

THE INFLUENCE OF AUDIT COMMITTEE ATTRIBUTES ON EARNINGS MANAGEMENT: EVIDENCE FROM LISTED INSURANCE FIRMS

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Abstract

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This job aims to confirm the role of audit committee (AC) attributes in curbing earnings management (EM) (discretionary accruals, DA). More significantly, it seeks to fully explore the moderating impact of audit quality (AQ) (Big4 companies) on the association of AC attributes with DA. The research subject is data from insurance businesses listed on the Saudi Stock Exchange (Tadawul) over an eight-year period (2014–2021). The data analyses from this period show that AC size, commitment, meetings, and independence negatively and significantly influence DA. However, AC experience was not linked to DA. The impact of moderating variables was also explored. AQ has a significant and negative moderating influence on the association of audit committee size (ACZ) with DA. Furthermore, the regression outcomes confirm that AQ does not affect the association of DA with other AC attributes. These findings can help investors and shareholders evaluate the trustworthiness and quality of annual reporting when deciding whether to invest in companies listed on Tadawul. They can also help Saudi policymakers develop and strengthen laws and regulations to assist and encourage firms' production of reliable, quality financial statements.

Keywords: Audit Committee Attributes, Earnings Management, Audit Quality, Insurance Firms, Panel Data, OLS Regression

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1. INTRODUCTION

Financial disgraces implicating significant corporations, such as *Xerox*, *Enron*, and *WorldCom*, have decreased shareholders' and investors' trust in the quality of financial statements (QFSs). This decreased trust, in turn, has led to an increase in scholarly interest in the effect of corporate governance (CG), especially audit committee (AC) efficiency, on the QFSs (Ngo & Le, 2021). Financial reports contain large amounts of accounting information, but the most important information in such reports is company earnings. These data help

users evaluate the firm's performance and, more specifically, drive investors' investment decisions. Therefore, financial reports must meet high reliability, credibility, and effectiveness (Xie et al., 2003). "Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers" (Healy & Wahlen, 1999, p. 365).

Hasan et al. (2019) argue that the matter of earnings management (EM) is one of the critical

aspects of CG and that CG relies on AC to ensure the QFSs. Furthermore, according to Hope et al. (2017), stakeholders expect high-quality audits since manipulated financial reports could provide misleading information about a firm's performance. According to Ngo and Le (2021), guaranteeing the dependability and accuracy of annual reporting is one responsibility of AC. One function of AC is supervising external audits. AC is considered an efficient mechanism of CG that can help curb EM (Hamdan & Mushtaha, 2011). According to Alzoubi (2018), audit quality (AQ) could play an important role in curbing EM and thus improving it. Hasan et al. (2019) argue that the matter of EM is one of the critical aspects of CG and that CG relies on AC to ensure the QFSs. Sáenz González and García-Meca (2014) argue that the function of AQ in reducing the magnitude of EM is influenced by CG. Akhalumeh et al. (2017) also report that the choice to use Big Four auditors (Big4) is positively and significantly impacted by audit committee independence (ACI). Therefore, it can be argued that AQ and AC may be the most important factors impacting EM and, therefore, QFSs. This is because these factors are directly linked to a company's preparation of financial statements and thus ensure the reliability of financial reports.

Agency theory can be described as "a contract under which one or more persons (the principals) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent" (Jensen & Meckling, 1976, p. 308). Agency theory applies to financial reporting due to the break of an administration from its company's owners. According to Hasan et al. (2020), agency theory applies to this issue because managers (rather than owners) manipulate earnings reports. Francis et al. (1999) find that the disconnect between ownership and administration in public companies leads to higher levels of EM. This is because actions that benefit owners may not benefit managers, and managers may misapply resources and transfer their efforts to increase their profits (Lambert, 2001). These disputes of interest incur costs for the owners, known as agency costs (Jensen & Meckling, 1976). According to agency theory, companies should implement mechanisms to monitor managers' behaviour; this may diminish agency costs (Jensen & Meckling, 1976). McKnight and Weir (2009) and Watts and Zimmerman (1983) find that AQ and CG devices such as AC help control managers' behaviour and thus decrease agency costs. Furthermore, in firms, AC functions as an observation device that can decrease information asymmetry among ownership and administration (Klein, 2002), decreasing agency costs. According to Watts and Zimmerman (1983), auditing is a controlling tool firms use to diminish agency costs. Therefore, auditing serves as a form of monitoring that restricts discretion in managerial reporting and reduces the potential for information-related risks (Chen et al., 2011).

