (2016), who discovered that Egyptian enterprises with high-quality auditors are more likely to detect aggressive EM and disclose material misreporting. According to the results of their investigation, Egyptian enterprises audited by the Big Four accounted for 58% of the sample. This suggests that the share of clients audited by large audit firms has increased compared to previous years. For example, Mohamed, Basuony, and Badawi (2013) discovered that "non-big 4" audit firms account for 54.5%, whereas "big-4" audit firms account for 45.5%. The findings of Khalil and Ozkan (2016) are reasonably compatible with other studies, such as Sarhan et al. (2019), which discovered that the average of large audit companies in Egypt is 59%. Clients of high-quality audit companies have lower levels of anomalous accruals. As a result, these audit firms are fearful of losing their clients and audit revenues, thus they are more likely to reduce litigation risk and protect their reputation. Soliman and Ragab (2014) discovered that high audit firm size, as a

proxy for audit quality, is inversely associated with DAs in the Egyptian setting.

However, the findings of Yasser and Soliman's (2018) investigation do not support agency theory, which holds that audit quality is a good instrument for preventing earnings manipulation. Their study included the EGX 100 from 2011 to 2016. They examined the link between three audit quality indicators--audit firm size, auditor industry specialisation, and auditor tenure--and DAs (a proxy for AEM). According to the study, audit tenure has a favourable and significant influence on DAs. Auditor industry specialists and audit firm size had no meaningful effect on DAs. They find that a lack of investor protection, poor regulatory regimes, and minimal auditor exposure to lawsuit risk may all contribute to low auditor effectiveness. This finding is consistent with Bassiouny (2016), who discovered a non-significant association between audit quality and EM for the 50 most active firms on the EGX from 2007 to 2011. As a result, there is no clear consensus on proving that audit quality prevents earnings manipulation. These equivocal findings on the association between audit quality and earnings manipulation could be attributed to the voluntary use of CG and disparities in socioeconomic and political settings between nations. This means that audit quality may not always convey meaningful information to consumers due to inadequate

disclosure and low transparency in financial reporting. Based on these considerations, the following hypothesis is proposed:

H1: There is a significant and positive association between Audit quality and quality of financial reporting.

H1A: There is a significant negative association between audit quality and DAs (modified Jones Model).

H1B: There is a significant negative association between audit quality and DAs (Kothari model)

H1C: There is a significant and negative association between audit quality and DAs (Kasznik Model)

H1D: There is a significant and negative association between audit quality and DAs (Raman and Shahrur Model)

1. Research Methodology

1.1. Data and Sample

To build our database, we used firms listed on the Egyptian Exchange (EGX). Following an economic reform program and privatization, EGX has grown again. In 2020, there were 226 firms listed. In our study, we used a sample of 78 listed non-financial firms covering the period 2011-2020. Firms that did not have information for at least three years and firms with relatively missing data were excluded from our analysis. Table I describes the structure of the panel database (a summary of the study sample). EGX, Capital Market Authority (CMA), and Egypt for Information Dissemination (EGID) are the main sources of data that were

collected manually. Data for the control variable set and EM proxies were calculated based on data from DataStream.

Table 1: Sample size of study

Sample	N	%
listed firms on the Egyptian Stock Exchange	226	100%
Less: financial, insurance, and investment firms	(47)	21%
Less: firms that do not have information for at least 3 years	(30)	13%
Less: industry sectors that do not have homogeneity	(5)	1%
Less: sectors that do not have at least 7 firms	(18)	8%
Less: firms with missing DataStream information	(45)	21%
Total firms included in the sample after excluding the missing data	78	36%

3.2. Variables Measurement

The variables of interest examined in this study are explained in this section.

First; Dependent variables : (Quality of financial reporting)

This study measures the quality of financial reporting using accrual earnings management (AEM). Discretionary accruals are used as a proxy for AEM using various models. They are the Modified Jones Model (Dechow, Sloan, and Sweeney, (1996), Kasznik Model (1999), performance-matched DAs model (Kothari *et al.* 2005) and Raman and Shahrur model (2008). DAs are used as proxies for accrual EMs using different models. Total accruals (TA) are computed as the difference between net cash flow from operating activities and net earnings for company *i* in Year *t*. To measure EM, DAs are estimated as residuals of the modified Jones model (Equation 1) (Dechow *et al.*, 1995), the

Kaszniak Model (1999) using Equation 2, the performance-matched DAs model (Kothari *et al.* 2005) using (Equation 3), and the Raman and Shahrur model (2008) (using Equation 4).

