

# Journal of Accounting Research

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## The audit committee effectiveness and earnings management: The moderating role of audit quality: Empirical Evidence from Egyptian listed Companies


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**Published online: September** -2024

**To cite this article:** Elsherif، Mai Adel. **The audit committee effectiveness and earnings management: The moderating role of audit quality: Empirical Evidence from Egyptian listed Companies** **Journal of Accounting Research**،11(3)

DOI: 10.21608/abj.2024.375928



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# The audit committee effectiveness and earnings management: The moderating role of audit quality: Empirical Evidence from Egyptian listed Companies

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**Article History**

Received 20 July 2024, Accepted 20 August, Available online: September 2024

**Abstract**

**Purpose:** This study aims to study and examine the association between audit committee effectiveness (ACE) and earnings management (EM) practice in Egypt and it aims to examine whether this association is affected by audit quality (AQ) as a moderator variable.

**Design/methodology:** a sample of the study includes 360 firm – year observations for the period 2018 – 2022 for firms listed in the Egyptian Stock Exchange (EGX). Multivariate regression models are used to test the study's hypotheses.

**Findings:** The results show the ACE is negatively associated with the level of performance-adjusted discretionary accruals (PADA) (as proxy for EM practice) and indicate the audit firm size (as proxy AQ) does not have any effect on this relationship. In addition, the main results of the study are robust to alternate measure of ACE and the findings support the main results indicating there is a negative and significant association between AC characteristics (independence, the financial expertise and frequent meetings) and the EM practices while the size of committee is not associated with EM practice

**Practical implications:** The results of this study provide an important guideline for stakeholders toward the role of AC characteristics in reducing the EM practices which in turn will help them to make appropriate decisions Moreover, the regulators need to concern with improving AQ in Egypt to constrain these opportunistic practices of the management.

**Originality:** This study assures the ACE can mitigate EM practices, determine which attributes of AC are most beneficial for assessing the ACE in listed companies in the EGX and indicate the joint effect of AQ and ACE promotes greater transparency in financial reporting

**Keywords:** Audit Committee Effectiveness, Audit quality, Earnings Management

**ملخص البحث**

**الهدف** : استهدف البحث دراسة و اختبار العلاقة بين فعالية لجنة المراجعة وممارسات إدارة الأرباح. كما استهدف البحث التحقق مما إذا كان هناك تأثير لجودة المراجعة ، كمتغير معدل ، علي هذه العلاقة.

**التصميم والمنهجية** : اعتمدت الدراسة علي عدد مشاهدات 360 مشاهدة (شركة/سنة) خلال الفترة ( 2018 – 2022) علي عينة من الشركات المقيدة بالبورصة المصرية. تم إختبار فروض الدراسة باستخدام نموذج الانحدار المتعدد.

**النتائج** : توصلت الدراسة إلي أن هناك علاقة عكسية معنوية بين فعالية لجنة المراجعة ومستوي الاستحقاقات الاختيارية (كمؤشر لإدارة الأرباح) في حين أنه لم يتضح وجود تأثير معنوي لجودة المراجعة كمتغير معدل علي هذه العلاقة. وتم اختبار متانة النتائج الأساسية اعتماداً علي مقياس بديل فعالية لجنة المراجعة وتوصلت الدراسة إلي أن إستقلال أعضاء لجنة المراجعة وتوفر عنصر الخبرة مالية لديهم بالإضافة إلي انعقاد لجنة المراجعة بصورة دورية (عدد اجتماعات اللجنة) يقلل من حدوث إدارة الأرباح علي الجانب الآخر لم يكن هناك علاقة معنوية بين حجم لجنة المراجعة وممارسات إدارة الأرباح.

**التطبيقات العملية:** توفر نتائج الدراسة الحالية إرشادات هامة لأصحاب المصالح بشأن دور خصائص لجنة المراجعة في الحد من إدارة الأرباح ومن ثم إمكانية اتخاذ القرارات السليمة، علاوة علي ذلك فإنها تلفت إنتباه المشرعين بشأن دور جودة المراجعة في الحد من هذه الممارسات الانتهازية

**الأصالة:**. التأكيد علي دور فعالية لجنة المراجعة في الحد من ممارسات إدارة الأرباح، تحديد خصائص لجنة المراجعة لتقييم مدي فعاليتها في الشركات المقيدة بالبورصة المصرية، وكذلك التأكيد علي أن التأثير المشترك لجودة المراجعة وفعالية لجنة المراجعة يزيد من شفافية التقارير المالية.

– **الكلمات المفتاحية** : فعالية لجنة المراجعة ، جودة المراجعة ، إدارة الأرباح

## Introduction.

Although the transparency of financial reports is critical to stakeholders for making various decisions, some companies tend to manage their reported earnings, resulting the users of financial statements, rely on misleading information (Zadeh et al, 2023). Therefore, many listed companies have been required to establish corporate governance (CG)[1] system, including formation an audit Committee (AC) meets specified characteristics to be effective in mitigating earnings management (EM) practices and subsequently protecting the interests of investors and other stakeholders (Mardessi, 2022, Gerayl: et al 2021).

The AC is a subcommittee of the board of directors. Its primary role is monitoring the preparation of financial reports, the external auditing, compliance with laws and regulations, and monitoring the company's internal controls (Hwang and lin, 2008, Agyei - Mensah and Yeboah, 2019, Masmoudi, 2021). Several studies used the agency's theoretical framework to analyze the company's motivation to form the AC and the question arises as to whether the formation of the AC is effective in mitigating the EM practices.