Some researchers have endeavoured to identify specific factors that may eliminate or at least decrease EM, for example, Le et al. (2022). Yahaya (2022) explores the influence of the chief executive officer's (CEO) attributes on EM. Han et al. (2022) also investigate whether foreign ownership can

mitigate EM. This paper proposes to explore the impact of AC attributes on discretionary accruals (DA) as a dimension of EM. More specifically, this research aims to measure the moderating impact of Big4 as a dimension of AQ on the relationship of AC attributes with DA by analysing data from insurance businesses that are listed on the Tadawul.

The discoveries of previous studies on the impact of AC attributes on DA are mixed, so further research on this topic is needed. A few empirical research have explored the influence of the latest update to Saudi Arabia's CG codes on different areas of accounting. As noted by Al-Faryan and Dockery (2017), "empirical studies of governance issues in Saudi Arabia, including ownership structure, are limited to a few areas" (p. 414). Moreover, few papers have tested the relationship of AC attributes with DA by analysing data from insurance companies. Most existing empirical research on the influence of AC attributes on DA in Saudi Arabia use data from companies in non-financial sectors (Alshetwi, 2016; Habbash, 2019; Hashed & Almaqtari, 2021). To the best of the present author's knowledge, no previous investigation has looked at the impact of audit committee commitment (ACC) on DA in Saudi Arabia (Alshetwi, 2016; Habbash, 2019). Furthermore, according to Hasan et al. (2020) and Kim et al. (2017), there is a dearth of studies exploring the moderating action of AQ on the associations of AC attributes with the QFSs. More importantly, as far as the present researcher knows, no study has used data from insurance companies to demonstrate that AC attributes constrain DA, or that auditing by Big4 moderates this relationship. Therefore, the present study's goals are to block these literature gaps.

Section 2 summarizes the existing literature and presents the hypotheses of this study. Section 3 describes the research methodology. Section 4 presents the results of the study, and Section 5 discusses the empirical results. Finally, Section 6 presents the conclusions, limitations of the study and its contributions.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Ensuring the reliability and accuracy of annual reports is a key responsibility of AC (Ngo & Le, 2021). However, AC could be one of the factors that may control the managers' behaviour, such as profit manipulation. Hamdan and Mushtaha (2011) argue that AC may help prevent managers from managing earnings due to their effectiveness as a CG mechanism. Ayemere and Elijah (2015) found that AC reduced manipulation of earnings and improved QFSs. Furthermore, one function of AC is supervising external audits. AC also is regarded as an essential element in the financial elements of CG since it guarantees AQ (Suryanto et al., 2017). Therefore, it can be argued that AQ could impact the role of AC in limiting DA and improving QFSs.

Based on agency theory, CG mechanisms may diminish agency costs by monitoring managers' behaviour (McKnight & Weir, 2009). According to Klein (2002) and Xie et al. (2003), perfect CG could improve financial reporting by reducing agency conflicts, motivating managers to wave special

information to users, and reducing managers' motivation to engage in EM. Thus, AC can decrease agency costs since it is an observation device that can decrease information asymmetry among ownership and administration (Klein, 2002).

This paper investigates the effectiveness of five attributes of AC: 1) ACC, 2) ACI, 3) audit committee size (ACZ), 4) audit committee meetings (ACM), and 5) audit committee experience (ACE). In the following subsections, we debated these attributes in further detail. This section also explains the moderating impact of Big4 on the relationships of AC attributes with DA.

2.1. Audit committee size and discretionary accruals

Audit committee size refers to the gross number of individuals on the AC. According to Saudi Arabia's CG code, AC must have at least three and no more than five members (Capital Market Authority [CMA], 2017).

Mohd Saleh et al. (2007) find that larger ACZ leads to reduced EM. Lin et al. (2006) also find that larger AC might control the financial statements procedure and thus improve the QFSs. Vafeas (2005) points out that AC efficiency decreases as the size of the committee decreases. However, Carcello and Neal (2000) argue that smaller ACs can more effectively supervise companies than larger committees.

In previous empirical studies, Agyei-Mensah and Yeboah (2019), Juhmani (2017), and Salihi and Jibril (2015) discovered that ACZ is negatively linked to DA. Nelson and Jamil (2011) conclude that DA is positively impacted by ACZ. Finally, Bamahros and Bhasin (2016) and Xie et al. (2003) discovered no connotation among DA and ACZ. Therefore, this study explores this relationship by testing the following hypothesis:

H1: ACZ significantly impacts DA in Tadawul-listed insurance firms.