In these models, the non-discretionary accruals are estimated as follow:

$$(1) TAC_{it}/TA_{it-1} = \alpha_1(1/TA_{it-1}) + \beta_1(\Delta REV_{it} - \Delta REC_{it}/TA_{it-1}) + \beta_2(PPE_{it}/TA_{it-1}) + \varepsilon_{it}$$

$$(2) TAC_{it}/TA_{it-1} = \alpha_1(1/TA_{it-1}) + \beta_1(\Delta REV_{it} - \Delta REC_{it}/TA_{it-1}) + \beta_2(PPE_{it}/TA_{it-1}) + \beta_3CFO_{it-1} + \varepsilon_{it}$$

$$(3) TAC_{it}/TA_{it-1} = \alpha_1(1/TA_{it-1}) + \beta_1(\Delta REV_{it} - \Delta REC_{it}/TA_{it-1}) + \beta_2(PPE_{it}/TA_{it-1}) + \beta_3ROA_{it} + \varepsilon_{it}$$

$$(4) TACC_{it}/TA_{it-1} = \alpha_1(1/TA_{it-1}) + \alpha_2((\Delta REV_{it} - \Delta REC_{it})/TA_{it-1}) + \alpha_3(PPE_{it}/TA_{it-1}) + \beta_4ROA_{it-1} + \beta_5GO_{it-1} + e$$

Where;

TAC_{ijt} : Total accruals

TA_{ijt-1} : Total book value of assets;

ΔREV_{ijt} : Change in revenues scaled by total assets;

ΔREC_{ijt} : Change in account receivable scaled by TA;

PPE_{ijt} : Gross property plant and equipment for sample firm i in industry j for year t ;

ROA_{ijt-1} : ROA for the company in the current year;

GO : Growth opportunities

CFO_{it-1} : Cash flow from operating activities for sample firm i in industry j in year $t-1$;

$\alpha_1, \beta_1, \beta_2, \beta_3$: Regression parameters

ε_{ijt} : Error term for sample firm i in industry j for year t .

Second; Main Independent Variable and Control Variables

The Big Four audit companies serve as a proxy for audit quality. They measured audit quality using a dummy variable that equals "1" if the firm is audited by Big4 Auditors and "0" otherwise (Abdul Rahman and Ali, 2006; Piot and Janin, 2007; Lin and Hwang, 2010; Basiruddin, 2011; Nosheen and Chonglertham, 2013; Al-Rassas and Kamardin, 2015; Alhadaba and Clacher, 2018; Yasser and Soliman, 2018). We use numerous control variables to help balance the company and business-specific variability in the sample that have the potential to influence the dependent variable (EM). Different control variables were used to organise the causal association in a model, resulting in a more complete empirical model and eliminating the problem of endogeneity. According to Emile et al. (2014) and Al-Najjar and Clark (2017), control variables include leverage (LEV), operating cycle (OC), company size (Size), profitability (ROA and ROE), gearing (Gear), liquidity (LIQ), asset tangibility (TANG), and market capitalization (MTKCAP). Table 2 summarises the study's variables and measurements.