The prior studies (lien et al, 2023, Pratmo and Sudibyo, 2023, Mardessi, 2022, Al-Absy et al., 2019) have investigated the relationship between AC characteristics and EM practices and indicated the presence of an AC doesn't itself guarantee effective monitoring but the AC should be properly structured. Also, these studies argued the audit committee effectiveness (ACE) requires a majority of its members should be independent and have sufficient financial and accounting expertise, also AC should have more members to control over financial reporting process in addition the number of meetings held by the committee should be regular to provide sufficient time for its members to perform their duties.

Regarding the requirements of the AC in Egypt, the Egyptian Code of Corporate Governance (ECCG) was adopted in 2005, reviewed in 2011, and implemented in 2016 which the Egyptian Financial Supervision Authority (EFSA) issued a set of CG rules to be adopted by all capital market participants (EFSA, 2016). Furthermore, the listing rules of the Egyptian Stock Exchange (EGX) now require that AC composition involves at least two independent members on their boards and one member with financial or accounting experience also the AC should meet at least once each three months (EFSA, 2016).

In 2020, the board of EFSA issued the decisions No. (47) and No. (91) relate to the characteristics of both board of directors and AC. In focus on the AC characteristics, the AC should involve at least three non-executive board directors' members with an option of hiring members from outside of the company and the majority of AC members must be independent involving AC chair (EFSA, 2020).

On the other hand, EM practices are also associated with a lower audit quality (AQ). Therefore, the firms depend on AQ to reduce EM practices especially the auditors have to audit the financial reports and assure higher -quality financial reporting (FRQ). In this context, the prior studies

[1] Corporate Governance (CG) includes set of rules and standards that led to decrease the conflict of interest between management and stakeholders (Buertey et al.,2020)

(Mollik et al, 2020; Makhlouf et al, 2022) revealed the AQ decreases the information asymmetry and restricts managers' opportunistic use of discretionary accruals (DA).

According to the above discussion, this study examines whether ACE, in terms of the AC characteristics, restrict the EM practices. This study also examines whether the AQ promotes the ACE in mitigating such behaviors. The remainder of the study is structured as follows**:** Section 2 outlines the related literature and develops the hypotheses. The methodology is described in Section 3. Section 4 reports the empirical results. Section 5 focus on the conclusion and present recommendations for future studies.

## 2. Literature review and Hypotheses Development

### *2.1. Concept and determinants of Earnings management:*

The financial crisis creates an opportunity for the management to manipulate earnings upward or downward via accrual -based earnings management" (AEM) or the real activities (i.e. real earning management (REM). Callao et al., (2021) argued that the earnings are managed when managers exercise professional judgments in areas involving accounting estimates, uncertainties, and inherent subjectivity. This type of EM is known as AEM. In this context, there are three models, based upon the jones model, are used to measure the AEM which are the initial Jones model (1991), modified Jones model, and Kothari et al, (2005) model.

With regard to the Jones model (1991), the non-Discretionary accruals (NDA) are estimated as a function of total assets, change in sales, and property, plant and equipment. By subtracting this value from total accruals, the portion of discretionary accruals (DA) is computed. On 1995, the Jones model (1991) has been modified through deducting the change in receivables from the change in sales revenues (Dechow et al,1995). On 2005, the modified Jones models were enhanced by using performance- matched measures, namely ROA to control the effect of extreme financial performance on measured (DA) of samples of firms (Kothari et al.,2005).

Also, the earnings may be managed by departing from normal operational activities to mislead users of financial statements for achieving certain financial reporting goals and then obtaining the private benefits, this type of EM is known as REM (Roychowdhury, 2006). The REM practices include over production, cutting of R&D investment and sales manipulation. The prior studies depend on the Roychowdhury (2006) model to measure REM through estimating abnormal production cost manipulations by subtracting the normal level of production cost (PRDCST)[2] from the actual PRODCST.

Consistent with the Callao et al (2021), there are **determinants of EM** can stimulate or restrict managers to engage in EM. These determinants are categorized into five groups (a) Regulations, (b) Financial reporting quality (FRQ), (c) External auditing, (d) the corporate governance (CG) and control mechanisms, (e) Characteristics of the firm

First, the **regulation theme**, the studies by (Ho et al.,2015, and oz and Yelkenci,2018) provide evidence the magnitude of AEM decreases and firms started using real activities manipulation post the adoption of IFRS. In addition, the prior studies (for example., Oz and Yelkenci,2018) indicate

[2] The production cost in a normal condition is computed using the coefficients of the regression model as follows:

$$PRODCST_{it} = \propto_0 + \beta_1\, 1/\text{Avg Assets}_{it} + B_2 \frac{\text{Sales}_{it}}{\text{AVG Assets}_{it}} + B_3 \frac{\Delta\text{Sales}_{it}}{\text{AVG Assets}_{it}} + B_4 \frac{\Delta\text{Sales}_{it}-1}{\text{AVG Assets}_{it}}$$

that firm substitutes REM for AEM in countries with stronger enforcement. However, the results of Espahbodi, et al (2022) indicates the REM has decreased significantly in the post-regulation period than it used to be whether in short term or long term.

**Second, the FRQ theme**, the studies by Dye (1988) and Schipper (1989) showed the information asymmetry between the management and shareholders is a "necessary condition" for EM, therefore it is positively correlated to the degree of EM. In this context, Sohn (2016) indicates that AEM decreases with increasing accounting information comparability compared to REM. In addition, Lara et al (2020) provides evidence that conditional conservatism replaces of AEM by REM.

**Third, the external auditing theme,** the prior studies **(**Alhadab, and Clacher,2018, Choi et al,2018) found that high audit quality constraints EM practices that may occur via discretionary expenses management (i.e. real activities manipulation) or manipulation of DA. However, Kung et al (2019) indicates the presence of auditor's industry specialization may cause an increase in REM practices rather than AEM by the clients.