2.2. Audit committee meetings and discretionary accruals

Audit committee meetings refer to the number of times the committee members meet over the course of a year. It could be argued that more frequent meetings reflect the engagement of AC members in their monitoring roles and would thus increase AC effectiveness (ACE). DeZoort et al. (2002) assert that "diligence is the process factor that is needed to achieve ACE" (p. 45). According to Lin and Hwang (2010), the members of AC should have enough time to carry out their responsibility of controlling financial statements. More frequent ACM can help increase members' effectiveness in their monitoring roles (Karamanou & Vafeas, 2005; Li et al., 2012). Shankaraiah and Amiri (2017) agree with this position, arguing that less frequent meetings may reduce the carrying out of AC members and their diligence, awareness and understanding of the current status of the audit.

In previous empirical studies, Ayemere and Elijah (2015), and Soliman and Ragab (2014) reveal that ACM is negatively related to DA, while Bala and Kumai (2015) and Setiawan et al. (2020) find that ACM positively impacts DA. Meanwhile, Agyei-

Mensah and Yeboah (2019), Bamahros and Bhasin (2016), and Ngo and Le (2021) report that ACM does not influence DA. Thus, the present study will explore this relationship using the following hypothesis:

H2: ACM significantly impacts DA in Tadawul-listed insurance firms.

2.3. Audit committee commitment and discretionary accruals

According to Al-Matari et al. (2022), "In business performance evaluation, another critical element is the commitment of the board of directors, which is generally required to realize the firm's target and to resolve firm issues" (p. 5). AC efficiency, a potential insistence, is when the AC members do their jobs or a task of diligence (Kalbers & Fogarty, 1993). The ACC members to attend committee meetings could be employed as a calculation of AC diligence. Thus, this study has investigated AC diligence by measuring AC members' commitment.

Members' commitment to attending ACM might help ensure and improve the QFSs, thus limiting managers' opportunistic behaviour. As reported by Qamhan et al. (2018), the number of annual ACMs is insufficient for measuring AC efficiency in restraining EM. Therefore, members' commitment to attending audit meetings could be used to measure the AC member's diligence and meeting efficiency, both of which may help control managers' opportunistic behaviour. Qamhan et al. (2018) find that attendance at ACM negatively impacts DA. Moreover, Mardessi (2021) finds that committee members are more effective when more ACMs are held and attend more meetings, thus improving the QFSs. Al-Matari et al. (2022) also find that further board meetings and increased member presence at these meetings lead to improved board carrying out.

Only a few prior papers have explored the role of members' commitment to attending ACM in curbing DA. Furthermore, no prior works have looked at the influence of ACC on DA among insurance companies in Saudi Arabia. Thus, this work endeavours to bridge this gap. The third hypothesis is used to explore this issue:

H3: ACC significantly impacts DA in Tadawul-listed insurance firms.

2.4. Audit committee independence and discretionary accruals

Jerubet et al. (2017) define ACI as "the number of independent non-executive directors in the audit committee" (p. 559). According to Setiawan et al. (2020), one task of AC members is monitoring managers. Therefore, to achieve the overall interest from the construction of this committee, the AC members must be independent of the firm. This view is in line with Saudi CG, which stipulates that the AC should include at least one independent member and that the committee may not include any members of the executive board (CMA, 2017).

According to Abbott et al. (2000), it is more likely that financial reports will be error-free when most members of the AC are independent. Ghafran and O'Sullivan (2013) argue that independence is an essential attribute of the AC. ACI ensures that the committee will do a good job and will be able to

curb EM practices. Klein (2002) also identifies ACI as a key attribute that enables the committee to observe the company's financial procedures and finds that members' independence impacts the efficacy of the committee's supervision of annual reporting. Klein (2002) also finds that ACI might reduce DA. Similarly, Setiawan et al. (2020) suggest that ACI is essential in restricting EM and thus improving the QFSs. ACI is less motivated to curb EM when they hold shares in the firm (Choi et al., 2004).

Previous empirical investigations on the effect of ACI on DA report varied results. Alkebeese et al. (2022) and Mollik et al. (2020) confirm that ACI negatively impacts DA. However, in other studies, ACI is positively linked to DA, as Bala and Kumai (2015) and Galal et al. (2022) reported. Other scholars report an insignificant correlation between DA and ACI (Ngo & Le, 2021; Setiawan et al., 2020). Thus, the present study proposes that:

H4: ACI significantly impacts DA in Tadawul-listed insurance firms.

2.5. Audit committee experience and discretionary accruals

Audit committee experience means that members of the AC have experience or education in accounting and/or finances. According to Hasan et al. (2020), having such experts on the AC could reduce the agency problem, since these experts can confirm the credibility of financial statements. AC efficiency fundamentally depends on financial expertise since the broad range of auditing tasks requires some members to have financial and accounting experience (Zaman et al., 2011). According to CMA (2017), Saudi CG stipulates that at least one member of the AC possess expertise in finance or accounting. Badolato et al. (2014) find that ACE is linked to reduced EM. According to Ngo and Le (2021), "the audit committee with members with experience in accounting and finance will improve efficiency and ability to detect and prevent earnings management" (p. 138).