Table 2: Summary of Variables and their Measurement

	Label	Measure	Source
Independent variables			
External audit			
BIG 4 X1	AUD. QUAL	A dummy variable that takes a value of '1' if a sampled firm is audited by any of the big four auditing firms, and zero otherwise.	Annual Disclosure Books By EGX, Annual reports, and BOD reports
Dependent variable : Quality of financial reporting			
AEM	DACMJ	DAs is calculated based on Modified Jones model, (1995).	Data stream and financial statements
AEM	DAK	DAs is measured based on Kothari et al. (2005), including lagged ROA.	Data stream and financial statements
AEM	DAKZ	DAs is measured based on (Kaszniak, 1999) model.	Data Stream and financial statement
AEM	DARS	DAs is calculated based on Raman and Shahur (2008) Model	DataStream and financial statement
Control variables			
Firm size	SIZE	Natural log of the book value of a firm's total assets at the end of its financial year.	Data stream and financial statements
Liquidity	Liquid	It is ratio of current assets to current liabilities	Data stream and financial statements
Performance	ROA	The ratio of net income to total assets at the beginning of the year.	Data stream and financial statements
Performance	ROE	It is net income scaled by the total equity at the beginning of the year.	Data stream and financial statements
Capital structure (Gearings)	GEAR	It is total debt scaled by total equity at the end of fiscal year.	Data stream and financial statements
Leverage	LEV	It is the book value of total debt scaled by total assets at the end of its financial year.	Data stream and financial statements
Assets Tangibility	AT	It is total of net property plant and equipment scaled by total assets.	Data stream and financial statements
Operating Cycle	OC	The logarithm of the sum of the inventory and the receivables period.	Data stream and financial statements
Earnings Management Flexibility	EMFLEX	It is a total inventories and receivables scaled by total assets.	Data stream and financial statements

3.3. The Specification of the Accrual-based EM Model

This empirical model investigates the impact of audit quality on accrual EMs (AEM). The proposed regression model is defined as follows:

$$EM_{jt} = \beta_0 + \beta_1 \text{Big } 4_{jt} + \beta_2 \text{ROA}_{jt} + \beta_3 \text{ROE}_{jt} + \beta_4 \text{LIQ}_{jt} + \beta_5 \text{Lev.}_{jt} + \beta_6 \text{Gear}_{jt} + \beta_7 \text{Size}_{jt} + \beta_8 \text{AT}_{jt} + \beta_9 \text{OC}_{jt} + \beta_{10} \text{EMFLEX}_{jt} + \varepsilon_t$$

Where;

Audit quality refers to Big 4 firms; *ROA* refers to return on assets; *ROE* refers to return on equity; *LIQ* refers to liquidity; *Lev* refers to leverage; *Gear* refers to gearing; *Size* refers to firm size; *MKT* refers to market capitalization; *AT* refers to asset tangibility; *OC* refers to the operating cycle; *EMFLEX* refers to EM flexibility.

4. Empirical results and discussion

4.1. Descriptive Statistics for the Accrual-based EM Models and Correlation matrix

Table 3 summarises the descriptive statistics for all indices utilised in the study. The level of DAs in the accrual-based EM Models was given using descriptive statistics. The mean value of the DAs estimated from the Kothari et al. (2005) model is positive for Egyptian enterprises listed on the stock exchange, whereas the Modified Jones, Kasznik, and Raman and Shahrur models have negative mean values. This could imply that most Egyptian enterprises participate in more income-reducing DAs

than income-increasing DAs on average. The DAs (the dependent variable) test across the four models reveals significant non-normality (skewness -0.234, kurtosis -0.033 for the Modified Jones model; skewness 0.145, kurtosis -0.175 for the Kothari model; skewness -0.088, kurtosis 0.102 for the Kasnizk model; skewness 0.17, kurtosis -0.339 for the Raman and Shahrur (2008) model). This results in non-normal residuals for the regression, which violates the OLS condition. As a result, this study normalised data using the Van der Waerden technique (Cooke, 1998), which effectively assigns ranks to non-normal data and converts ranks into numbers with a normal distribution.