**Fourth, the CG and control mechanism theme**, there are three main CG mechanisms are effective in reducing the E.M. These mechanisms are the board of directors (BOD)[3], internal audit (IA)[4], and audit committee effectiveness (ACE). Also, there are prior studies examines the monitoring role of the other variables in constraining the EM including the ownership structure of a firm[5] and corporate social responsibility (CSR)[6]

Finally, **the theme of firms' characteristics**, the **firm size** is considered one of the main determinants that has a direct relationship to EM practices. In this context, the prior studies (Gerayli et al, 2021, Agyei- Mensah and Yeboah, 2019, Yasser and Soliman,2018) indicate that large firms engage less in EM. However, the study by Soliman and Ragab (2014) showed contrary results indicating that larger firms are more likely to engage in the EM practices to be favorably by shareholders .Also, the **financial leverage determinant**, Watts and Zimmerman, (1990) indicate that highly leverage of the firms could be expected to engage in EM to avoid any violation of debt covenant, whereas Lazzem and Jilani (2018) show that financial leverage of the firms induce the managers to manipulate earnings.

### *2.2 The relationship between ACE and EM:*

Given the importance of the AC in the financial reporting process, it is critical to investigate its features and how they relate to EM. In this context, the prior studies (Pujiati et al, 2022, lien et al, 2023, Sharawi, 2018, ElHawary ,2018) indicate that there are several features of the AC have been shown to have an impact on the likelihood of EM. For instance, AC Size, AC financial expertise, AC independence and frequency of AC meeting. Therefore, it is an essential to understand the

[3] BOD is considered one of the primary internal control mechanisms for overseeing the top management and protecting the shareholders' interests (Callao et al.,2021). However, Qi et al (2017) indicate that financial experts on the board tend to manipulate earnings using the accrual accounting and real activities as well.

[4] Ismael and kamal (2021) show the high quality of IA will decrease the probability of EM.

[5] In this context, Dong et al (2020) indicate that REM is constrained by existing the state and managerial ownership compared to the largest shareholders ownership.

[6] For example, the studies by (Dimitropoulos,2022, Chen and Hung,2021) indicate that firms practicing CSR are associated with less income smoothing and DA, thereby providing more quality of accounting information. However, Buertey et al (2020) report that firms with CSR are positively related with EM.

association between EM and AC characteristics and then evaluating the role of ACE in detecting and preventing EM practices.

**Regarding to AC size**, Alqatamin, (2018) indicates the large ACs might cause miscommunication problem and lose focus, which in turn might have a negative effect on ACE. Also, the small ACs will suffer from shortage in expertise, skills and knowledge, therefore it will not fulfill their duties in the best interests of the shareholders. In this context, the results of related literature that examine the association between AC size and EM have been conflicting. On the one hand, Badolato et al (2014) found that a larger AC is more likely to have greater organizational status and thus be more willing to question and confront management for misreporting or in appropriate behavior. Also, the studies by (Mardessi, 2022, and Agyei- Mensah and Yeboah ,2019) found that AC size is negatively associated with EM. While the results of Xi et al (2003) indicate there is insignificant association between AC size and earnings management using DA.

**Regarding to AC Independence,** the results of some prior studies (Al-Absy et al., 2019, Alqatamin, 2018) assure that the independence feature is crucial for restricting the EM practices which the member will not subject to the influence of the company's management and then these committees can provide an objective and unbiased assessments of the financial statements and be more objective in monitoring the financial reporting process. Therefore, the members of AC that hold shares in a company, they do not seek for detecting EM (Choi et al.,2004).

Some prior studies exhibit that AC independence is negatively related to the occurrence of financial restatement (Abbott et al. ,2004). Furthermore, the relation between AC independence and FRQ exists in a case of income-increasing discretionary accruals (Bradbury et al., 2006). Recently, Mardessi, (2022) concluded that the AC independence allow the auditors to resist managerial interferences. Also, Leng (2022) reported that AC independence plays a crucial role in inspecting the financial reporting process and monitoring the internal control system.

**Regarding to AC financial experience**, it refers to the availability of expertise and skills in the members of the AC. It was shown that if the members of AC have sufficient accounting and financial expertise that will increase the effectiveness of the monitoring which in turn reduce the fraud financial statements (Abbott et al.,2004) and reducing the EM practices (Zhang et al, 2007). In addition, Farber (2009) reveal the fraud firms tend to have a lower number of AC members with financial experts compared to non- fraudulent firms. In the same line, Amar (2014) reports that AC consisting mostly of financial experts have a negative and significant effect on DA and other studies (Leng.2022, Salehi et al.,2022) indicate financial reporting transparency is positively related to AC experience.

Furthermore, Velte (2023) indicates that the financial expertise of the AC enhances the corporate financial reporting quality and AQ as well, therefore the firms should be aware of the necessity to have financial expertise in AC to guarantee the quality of (non) financial reports.

**Regarding to AC meetings**, it was noted that some studies have investigated whether there is a negative association between frequency of AC meetings and EM. For example, Menon and Williams (1994) indicates the in active ACs are less likely to effectively monitor the management. Therefore, Abbott et al (2004) demonstrate the frequent meeting of ACs per year have a significant reduction in the financial restatements. However, Masmoudi, (2021) concludes the opposite which he found the management is capable to manipulate earnings by engaging in real activities through abnormal operating cash flow and discretionary expenses regardless the number of AC meetings held by the firm.