Several previous investigations have looked at the influence of ACE on DA. Ayemere and Elijah (2015) and Agyei-Mensah and Yeboah (2019) find that ACE significantly and negatively influences DA, while Alkebeese et al. (2022) and Mollik et al. (2020) report that ACE does not impact DA. Thus, the present study proposes the following hypothesis:

H5: ACE significantly impacts DA in Tadawul-listed insurance firms.

2.6. Big4 companies' moderating effects on the relationships of AC attributes with DA

As mentioned above, very few studies have explored the moderating influences of AQ on the associations of AC attributes with the QFSs. More importantly, the Saudi insurance sector has not examined this association. However, higher AQ increases the likelihood of auditors revealing and announcing misstatements in annual reporting. Higher AQ also indicates the auditors' competence in detecting errors in financial reports; therefore, as AQ increases, it becomes more likely that errors will be detected and reported (DeAngelo, 1981).

EM magnitudes can be higher in public firms due to disconnect between ownership and administration (Francis et al., 1999). This highlights the importance of auditing, a type of control that can restrain managerial discretion in administrative financial statements and minimize information hazards (Chen et al., 2011). According to Chen et al. (2011), AQ may curb EM and thus develop the QFSs since high-quality auditors are anticipated to handle DA aggressively, and reduced DA are linked to higher AQ (Alzoubi, 2018; Eulerich et al., 2021; Shahini-Gollopini et al., 2022). Similarly, Piot and Janin (2005) claim that high-quality audits help limit EM and the addition of misleading information to earnings statements. Therefore, high-quality auditors play a significant role in controlling companies and reducing EM, which, in turn, increases the QFSs (Johl et al., 2003). From the agency theory perspective, auditing is one tool firms can use to reduce agency costs (Watts & Zimmerman, 1983).

AQ can be measured using a variety of factors, including audit tenure or fees. The Big4 is employed as a dimension of AQ in the present study. According to DeAngelo (1981), big auditing firms conduct high-quality audits since they are more efficient and have stronger incentives to produce quality work. According to Mardessi (2021), "when a company is audited by a Big4 auditor, it mirrors the company's concerted effort to produce high financial reporting quality and consequently give stockholders proprietary and confidential information and, in turn, lessen the range of accounting misrepresentations" (p. 373).

The AC's responsible for negotiating between internal and external auditors and assisting the board to address all audit-related issues (Al-Matari, Al-Swidi et al., 2012). Suryanto et al. (2017) explain that "audit committees assume imperative parts in financial parts of corporate governance as they guarantee audit quality while in the meantime securing the enthusiasm of investors. The audit committee and accounting firms play a significant role in ascertaining the validity, acceptability, and reliability of high quality audits" (p. 54). According to Kim et al. (2017), ACE may increase AQ; therefore, the likelihood of the company selecting one of the Big4 firms is higher when AC members possess financial and/or accounting expertise (Chen & Zhou, 2007).

According to Hoitash et al. (2009), an increased frequency of ACM could increase the likelihood that the company will choose a Big4 firm, which is linked to higher-quality audits. Abbott et al. (2016) find that having more frequent ACMs may increase the likelihood of the company selecting an audit company specialising in their industry or field, which is also linked to higher AQ, specifically in EM. However, Jiraporn et al. (2018) find that the likelihood of choosing Big4 firms is significantly lower for corporations with a large proportion of independent directors.

Previous research on the influence of AC attributes on EM reports varied and unexpected results. The selection of an auditing company may play a role in these varied and unpredictable outcomes. To put it another way, the audit firm chosen by the firm could influence the effect of AC attributes on DA and the QFSs. As reported by Abbott and Parker (2000), one function of the AC is

to assign an auditor, and AC with high ratios of non-executive directors makes it possible to select one of the Big4 auditors. Therefore, this study proposes that the Big4 auditors have a moderating influence on the relationships of AC attributes with DA. Thus, a number of hypotheses are proposed as follows:

H6: Big4 firms have a moderating influence on the association of ACZ with DA in Tadawul-listed insurance firms.

H7: Big4 firms have a moderating influence on the association of ACM with DA in Tadawul-listed insurance firms.

H8: Big4 firms have a moderating influence on the association of ACC with DA in Tadawul-listed insurance firms.