Table 3: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
BIGAUDIT	780	0	1	0.3	0.459	0.875	-1.238
ROA	780	-0.0398	0.2163	0.051876	0.0650379	0.957	0.472
ROE	780	-0.0688	0.374	0.100429	0.1185833	0.813	-0.089
LIQU	780	0.5147	5.0461	1.833757	1.1885192	1.375	1.141
LEV	780	0.0182	0.6098	0.232505	0.1724446	0.618	-0.626
GEAR	780	0.0195	2.0804	0.518018	0.5552779	1.554	1.667
ASSTTANG	780	0.0089	0.78	0.356718	0.2437437	0.134	-1.156
OC	780	4.0974	6.8154	5.351267	0.7572294	0.219	-0.776
EMFLEX	780	0.0799	0.8734	0.400584	0.2238405	0.557	-0.596
FIRM-Size	780	4.6774	6.9666	5.691671	0.6958374	0.374	-1.037
DAMOD	780	-0.2862	0.238	-0.003923	0.12784	-0.234	-0.033
DAKOTH	780	-0.1782	0.205	0.001786	0.09442	0.145	-0.175
DAKAZNAK	780	-0.2042	0.181	-0.008495	0.090701	-0.088	0.102
DARAMAN	770	-0.194	0.192	-0.012164	0.09742	0.17	-0.339
Valid N (listwise)	770						

This table 3 presents the descriptive statistics for accruals EM Models variables for firms in the Egyptian context from 2011-2020. Big Audit= Audit quality; ROA= Return on assets; LIQ =Liquidity; Lev =Leverage; Gear =Gearing; Size = Firm size; AT = Asset Tangibility; OC =Operating Cycle; EMFLEX= EM-flexibility; GO=Growth Opportunities.

4.2. The Multicollinearity Test

The variance inflation factor (IVF) test was conducted to examine multicollinearity among the independent variables. The estimated VIF values for all independent variables were lower than the threshold of 10, indicating the absence of multicollinearity in these models.

Table 4: Test Results for VIF and Tolerance Values

Variable	VIF	1/VIF
ROE	5.5	0.179769
ROA	5.4	0.182472
Gear	3.50	0.2845660
Leverage	3.12	0.320985
Operating Cycle	1.76	0.566583
Liquidity	1.67	0.600512
Asset Tangibility	1.64	0.610499
EM Flexibility	1.58	0.633835
BIG AUDIT FIRM	1.27	0.785620
Firm Size	1.03	0.964374
Mean VIF	2.09	

4.3. Empirical results from System Generalized Method of Moment (SGMM)

The following equation reflects the impact of CG mechanisms on AEM using several proxies for EMs based on the System generalised method of moment (GMM): The commentary reflects the findings, which show the extent to which CG qualities are statistically related to AEM, taking into account the relationship's dynamic nature. The dynamic nature of

the governance-EM relationship is managed by using lagged AEM as an explanatory variable. The dependent variable is now accrual earnings management (AEM), after controlling for firm-level variables, as stated in the following equation:

$$EM_{it} = \beta_0 + \beta_1 EM_{it-1} + \beta_2 Governance_{it} + \beta_j \sum_{j=4}^{13} X_{it} + \varepsilon_{it}$$

Where;

Governance indicators include audit firm=audit quality; X_{it} ; control variables include ROA = return on assets, ROE = return on equity, LIQ = liquidity, Lev = leverage, $Gear$ = gearing, $Size$ = firm size, MKT = market capitalization, AT = Asset Tangibility; OC = operating cycle, $EMFLEX$ = EM flexibility. AEM is measured using four models (the Modified Jones Model (Dechow *et al.*, 1996), the Kasznik Model (1999), the performance-matched DAs model (Kothari *et al.* 2005) and the Raman and Shahrur model (2008).

Following multiple regression analysis, heteroscedasticity was discovered using Stata's *hetttest* function. The null hypothesis in the Breusch-Pagan test indicates that the residual variance is homogeneous. If the P-value is less than 5%, the null hypothesis is rejected and the alternative hypothesis (heterogeneous variance) is accepted. Table 5 shows that the null hypothesis is accepted while the alternative hypothesis is rejected, showing that the variance is heteroskedastic across the four models based on the Breusch-Pagan test and the significant χ^2 statistic.

Table 5: Breusch-Pagan Test for Heteroskedasticity

	Obs	F-statistics	Pro> F
Modified Jones model (1 st Model)	779	.51	.4761
Kothari, (2005) model (2 nd Model)	770	2.35	.1252
Kaszniak (1999) model (3 rd Model)	779	00	.9624
Raman and Shahrur (2008) model (4 th Model)	779	.67	.4141

The Wooldridge autocorrelation test was used to perform a serial correlation test on a panel dataset. The xtserial command was used in the STATA software for autocorrelation testing. Except for Kaszniak's (1999) model, the Wooldridge test results resulted in the rejection of the null hypothesis of no first-order autocorrelation at the 1% significance level. As a result, the study may address heteroscedasticity issues and first-order (AR1) serial correlation in error terms by modelling random- and fixed-effects regressions using the cluster option, which yields robust estimates of the regression parameters compatible with (Habbash, 2010).