In sum, the prior studies have provided mixed and inconsistent results on the association between AC characteristics and EM practices. Whilst, some of these studies document that firms with properly establishment of AC in terms of AC size, AC meeting, AC experience, and AC independence are necessary for enhancing ACE in reducing the EM practices. However other studies conclude the opposite. Based on the above discussion, the first hypothesis and sub-hypotheses are as follow:

**$H_1$: ACE is significantly associated with the EM practices in the Egyptian listed companies**

$H_1$/a: AC financial experience is significantly associated with the EM practices in the Egyptian listed companies

$H_1$/b: AC size is significantly associated with the EM practices in listed companies in the Egyptian listed companies

**$H_1$**/c: AC Independence is significantly associated with the EM practices in the Egyptian listed companies

**$H_1$**/d: AC meetings are significantly associated with the EM practices in the Egyptian listed companies

### *2.3. The effect of AQ as a moderator variable on the relationship between ACE and EM*

*2.3.1 The concept and determinants of Audit quality:*

Regarding the **concept of audit quality (AQ)**, it is likely to be achieved when the auditor gathers sufficient and appropriate audit evidences as a reasonable basis to form an opinion on the financial reports which can be relied on by the stakeholders for making economic decisions (IAASB ,2014). With respect to the literature review, the definition of (AQ) has been stated by numerous studies. For example, DeAngelo (1981) defines AQ as the market-assessed joint probability that a given auditor will both detect a breach in the client's accounting system and report the breach". Also, Palmrose (1988) argues that a higher level of assurances is an indicator for a higher AQ.

In this context, it is necessary to distinguish between two concepts of AQ, namely perceived AQ and actual AQ. Perceived AQ refers to the financial statement users' perceptions of AQ, while actual AQ concept refers to the auditors are able to report the material misstatements in accounting information (Dang,2004). With regard to the **perception- based measures**, the prior studies used AQ attributes related to the auditors such as the industry specialization, the auditor fees, tenure of auditor and audit firms size (Myers et al.,2003, Dang,2004, He et al., 2014, Soliman, 2014, Rajgopal et al.,2021). While the other prior studies relied upon market-perceived AQ proxies including the value relevance of financial information, financial reporting quality, earnings management, accounting conservatism (Dang, 2004, Cameran et al,2016, Rajgopal et al.,2021).

Regarding the **actual AQ proxies**, some studies (Dang,2004, Palmrose ,1988, Rajgopal et al.,2021) depends on various measures including the financial restatements, auditors' litigation activities, and the auditor's *opinion accuracy* regarding *going* concern due to the actual AQ can be evaluated only after audits have been conducted.

**Regarding the determinants of AQ**, the International Auditing and Assurance Standards Board (IAASB) developed **AQ framework** determines key elements for AQ (IAASB,2014). In this framework, four interrelated factors were described as the key elements needed that contribute to high AQ. These factors are inputs and outputs factors, interactions and contextual factors.

Regarding the **input factors,** they are more related to external auditor quality attributes in terms of the values, ethics, and attitudes of the auditors[7], knowledge, experience of auditors and time [8], and finally the effectiveness of the audit process and quality control procedures [9]. With regards to the **output factors** of AQ, the report of the auditor is a primary output of the auditing. These factors are applied at three levels involving the engagement level[10], audit firm level and national level [11].

The third factor related to the **interactions within the Financial Reporting Supply Chain**. This concept is described by the IFAC as “the people and processes involved in the preparation, approval, audit, analysis and use of financial reports.” In this context, it is noted the interactions are divided into four groups. for example, the interactions between external auditors and other stakeholders, namely the management, users, legislators, and corporate governance bodies.

Regarding **the contextual factors**; these factors are categorized into two main groups. The **first group** relates to the professional practice environment including the financial reporting laws and regulations, the financial reporting framework, business practices and commercial law. The **second group** relates to client’s environment including the cultural factors, the information systems, the financial reporting timetable, and the corporate governance that affect audit performance, and ultimately improving the AQ.

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[7] The inputs factors at the level of engagement involve the engagement team is independent, maintains the professional skepticism when conducting an audit, identifies the required characteristics of the auditor (such as, the integrity, objectivity, and competence), and enhances information sharing between audit firms in a case of one firm resigns from an audit engagement.

[8] This attribute **at engagement level** focus on the partners and staff must be knowledgeable about the client’s industry and have the appropriate competences to comply with auditing standards. In addition, this attributes **at the firm level** involve the audit firms are licensed, audit teams should be properly structured, and they can communicate with management to achieve audit efficiency. Also, the audit firms provide regular training to their partners and staff on audit specialized industry issues.

[9] It refers to the engagement team conducts the auditing process in consistent with the professional standards, related laws and regulations, applies quality control system of the audit firm, and depends on the appropriate information technology. In addition, the external audit inspection bodies concern about the AQ attributes and there is an effective system for investigating the audit failure allegations and taking strict action.

[10] Outputs factors of AQ, in this context, relate to the auditor's report issued to the users of financial reports, those charged with governance, management, and financial regulators.

[11] Outputs factors of AQ, at the audit firm and national levels, relate to the transparency reports that provide information about the audit firm governance and firm's systems of quality control over audits. As well as, the annual reports that provide information about the key performance indicators (KPIs) of AQ and the procedures undertakes to improve it.

### *2.3.2 The moderating effect of AQ on the association between ACE and EM practices in Egyptian listed companies:*

Some prior studies (Francis et al. 1999; Doyle et al. 2007) show that the reporting quality is improved when the firms audited by Big 4 that are more competent, independent, and have higher litigation and reputation risks. Also, Chi and Weng (2014) indicate that the high qualified auditors have incentive to report the material errors and irregularities, (if any), and don not accept EM activities through the accounting choices. Therefore, it is expected that AQ complements the oversight function of ACs on FRQ.