H9: Big4 firms have a moderating influence on the association of ACI with DA in Tadawul-listed insurance firms.

H10: Big4 firms have a moderating influence on the association of ACE with DA in Tadawul-listed insurance firms.

3. RESEARCH METHODOLOGY

3.1. Sample selection

All 27 insurance firms listed on Tadawul were selected as the sample of this work because almost of previous studies in Saudi Arabia were focused on non-financial companies (Alshetwi, 2016; Habbash, 2019; Hashed & Almaqtari, 2021). So, this study enriched the previous studies and will guide the researchers to fill this gap.

Data from 2014 to 2021 were analysed for a total of 216 observations. We used the company's yearly financial reports and DataStream to obtain the data on the study's variables. Panel data were employed in this work since the dataset comprises financial data reported by Tadawul-listed insurance firms for eight successive years, from 2014 to 2021.

3.2. Dependent variable calculation

Accruals-based EM, or DA, is one of the methods of EM. This study used this method because it is the most popular technique that can be used to identify EM (Al Husban et al., 2022; Alzoubi, 2018; Dechow et al., 1995). The absolute value of DA is obtained from the variance between total accruals (TACC) and non-DA, and, therefore, DA is measured by two steps. First, the cash flow approach was employed to calculate the TACC because this approach is more efficient in estimating the TACC (Hribar & Collins, 2002).

The following step is the calculation of non-DA. We can estimate non-DA using several models, including the Dechow and Dichev's (2002) model, the modified Jones's model (Dechow et al., 1995) model, and the industry model. The modified Jones's model has the best capacity to detect DA and is the most extensively used model in the literature (Alzoubi, 2018; Dechow et al., 1995; Fodio et al., 2013). Therefore, following Fodio et al. (2013), we calculated DA employing the modified cross-sectional Jones's model (Dechow et al., 1995) and the following regression equation:

$$TACC_{it} = a(1/AT_{i,t-1}) + a_1(\Delta REV_{it} - \Delta REC_{it}) + a_2PPE_{it} + \varepsilon_{it} \quad (1)$$

where, $TACC_{it}$ is the total amount of accruals made in year t for business i , while ΔREV_{it} represents the difference in revenue between year t and year $t - 1$ for business i . Similarly, ΔREC_{it} stands for the change in receivables from year $t - 1$ to year t for business i . PPE_{it} is the gross value of property, plants, and equipment in year t for firm i ; ε_{it} = error term (residuals) in year t for business i . ε_{it}

represents the residuals for year t , and it stands for DA. It is important to note that all variables are scaled by total assets year $t - 1$ (Fodio et al., 2013, pp. 282-283).

Following Sun et al. (2010), the regression equation of Kothari et al.'s (2005) model is as follows:

$$TACC_{it} = a(1/AT_{i,t-1}) + a_1(\Delta REV_{it} - \Delta REC_{it}) + a_2PPE_{it} + a_3ROA_{it} + \varepsilon_{it} \quad (2)$$

where, ROA_{it} signifies the return on assets for business i at time t .

3.3. Regression model

The proposed hypotheses were tested using the following regressions:

$$DAJ_{it} = \beta_0 + \beta_1ACZ_{it} + \beta_2ACM_{it} + \beta_3ACC_{it} + \beta_4ACI_{it} + \beta_5ACE_{it} + \beta_6BIG4_{it} + \beta_7SIZE_{it} + \beta_8ROA_{it} + \beta_9CFO_{it} + \beta_{10}LEV_{it} + \beta_{11}YEAR_{it} + \varepsilon_{it} \quad (3)$$

$$DAJ_{it} = \beta_0 + \beta_1ACZ_{it} + \beta_2ACM_{it} + \beta_3ACC_{it} + \beta_4ACI_{it} + \beta_5ACE_{it} + \beta_6BIG4_{it} + \beta_7ACZ * BIG4 + \beta_8ACM * BIG4 + \beta_9ACC * BIG4 + \beta_{10}ACI * BIG4 + \beta_{11}ACE * BIG4 + \beta_{12}SIZE_{it} + \beta_{13}ROA_{it} + \beta_{14}CFO_{it} + \beta_{15}LEV_{it} + \beta_{16}YEAR_{it} + \varepsilon_{it} \quad (4)$$

$$DAK_{it} = \beta_0 + \beta_1ACZ_{it} + \beta_2ACM_{it} + \beta_3ACC_{it} + \beta_4ACI_{it} + \beta_5ACE_{it} + \beta_6BIG4_{it} + \beta_7SIZE_{it} + \beta_8ROA_{it} + \beta_9CFO_{it} + \beta_{10}LEV_{it} + \beta_{11}YEAR_{it} + \varepsilon_{it} \quad (5)$$