Table 6: Wooldridge Test for Serial Autocorrelation Results

	obs	F-statistics	Pro> F
Modified Jones model (1 st Model)	779	4.11	.0461
Kothari et al. (2005) (2 nd Model)	770	6.921	.0103
Kaszniak (1999) model (3 rd Model)	770	1.431	.2352
Raman and Shahrur (2008) model (4 th Model)	770	6.571	.0123

However, Baltagi (2008) demonstrates that OLS and GLS models are not always effective when heteroscedasticity and serial correlation issues exist. In this regard, he suggested that feasible generalised least squares (FGLS) and panel-corrected standard error (PCSE) techniques may be utilised to address such issues, yielding impartial and consistent findings.

The limitations of employing the static model with a fixed or random effect panel (GLS) were explored. Indeed, GLS utilising the fixed/random effects model is likely to produce biased findings due to the link between the error term and the lagged variable. As a result of the correlation issue, the usage of instruments is justified. Hansen originated and developed the GMM approach in 1982, which was then enhanced by Arellano and Bond (1991), Arellano and Bover (1995), Holtz-Eakin et al. (1998), and Blundell and Bond (1998). They proposed that this method can generate unbiased, efficient, and consistent results for dynamic panel data models (Khemiri and Noubbigh, 2018).

To address the endogeneity issue, Arellano and Bond (1991) employ lags appropriate for the dependent and independent variables as instruments. However, the lagged levels of explanatory variables may be ineffective instruments for differentiated variables that cannot be recognised by the difference estimator. To address the inadequacies of the GMM first-difference estimator, Arellano and Bover (1995) and Blundell and Bond (1998) proposed a two-step system GMM estimator. Indeed,

a lack of information on the debugging variables in the level model might result in the loss of a significant portion of the total variance in the data (Arellano and Bover, 1995).

Table (7) depicts the influence of CG mechanisms on discretionary accruals using various EM proxies based on the SYSTEM GMM model. In terms of audit quality, the study results suggest that Big 4 audit firms are strongly and negatively associated to DAs, based on the Modified Jones model at 10%. This finding supports the view that firms audited by Big Four auditors are less likely to engage in earnings manipulation activities due to the higher quality of auditing provided by those auditors and the recognition of audit firms as good governance mechanisms that help mitigate earnings manipulation (e.g., Al-Ajmi, 2009; Basiruddin, 2011; Soliman and Ragab, 2014; Khalil and Ozkan, 2016; Alhadaba and Clachern, 2018). This viewpoint contends that high-quality auditors are more objective in analysing firm performance, hence improving the quality of financial reporting and withstanding management pressure to produce an unqualified opinion or report.

However, the results show that the Big4 corporations are not significantly associated to accounting earnings manipulation in the other three models. The study's findings are consistent with those of Fawzy (2003), Piot and Janin (2007), Aryan (2015), and Abata and Migiro (2016), however they contradict the Agency Theory, which holds that a Big 4 audit firm plays a substantial role in minimising

earnings manipulation. This concept cannot be applied to all developing and developed countries due to a variety of probable reasons. First, civil law countries (e.g., emerging economies and continental Europe) differ from common law countries (the United Kingdom and the United States) in that they have weak enforcement tools and low market adherence to corporate governance, resulting in a safe litigation environment. As a result, audit companies face low lawsuit risk, resulting in a lack of asymmetric oversight by large audit firms (Abdul-Rahman and Ali, 2006; Piot and Janin, 2007). As a result, the quality of auditing given by Big 4 and non-Big 4 businesses is identical.