Regarding the literatures that examine the effect of AQ on an association between ACE and EM practices, they provide mixed results. On one hand, Masmoudi, (2021) indicates the auditors are able to identify EM or accounting irregularities and found evidence that AQ positively moderates the ACE and REM. On the other hand, Yasser and Soliman (2018) provide no evidence that the Egyptian firms with lower-level discretionary accruals (as proxy for EM) affected by Big 4 firms (as a proxy of AQ) compared to other audit firms, while they show the auditor tenure (as proxy for the AQ) helps in contrasting EM practices. Finally, Hertina et al., (2023) present no evidence support that AQ moderates the association between the audit committee quality and the FRQ. Thus, the second research hypothesis is:

**$H_2$: AQ moderates the association between ACE and EM practices in Egyptian listed companies**

## Methodology:

### 1- Sample and data collection:

The population for this study consists of all Egyptian listed companies [EGX] over the period 2018-2022. With respect to the sample selection process, after deleting the firms in financial, investment, insurance, and banking industries also the firms that deal with foreign currency and any firm with unavailable data, the final sample consists of 360 firm - years observation (72 firms) for the period 2018-2022. Table (1) shows the number of sample firm -year observations by the industry.

The data used in this study are derived from the published annual financial reports for the sample firms as well as the audit committee reports and corporate governance reports, which they provide the information on the characteristics of the AC (Mollik et al, 2020, Al-sharawi,2022, Mardessi, 2022).

**Table 1:** Sample composition by industry and firm -year observations

| The industry | No. of firms | No of observations |
|---|---|---|
| Telecommunication industry | 3 | 15 |
| Health Care and Pharmaceuticals industry | 8 | 40 |
| Tourism and leisure industry | 6 | 30 |
| Chemical industry | 3 | 15 |
| Basic resources industry | 6 | 30 |
| Food and Beverage industry | 8 | 40 |

| | | |
|---|---|---|
| Utilities industry | 1 | 5 |
| Personal and household products industry | 2 | 10 |
| Constructions and materials industry | 11 | 55 |
| Real estate industry | 14 | 70 |
| Industrial Goods and Services and Automobiles | 3 | 18 |
| Paper and Packaging industry | 1 | 5 |
| **Total** | **66** | **330** |

**2- Research Model:**

Figure (1) indicates the relationships between the variables of the study including EM (dependent variable) and ACE (independent variable), AQ (moderator variable), the firm size, and financial leverage (control variables). Further, it illustrates the research hypotheses

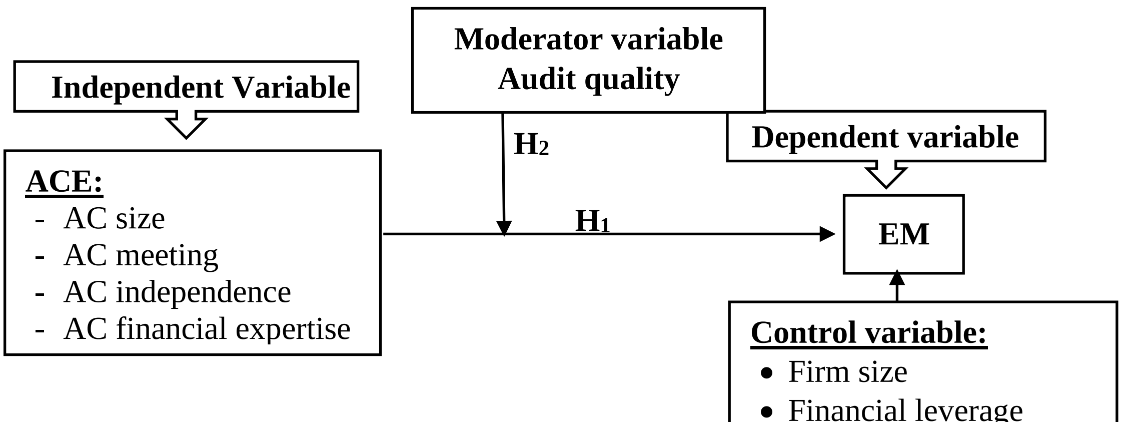


**Figure 1:** Research Model

**3. Measurement of variables: -**

***3.1. EM***

Consistent with prior studies (Makhlouf and Ramadan,2022), the current study based on residuals from the modified Jones model, adjusted by a performance (Kothari et al., 2005) as a proxy for EM as follows:

**First step**: Estimating the coefficients for the independent variables

$$TACC_{i,t} / TA_{i,t-1} = \beta 0\ (1/ TA_{i,t-1}) + \beta 1\ (\Delta(REV_{i,t} - \Delta REC_{i,t} / TA_{i,t-1}) + \beta 2(PPE_{i,t} / TA_{i,t-1}) + \beta 3\ (ROA_{i,t} / TA_{i,t-1}) + \varepsilon_i \quad (1)$$

Where for firm (i) at time(t),

TACC, is total accruals, calculated as net income less cash flow from operations,
$\Delta$REV, is the change in revenue,
$\Delta$REC, is the change in receivables,
PPE, is gross Property, Plant and Equipment
$ROA_{i,t}$ is return of assets
$\varepsilon_{i,t}$, is the error term.
$TA_{i,t-1}$, is the lagged total assets.

**Second step**: Calculating the non-discretionary accruals (NDA) by using the estimated coefficient of the equation (1)'s parameters as shown in the equation (2):

$$NDA_{i,t} / TA_{i,t-1} = \beta 0 \, (1/ TA_{i,t-1}) + \beta 1 \, (\Delta(REV_{i,t} - \Delta REC_{i,t} / TA_{i,t-1}) + \beta 2 (PPE / TA_{i,t-1}) + \beta 3 \, (ROA/ TA_{i,t-1}) \quad (2)$$

**Third step**: Computing the PADA by subtracting NDA from TACC. The higher level of PADA, the lower EM practices.

### *3.2. ACE:*

Consistent with prior studies (Sharawi, 2018, El Hawary ,2018), this study constituted ACE index captures four AC proxies as determinants for ACE which each sample firm was awarded a score, and it is calculated by using the equation (3)

$$\text{Overall effectiveness score of AC } proxies = \frac{Summation\ of\ actually\ implemented\ AC\ chaeacteristics}{4} \quad (3)$$

Further, Table (2) indicates the proxies of ACE dimensions.