$$DAK_{it} = \beta_0 + \beta_1ACZ_{it} + \beta_2ACM_{it} + \beta_3ACC_{it} + \beta_4ACI_{it} + \beta_5ACE_{it} + \beta_6BIG4_{it} + \beta_7ACZ * BIG4 + \beta_8ACM * BIG4 + \beta_9ACC * BIG4 + \beta_{10}ACI * BIG4 + \beta_{11}ACE * BIG4 + \beta_{12}SIZE_{it} + \beta_{13}ROA_{it} + \beta_{14}CFO_{it} + \beta_{15}LEV_{it} + \beta_{16}YEAR_{it} + \varepsilon_{it} \quad (6)$$

Table 1. The acronyms used in the regressions

<i>Symbol</i>	<i>Variable name</i>	<i>Measures</i>
<i>DAJ</i>	The absolute value of discretionary accruals	Modified Jones's model (Dechow et al., 1995).
<i>DAK</i>	Alternative measure of discretionary accruals	The model of Kothari et al. (2005).
<i>ACZ</i>	Size of the audit committee	Gross number of members in the AC (Al-Matari, 2022; Ngo & Le, 2021).
<i>ACM</i>	Meetings of the audit committee	Total number of annual ACM (Ngo & Le, 2021; Hasnan et al., 2022).
<i>ACC</i>	Commitment of the audit committee	Proportion of members who attend ACM yearly (Al-Homaidi et al., 2021; Al-Matari et al., 2022).
<i>ACI</i>	Independence of the audit committee	Proportion of non-executive directors in the AC (Al-Matari & Mgammal, 2019; Fodio et al., 2013).
<i>ACE</i>	Experience of the audit committee	The aggregate members who have accounting and financial education or experience in the committee (Ayemere & Elijah, 2015).
<i>BIG4</i>	Big4 audit firms	Dummy variable (Alkdai & Hanefah, 2012; Al-Matari & Al-Hebry, 2019).
<i>ACZ * BIG4</i>	Audit committee size * Big4 audit firms	Interaction between ACZ and Big4.
<i>ACM * BIG4</i>	Audit committee meetings * Big4 audit firms	Interaction between ACM and Big4.
<i>ACC * BIG4</i>	Audit committee commitment * Big4 audit firms	Interaction between ACC and Big4.
<i>ACI * BIG4</i>	Audit committee independence * Big4 audit firms	Interaction between ACI and Big4.
<i>ACE * BIG4</i>	Audit committee experience * Big4 audit firms	Interaction between ACE and Big4.
<i>SIZE</i>	Firm size	Log of total firm assets (Al-Matari & Alosaimi, 2022; Alzoubi, 2018).
<i>ROA</i>	Return on assets	Firm net income divided by total assets (Alzoubi, 2018).
<i>CFO</i>	Cash flow from operations	Cash flow from operations is divided by total assets at year's end (Klann & Beuren, 2018).
<i>LEV</i>	Leverage	Ratio of the company's total debt to its total assets (Al-Matari et al., 2012).
<i>YEAR</i>	Year	Dummy variable (Al-Matari et al., 2023).
ε	Error	Error term.

Source: Authors' elaboration.

4. RESULTS AND DISCUSSION

4.1. Descriptive statistics

The descriptive analysis of the research's variables is demonstrated in Table 2, which shows the mean, maximum (*Max*), minimum (*Min*) and standard deviation (*Std. dev.*). The average value for the dependent variable of DA is 0.0341, with *min* and *max* of 0.001 and 0.269, respectively. The *max* and *min* for ACZ are 5 and 3, respectively. Five members are the largest ACZ for a listed insurance company in Saudi Arabia. The average number of annual ACM is 7.10, with a *max* of 23 and *min* of 3.

The average value of ACC is 93%, which indicates that, in general, members are very committed to attending ACM.

The average value for ACI is 89%, which means that, on average, 89% of AC members in the selected sample were independent. This indicates that many firms comply with the Saudi CG code requiring AC to have at least one independent member. Table 2 also shows that the listed insurance companies in this study have, at minimum, an AC member with experience in accounting and/or finance, which is also in line with Saudi CG. Finally, 56% of the selected sample was audited by Big4 auditors, and 44% used non-Big4 auditors.