In contrast, in a common law environment, where laws and regulations are more strictly enforced and there is a high level of investor protection, shareholders have the ability to file lawsuits against firms (e.g., class action and contingent fees), making audit firms more conservative and concerned with detecting aggressive earnings manipulations and material misreporting, as well as less susceptible to deep pocket incentives. They are also more concerned with protecting their reputation and minimising the possibility of lawsuit, even if it means losing multiple clients and audit fees. Another probable explanation is that audit firms want to maintain their client relationships and minimise the danger of jeopardising future collaboration, therefore they do not conduct in-depth investigations into the managers' activities in the companies they monitor and audit (Al-Ghamdi, 2012). This

somewhat confirms Hypothesis (1), which proposes a negative and significant link between audit quality and DAs.

Table 7: Governance indicators and AEM: System GMM estimation results

VARIABLES	Modified Jones Model	Kothari Model	Kaznisk Model	Raman and Shahrur Model
L. AEM	-0.05*** (0.0164)	-0.223*** (0.0197)	-0.09*** (0.0275)	-0.161*** (0.0146)
External audit	-0.009* (0.005)	0.00490 (0.00495)	0.00604 (0.00677)	0.00285 (0.00494)
ROA	-0.168 (0.192)	-0.0826 (0.146)	-0.404* (0.216)	-0.0174 (0.102)
ROE	0.0594 (0.0857)	0.0150 (0.0658)	0.243*** (0.0897)	0.0204 (0.0525)
LIQ	0.00546* (0.00298)	0.00471* (0.00265)	-0.0068*** (0.00223)	0.00195 (0.00341)
LEV	-0.0855*** (0.0313)	-0.0381 (0.0256)	-0.0655* (0.0374)	-0.00968 (0.0256)
GEAR	0.0166* (0.00933)	0.00842 (0.00558)	0.0152 (0.00957)	0.000933 (0.00765)
Size	0.0143 (0.0113)	0.0483*** (0.0112)	-0.0363*** (0.00872)	0.0452*** (0.00798)
ASS.TAN	0.173*** (0.0317)	0.0323 (0.0274)	0.130*** (0.0253)	0.0325 (0.0231)
OC	-0.00238 (0.0162)	-0.0263*** (0.00943)	-0.00793 (0.00787)	-0.0347*** (0.00762)
Emflex	0.00357 (0.0492)	-0.00218 (0.0232)	-0.0541*** (0.0174)	0.0149 (0.0222)
Constant	-0.129 (0.0939)	-0.149** (0.0699)	0.233*** (0.0544)	-0.105* (0.0616)

Observations	702	702	702	702
Number of firms	78	78	78	78
Hansen test (p-val)	121	121	121	121
	0.992	0.997	0.998	0.994
AR (2) test (p-val)	0.735	0.161	0.115	0.633
<p>This Table presents the results from System-GMM estimations for dynamic panel-data models. The dependent variable is the AEM proxies. Sample consists of 780 observations during period 2011–2020. Two-step results and Hansen J tests never reject the validity of the over-identifying restrictions. Second order autocorrelation (AR(2) of residuals is always rejected. Standard errors are reported in parentheses. *, **, *** significance levels at the 10% , 5% and 1% levels respectively.</p>				

Table 8: Summary of SYSTEM GMM CG Mechanisms and Accrual-Based Earnings Management

	Expected sign	Modified Jones Model	Kothari Model	Kasznik Model	Raman and Shahrur Model
<i>External Audit Big 4</i>	-	Negative and significant at 10%	Positive and non-significant	Positive and non-significant	Positive and non-significant

4.4. Robustness Check and Sensitivity Analysis

To ensure that our results are robust, we re-estimate the regressions using Feasible Generalised Least Squares estimations (F-GLS), panel data Fixed/random Effects (FE), and OLS with robust standard error as alternative econometric methodologies.

In most situations, the FGLS results are invariant, and the tests of the research hypotheses yielded identical results. Other methodologies do not show evidence of such a link. This suggests that the majority of significant associations discovered using a fixed-effect model, pooled OLS, or OLS with robust standard errors are the consequence of false relations.