**Table 2:** The proxies of ACE

| AC attribute | Proxy |
|---|---|
| 1.Audit committee independence | Dummy variable equals 1 if the number of independent members equals to or greater than 75% and 0 otherwise |
| 2. Audit committee meeting | Dummy variable equals 1 if the firm holds at least 4 meetings per year and 0 otherwise. |
| 3. Audit committee size | Dummy variable equals 1 if the AC includes more than three members and 0 otherwise. |
| 4. Financial expertise of audit committee | Dummy variable equals 1 if the AC has more than one member with financial experience and 0 otherwise. |

### *3.3. Audit quality:*

The current study utilized the audit firm size as proxy for AQ (Al-sharawi, 2020, Rajgopal et al, 2021; Mardessi, 2022).

3***.4. Control variables***: To control for firm characteristics, the regression models have included two variables namely the firm size and financial leverage (Al-sharawi,2022, Mardessi,2022).

Table (3) summarizes the description and measurement of the variables.

**Table 3:** Description and measurement of the variables

| Variable | Descriptions | Proxy | Exp sign |
|---|---|---|---|
| Dependent variable<br>Earnings management (EM) | It is "a purposeful intervention in the external financial reporting process with intent to obtain some private gain" (Schipper,1989) | Performance-adjusted discretionary accruals (PADA) | |
| Independent variable:<br>Audit Committee effectiveness (ACE) | "An effective audit committee has qualified members with the authority and resources to protect stakeholder interests by ensuring reliable financial reporting, internal controls, and risk management through its diligent oversight efforts" (DeZoort et al.,2002). | Measured as a composite variable which can be mathematically computed as a percentage of actually implemented AC characteristics largely determines the ACE. | -<br>+ |
| Moderator variable<br>Audit quality (AQ) | The likelihood that financial statement errors or omissions will be detected and reported (De Agelo, 1981) | Audit Firm Size,<br>An indicator variable signifies 1 if firm engaged with a big four audit firms and 0 otherwise | -<br>+ |
| Control variables<br>1- Financial leverage (LVG) | It represents the reliance of the firm on the debts to fund its assets (Pujiati et al, 2022) | Ratio of total debts to total assets | +<br>- |
| 2- Firm size (FSize) | It is an operational characteristic of the firm that indicates the ability of a firm to exploit its capacity, physical and human resources in achieving its objectives and creating competitive advantages. | Natural log of total assets | -<br>+ |

**Note**: Expected signs of the variables used were based on the conclusions of related literature review.

## 4. Empirical Results:

### *4.1 Descriptive statistics: -*

Table 4 reports descriptive statistics for independent variable, dependent variable, and control variables. The results reveal that, on average, ACE is 56% (where, a SD= ,28). Additionally, the mean for PADA is ,43. Moreover, it was observed that AQ records a mean value of ,50. Finally, the statistics results indicate the firm size and the financial leverage record a mean value of 9 and around 60% respectively.

**Table 4**: Descriptive Statistics

| Descriptive Statistics | | | | | |
|---|---|---|---|---|---|
| Variable | N | Min | Max | Mean | Standard Deviation |
| PADA | 360 | -8.78 | 7.48 | .4313 | 2.99358 |
| ACE | 360 | .00 | 1.00 | .5551 | .28329 |
| FSize | 360 | 6.24 | 10.72 | 9.0031 | .85183 |
| LVG | 360 | .03 | 3.20 | .5966 | .55195 |
| AQ | 360 | .00 | 1.00 | .5030 | .50075 |
| Valid N | 360 | | | | |

***4.2 Correlation matrix: -***

Table (5) shows the Pearson correlation matrix. The results indicate the correlation between PADA and ACE is significantly and negatively. Meanwhile the AQ is insignificantly and negatively correlated with PADA. By analyzing the other correlations related to the control variables (F size and LVG) and PADA. the results indicate the association between the firm size and PADA is negative and significant whereas the results show the financial leverage is not correlated with PADA. Table (5)

**Table 5**:Pearson Correlations

| | N=360 | PADA | ACE | AQ | Fsize | LVG |
|---|---|---|---|---|---|---|
| PADA | | 1 | | | | |
| ACE | Sig. (2-tailed) | -.445<br>.000 | 1 | | | |
| AQ | Sig | -.068<br>.220 | .058<br>.296 | 1 | | |
| Fsize | Sig | -.168<br>.002* | .154<br>.005 | .381<br>.000 | 1 | |
| LVG | Sig | -.059<br>.285 | -.055<br>.319 | .147*<br>.008 | .041<br>.463 | 1 |

On the other hand, for examining of multicollinearity and auto correlation among the study variables, this study conducts both of the variance inflation factor (VIF) test and Durbin Watson (DW) test. The results in Table (6) indicate the VIF and the DW values for all the variable are around 3 and 1,78 respectively, indicating the findings of this study do not have any problems with multicollinearity and auto correlation.