Table 2. Descriptive statistics

<i>Variable</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Std. dev.</i>
<i>DAJ</i>	0.0010	0.2699	0.0341	0.0354
<i>ACZ</i>	3.0000	5.0000	3.1991	0.5559
<i>ACM</i>	3.0000	23.0000	7.1065	3.3387
<i>ACC</i>	0.4167	1.0000	0.9392	0.0940
<i>ACI</i>	0.4000	0.1000	0.8954	0.2388
<i>ACE</i>	1.0000	4.0000	1.0046	1.1310
<i>BIG4</i>	0.0000	1.0000	0.5648	0.4969
<i>SIZE</i>	11.9084	16.3264	13.8311	0.9014
<i>ROA</i>	-37.7000	13.1900	0.2846	7.3327
<i>CFO</i>	-1357500.0000	1693612.0000	30715.9800	236082.8000
<i>LEV</i>	0.0861	1.1001	0.6435	0.1471

Source: Authors' elaboration.

Testing for multicollinearity problems can be accomplished by employing a correlation matrix. According to Gujarati and Porter (2009), if the correlation matrix is greater than 0.80, the sample has a multicollinearity problem. Research variables' correlation matrices were under 0.80, indicating the absence of a multicollinearity issue, as

shown in Table 3. To confirm this, the variance inflation factor (VIF) was also employed to examine for multicollinearity. Hair et al. (2010) mention that a VIF value exceeding 10 suggests the presence of multicollinearity. As shown in Table 4, there is no evidence of multicollinearity based on the VIF values, which are under 10.

Table 3. Correlation matrices

Variable	DAJ	ACZ	ACM	ACI	ACE	ACC	SIZE	ROA	CFO	LEV
DAJ	1.000									
ACZ	-0.170**	1.000								
ACM	-0.196***	0.252***	1.000							
ACI	-0.136**	-0.007	0.116*	1.000						
ACE	0.007	0.280***	0.133**	0.187***	1.000					
ACC	-0.108	-0.155**	-0.011	-0.092	-0.054	1.000				
SIZE	-0.122**	0.266***	0.300***	0.109*	0.298***	-0.070	1.000			
ROA	-0.175*	0.028	-0.140**	-0.124*	-0.125	-0.028	0.318***	1.000		
CFO	-0.019	0.159*	-0.015	0.042	0.023	-0.012	0.377***	0.283***	1.000	
LEV	-0.052	0.060	0.261***	-0.039	0.042	-0.107	0.324***	-0.174**	0.034	1.000

Note: *, **, *** mean the significance of 0.01, 0.05 and 0.1 respectively.
Source: Authors' elaboration.

Table 4. Correlation matrices

Independent variables	VIF	1/VIF
ACZ	1.23	0.8101
ACM	1.27	0.7884
ACC	1.07	0.9308
ACI	1.13	0.8883
ACE	1.43	0.7003
BIG4	1.23	0.8154
SIZE	2.07	0.4839
ROA	1.45	0.6882
CFO	1.25	0.8011
LEV	1.33	0.7538
Mean VIF	1.35	

Source: Authors' elaboration.

4.2. Multivariate analysis

Two statistical techniques can be employed to analyse data: parametric (ordinary least squares – OLS) and nonparametric (random effects). The Breusch-Pagan test and the Lagrange Multiplier (LM) test were used to determine which approach

was appropriate for the data analysed in the paper. When the p-value of this test is greater than 5%, a pooled OLS should be used (Hair et al., 2010). Thus, a pooled OLS was employed to analyze the data based on the outcomes of the test of LM in Table 5. Moreover, homogeneous error terms should be steady when an OLS regression is used. Therefore, the test of Breusch-Pagan was utilised to examine the homoscedasticity of the regression model. Table 5 shows these data have a significant homoscedasticity issue as the model results are significant (p < 0.000). This issue was addressed using the robust standard error (Wooldridge, 2013).

Table 5. LM test and Breusch-Pagan test

LM test	
Chibar2(01)	0.74
Prob > chibar2	0.1956
Breusch-Pagan test	
Chibar2(01)	40.58
Prob > chibar2	0.0000

Source: Authors' elaboration.