The FGLS findings demonstrate that the Big 4 audit firms are not significantly associated with earnings manipulation across accrual models. This does not support hypothesis (H1a), which proposes a negative and substantial relationship between audit quality and discretionary accruals based on the modified Jones model, but it does support the results of the other models. The study's findings are consistent with those of Fawzy (2003), Piot and Janin (2007), Aryan (2015), Yasser and Soliman (2018), and Abata and Migiroy (2016), and they contradict the Agency Theory's prediction that a Big 4 audit firm plays an important role in mitigating earnings manipulation. These results are consistent with the main test, with the exception of the association between Big Audit 4 and DAs, which follows the modified Jones model. The main study (SYSTEM GMM) found a 10% negative and significant connection between the Big 4 and DAs.

5. Conclusion

This study looked at how Big Four auditors improved the quality of financial reporting between 2011 and 2020. Furthermore, we looked at the quality of financial reporting using discretionary

accruals estimated by a modified Jones model (1995), Kothari, Leone, and Wasley's (2005) model, Kasznik's (1999) model, and Raman and Shahrur's(2008).

Audit quality has emerged as a critical tool for improving the transparency, credibility, and reliability of information presented to shareholders, particularly in light of recent global financial scandals. The majority of the literature predicts that highly qualified audit firms will induce managers to be more attentive about shareholders' interests. Empirical research suggests that audit quality (Big 4 audits) is inversely correlated with AEM. This result is consistent with Agency Theory, which holds that shareholders are more concerned with employing a third party (external audit) to verify the quality of the information supplied and eliminate information asymmetry. According to this idea, large audit firms are more likely to improve management's monitoring and regulating capabilities in order to uncover cases of profits manipulation. This idea supports the view that large audit companies have greater financial and operational resources and knowledge, allowing them to provide independent and high-quality services.

Based on the other three models, the analysis indicates an insignificant but favourable association between big audit firms and AEM. These findings do not support the claim that audit quality is negatively connected to aggressive earnings manipulation. The findings of this thesis are consistent with those of Yasser and Soliman (2018), who failed to find sufficient

evidence that auditing firm size and auditor specialisation can constrain earnings manipulation due to Egypt's weak regulatory system and the limited application of CG in developing countries. This poor regulatory structure exposes auditing companies to less legal risk, making them less effective in carrying out their tasks. Furthermore, Chi, Lisic, and Pevzner (2011) found that large audit firms and auditor industry specialists are associated with a greater degree of overall REM. Piot and Janin (2007) in France, Abata and Migiro (2016) in Nigeria, and Chouaibi, Harres, and Brahim (2018) in Tunis found a positive but non-significant association between audit quality and earnings manipulation. Furthermore, Jeong and Rho (2004) found that institutional structures play an important role in motivating auditing companies to perform their supervision and monitoring roles to assist their clients in constraining opportunistic behaviour. They identified no difference in the quality of audit services offered to clients between large and small auditing businesses. This is due to Korea's inadequate regulatory institutional framework. In conclusion, an auditor's efficacy is determined by the country's audit environment and institutional context. Although there is a significant inclination to use financial reporting standards, the quality of financial reports is not as high as expected, and the Egyptian institutional and economic environment has an impact on the objectivity and dependability of auditor independence and audit quality.

The study's weakness is that it concentrates on large enterprises and excludes some industries, allowing future research to examine the relationship between SMEs and industries not included in this study. Future research should include non-audit services supplied by auditors. Most institutional and individual investors have increasingly demanded business ethics, especially in light of the increasing number of company scandals, exceptionally high compensation for directors and management, and the current financial crisis. Thus, future study can take into account auditors' corporate ethics when assessing the quality of published financial reporting. Future study may use novel alternative accrual-based techniques, such as Dechow et al. (2000), including reversal factors that improve the quality of DA variables. In addition, this study suggests using discretionary revenue-based approaches (Stubben, 2010) as a comparative metric. Future research could look at other audit quality indicators, such as the auditor's opinion and experience level.

Author contributions statement:

The conception and design, or analysis and interpretation of the data: Eman Attia. The drafting of the paper: Eman Attia. The critical revision of intellectual content: Eman Attia. The final approval of the version to be published: Eman Attia. All authors agree to be accountable for all aspects of the work

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The data presented in this study are available on request.

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