**4.3 Regression analysis:**

*4.3.1: **Multivariate results for hypothesis($H_1$):***

The first hypothesis states ACE is significantly related to EM practices in the Egyptian listed firms. The current study applies the following regression model to test this hypothesis

$$\mathrm{PADA}_{i,t} = \beta_0 + \beta_1\,\mathrm{ACE}_{i,t} + \beta_2\,\mathrm{LVG}_{i,t} + \beta_3\,\mathrm{F.\,size}_{i,t} + e_{i,t}$$

**Where** for firm (i) at time(t),

PADA: performance-adjusted discretionary accruals,

$\beta_0$ : Constant

ACE: Audit Committee effectiveness,

F. Size: Firm size,
LVG: Financial leverage,
$e_{i,t}$: error term

Table 6 reports the findings of testing **$H_1$**, indicating this regression model is significant (,000) and its adjusted R square value is (,208). They also document a negative (β = -0,645) and significant (P = 0,000) association between ACE and PADA, implying that the high level of ACE in the companies will, in turn, constrain the EM practices. Therefore, the **null hypothesis is rejected and stated $H_1$ is accepted, indicating the ACE is significantly related to EM practices in the Egyptian listed companies.** This finding supported by the prior studies (Tian et al, 2022, AL zeban, 2019, Masmoudi ,2021., Pujiati et al, 2022, lien et al, 2023). However, this result is contrary to Rainsbury et al (2009) who found AC quality is not sufficient to ensure FRQ.

Controlling for the characteristics of the firm (LVG and F size), the coefficient's estimate on firm size is significant (P= 0,037) and negative (β = - 0,367) in the accrual EM regression, indicating that the negative relationship the EM practices are less for larger companies compared to the small ones. On the other hand, the results did not find that evidence for LEV variable. This finding is consistent with prior studies (Gerayli et al, 2021, Agyei- Mensah and Yeboah, 2019), but it contradicts with the results of the study by (Soliman and Ragab ,2014). Overall, these results reflect the importance of establishing an effective AC to restrict the incentive of managers to be engaged in accrual EM, hence, improving the firm's financial reporting quality.

**Table 6;** Results of multivariate analysis and VIF test

| | B | Sig | VIF |
|---|---|---|---|
| (Constant) | 5.602 | .000 | |
| ACE | -.645 | .000 | 1.037 |
| F size | -.367 | .037 | 1.037 |
| LVG | -.499 | .069 | 1.055 |
| R Square | .218 | | |
| Adjusted $R^2$ | .208 | | |
| Durbin-Watson | 1.444 | | |
| F | 22.625 | | |
| Model Sig | $.000^b$ | | |

### *4.3.2 Results of testing second hypothesis (H2): -*

H2 states that AQ moderates the association between ACE and EM practices in Egyptian listed companies, the following model is used to test this hypothesis:

$$PADA_{i,t} = \beta_0 + \beta_1 ACE_{i,t} + \beta_2 AQ_{i,t} + \beta_3 (AQ * ACE)_{i,t} + \beta_4 F.Size_{i,t} + \beta_5 LVG_{i,t} + e$$

Where: for firm (i) at time(t):

AQ: Audit quality,
(AQ * ACE): The joint effect of AQ and ACE
The other variables have been previously mentioned in the main regression model

Table (7) indicates the significance level of regression model is (,000) and the adjusted $R^2$ value is 0,204. The findings also indicate coefficient of joint effect of AQ and ACE is negative ($\beta$ = -0,528) but statistically insignificant (P= 0,617), indicating that the association between ACE and EM practices is not influenced by audit firm size as moderator. Thus, the **null hypothesis is accepted and stated $H_2$** is rejected. This result may be related to the audit environment in the developing countries, such as Egypt, which differs from other developed markets. Another likely reason is the big 4 firms may have many clients during the sample period which negatively affect the audit efforts, hence, decreasing the AQ level. This finding is in line with the study by (Yasser and Soliman ,2018).

Regarding the results of the control variables, the coefficient signs of firm size is negative ($\beta_1$= - 0, 388) and significant (P = 0,043), suggesting that large firms have an incentive in reducing EM practices while the association between PADA and LVG is not statistically affected by the financial leverage variable which the coefficient is negative and insignificant.

**Table 7**: Results of multivariate analysis and VIF test

| | B | Sig | VIF |
|---|---|---|---|
| (Constant) | 5.700 | .001 | |
| ACE | -.570 | .000 | 2.157 |
| AQ | .207 | .660 | 2.540 |
| ACEAQ | -.528 | .617 | 3.437 |
| F size | -.388 | .043 | 1.226 |
| LVG | -.513 | .065 | 1.079 |
| R Square | .218 | | |
| Adjusted $R^2$ | .204 | | |
| Durbin-Watson | 1.782 | | |
| F | 15.046 | | |
| Model Sig | .000[b] | | |

**5: Sensitivity analysis and Robustness check:**

To check the robustness of the result of testing $H_1$, the study used alternative measure for AC characteristics (AC independence, AC meeting, AC size, and AC Financial expertise) rather than the composite measure used for measuring ACE. Therefore, the following multivariate regression model is run separately for each AC characteristics, as independent variables, to test the $H_1$and its sub-hypotheses of (Mardessi, 2022, Majid et al.,2022).

$$PADA_{i,t} = \boldsymbol{\beta_0 + \beta_1\, ACS_{i,t} + \beta_2\, ACMT_{i,t} + \beta_3\, AC\ IND_{i,t} + \beta_4\, ACFE_{i,t} + \beta_5\, LVG_{i,t} + \beta_6\, F\ size_{i,t} + e_{i,t}}.$$

Where ACS (audit committee size) is measured by total number of committee members. ACMT (audit committee meeting) is calculated using the number of AC meetings held during the year. AC IND (audit committee independence) is measured by percentage of independent members on the AC ACFE (audit committee financial expertise) is measured by a proportion of members with financial expertise to total members of AC. Finally, the other variables are included in this model to control the financial characteristics of the firm that may influence on managing the reported earnings. Results are reported in Table (8).

The results indicate the coefficients for the variables ACS, ACMT, ACIND are the (β = -.112), (β =-.201), (β =-.704), ACFE (β =-.608) respectively and significant (P‹ 5%). However, the association between AC size and accrual EM practices is insignificant (P = 0.394). In other word, lower EM practices significantly and negatively associated to three of four measures of ACE. Therefore, the sub hypothesis of $H_1$, especially $H_1$/a, $H_1$/c, $H_1$/d are accepted while $H_1$/b is rejected.

In sum, the main findings of the study are robust, suggesting the ACE is significantly associated with the EM practices in listed firms in the EGX and they provide consistent support for prior studies (Gerayli et al, 2021, Mardessi, 2022, Zadeh et al.,2023) regarding the necessity of presence **financial experts** on the AC. Also, the findings of this study support the results of the study by Mardessi (2022) who proves the **AC independence** enhances the accounting information quality, while others (Gerayli et al., 2021, Agyei - Mansah and Yeboah ,2019 and Zadeh et al ,2023) find no evidence of a significant association between these two variables.

With regard to the **AC meeting**, this study indicates the frequent meeting of the committee negatively associated to the EM practices. Finally, the results in relation to the **AC size** variable consistent with the results of the study by Zadeh et al., (2023) meanwhile **contradict** the results of prior studies (e.g. Mardessi, 2022, Agyei. Mensah and Yeboah, 2019) that reported EM practices were not significantly affected by AC size.

Overall, although the AC size has not significant association with EM practices in the Egyptian context, still the other characteristics involving the AC independence, the AC financial experience, and regular meetings of AC represent an active mechanism against opportunistic EM practices which ultimately improving the financial reporting transparency.

**Table 8**: Results of multivariate analysis and VIF test

| | B | Sig | VIF |
|---|---|---|---|
| (Constant) | 6.800 | .000 | |
| ACS | -.112 | .394 | 1.315 |
| ACMT | -.201 | .001 | 1.296 |
| ACIND | -.704 | .000 | 1.040 |
| ACFE | -.608 | .003 | 1.010 |
| F size | -.401 | .033 | 1.082 |
| LVG | **-.338** | **.239** | **1.059** |
| R Square | .148 | | |
| Adjusted $R^2$ | .129 | | |
| Durbin-Watson | 1.473 | | |
| F | 7.946 | | |
| Model Sig | .000[b] | | |

**6: Additional test:**
In this section, the audit quality variable is reexamined as an independent variable rather than a moderator variable. The following regression model is used to test whether AQ has a direct effect on reducing the EM practices

$$PADA_{i,t} = \beta_0 + \beta_1\, ACE_{i,t} + \beta_2\, AQ_{i,t} + \beta_3\, F\,lev_{i,t} + \beta_4\, F\,size_{i,t} + e_{i,t}$$

Table (9) indicates the estimated coefficient for AQ is positive (β = 0,036), but statistically insignificant (P= 0,91). However, the findings of the prior studies (Agyei. Mensah and Yeboah, 2019, Al Zeban, 2019) found the AQ is negatively associated with EM practices. The reason for this result may be also due to the small audit firms are less able to constraint managers' opportunistic use of discretionary accruals (Comprix and Huang, 2015).

Table 9: Results of multivariate analysis and VIF test

| | B | Sig | VIF |
|---|---|---|---|
| (Constant) | 5.657 | .001 | |
| ACE | -.645 | .000 | 1.037 |
| AQ | .036 | .911 | 1.195 |
| F size | -.375 | .044 | 1.202 |
| LVG | -.503 | .069 | 1.074 |
| R Square | .218 | | |
| Adjusted $R^2$ | .206 | | |
| Durbin-Watson | 1.630 | | |
| F | 18.047 | | |
| Model Sig | .000 | | |

**Conclusions, recommendations and future research:**

Given the importance of audit committee composition in limiting EM practices and improving the financial reporting quality. This study aims to examine whether ACE is associated with EM practices. In addition, this study also examines whether AQ moderates this relationship.

After controlling for some characteristics of the firm, namely financial leverage and firm size, the empirical results indicate the ACE has a significant negative association with performance adjusted discretionary accruals (as proxy EM practices). This finding supports the notion the listed firms with effective AC in terms of the availability of members with financial expertise, independent members, and frequent meeting by AC exhibit lower EM practices and higher FRQ. Further the findings of this study show the AQ, as a moderator variable, is not affect the relationship between ACE and EM practices.

Overall, these findings provide some **recommendations** such as the financial reports of the firms should include report issued by the AC indicating the activities of the committee that enhance the FRQ and the extent of compliance by listed firms with national corporate governance codes. In addition, this proposed report of AC includes a paragraph for disclosing whether there is EM practices in the firm and define the incentives for these practices and hence this report used as a control tool for monitoring the performance of a firm. Finally, the Egyptian Financial Supervision Authority (EFSA) should require the firms to present a document specialized for the AC structure to allow the listing of any security of an issuer.

However, the results of this study are subject to some **limitations**. This study focused on four AC characteristics are presumed affecting the ACE. Further, this study concern on the role of ACE as an internal governance mechanism in limiting the EM practice. Thus, the **future studies** can examine the effect of other attributes of AC have not been tested in this study such as AC gender, AC prior experience and AC chair financial expertise. In addition, it may consider other governance mechanisms such as the internal control effectiveness, board of director characteristics, and ownership concentration. Also, the future studies may investigate the relationship between ACE and sustainability reporting assurance as well as examine the effect of ACE on greenhouse gases emission (GHGE) disclosure. Finally, the future studies may investigate the effect of applying IT governance on EM practices.

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