Table 6. Robust regressions for all models

Variable	Model 1		Model 2		Model 3		Model 4	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
ACZ	-0.011***	-3.11	-0.023***	-4.05	-0.012***	-3.11	-0.023***	-4.05
ACM	-0.002**	-2.46	-0.001	-0.41	-0.003**	-2.46	-0.002	-0.41
ACC	-0.067***	-2.62	-0.075*	-1.91	-0.084***	-2.62	-0.103*	-1.91
ACI	-0.025**	-2.37	-0.033***	-2.85	-0.037**	-2.37	-0.045***	-2.85
ACE	0.001	0.42	0.001	0.21	0.002	0.42	0.004	0.21
BIG4	-0.009*	-1.83	-0.085	-1.24	-0.017*	-1.83	-0.107	-1.24
ACZ * BIG4	-	-	0.018**	2.42	-	-	0.017**	2.42
ACM * BIG4	-	-	-0.002	-1.29	-	-	-0.001	-1.29
ACC * BIG4	-	-	0.017	0.31	-	-	0.032	0.31
ACI * BIG4	-	-	0.019	0.88	-	-	0.019	0.88
ACE * BIG4	-	-	0.000	-0.01	-	-	-0.004	-0.01
SIZE	0.004	1.11	0.003	0.76	0.002	1.11	0.001	0.76
ROA	-0.001	-1.46	-0.001	-1.42	-0.001	-1.46	-0.001	-1.42
CFO	0.000	1.52	0.000	1.37	0.000	1.52	0.000	1.37
LEV	-0.022	-1	-0.015	-0.74	0.002	-1	0.008	-0.74
Year	Included							
_cons	0.127		0.184		0.187		0.245	
Number of obs.	216		216		216		216	
F(17, 198)	2.98		2.84		5.42		4.21	
Prob > F	0.0001		0.0001		0.0000		0.0000	
R-squared	0.1834		0.2032		0.2248		0.2372	

Note: *, **, *** mean the significance of 0.01, 0.05 and 0.1 respectively.
Source: Authors' elaboration.

5. DISCUSSION

The findings of all the models utilised in this paper are displayed in Table 6. Model 1 measures the role of AC attributes in curbing DA, while Model 2 measures the moderating influence of Big4 on the associations of AC attributes with DA. Models 3

and 4 examine the robustness of the primary models used in this paper (Models 1 and 2).

The findings of Model 1 show that ACZ influences DA practices in Tadawul-listed insurance companies. Therefore, H1 is supported. The model also shows that this relationship is negative, which means that lower rates of DA are connected with

larger AC and, therefore, better financial reporting. This finding supports Vafeas's (2005) argument that the AC's effectiveness in controlling the operations of annual reporting decreases when the committee is too small. This outcome is also consistent with those of prior studies, such as Agyei-Mensah and Yeboah (2019), Juhmani (2017), and Salihi and Jibril (2015).

Model 1 also supports *H2*, which predicts that ACM significantly influences DA in Tadawul-listed insurance firms. ACM are negatively linked to DA, as shown in Table 6. This outcome implies that an increase in the frequency of ACM in Saudi insurance companies can lead to reduced managerial opportunistic behaviour, such as DA, resulting in higher QFSs. This finding also aligns with those of previous studies (Ayemere & Elijah, 2015; Bryce et al., 2015).

Model 1 also shows that members' commitment to attending ACM might play a significant role in restraining DA and ensuring and enhancing the QFSs. The model shows that ACC negatively impacts DA, supporting *H3*. This result aligns with Qamhan et al. (2018), who reveal that attendance at ACM is negatively linked to DA.

The model also illustrates that ACI negatively impacts DA. Thus, *H4* is supported. This result suggests that ACs with high percentages of independent members can better control and reduce opportunistic management activities such as DA. This finding also aligns with earlier studies (Alkebsee et al., 2022; Amin et al., 2018; Mollik et al., 2020).

Model 1 (Table 6) does not support *H5*, which predicts a significant connotation among ACE and DA in Tadawul-listed insurance firms. The model indicates that ACE is positively but insignificantly related to DA, as shown in Table 6. This finding implies that the AC, which has persons with experience in accounting and/or finance, does not eliminate or significantly decrease DA. This result is not entirely unexpected, as some prior works, such as those by Alkebsee et al. (2022) and Mollik et al. (2020), also report that ACE does not impact DA.

As Model 2 shows (Table 6), auditing by a Big4 has a significant moderating effect on the association of ACZ with DA, and this relationship is negative. Thus, *H6* is supported. This result implies that auditing by a Big4 moderates the impact of ACZ on DA. This means that high-quality external auditing enhances the impact of ACZ on curbing DA, leading to improved QFSs. This finding aligns with those of Mardessi (2021).

The outcomes of Model 2 also show that Big4 has an insignificant moderating effect on the relationships of ACM, ACC, ACI and ACE with DA. Thus, *H7*, *H8*, *H9*, and *H10* are not supported. This finding suggests that auditing by Big4 does not moderate the impact of ACM, ACC, ACI or ACE on DA. One likely reason for this finding is that the attendance of independent members with financial experience on the AC and frequent ACM help the AC and internal auditors effectively monitor company operations, reducing the need for high-quality external auditors. Jiraporn et al. (2018) reported that the likelihood of a Big4 selection is decreased for firms possessing a greater proportion of independent directors. Mardessi (2021) also discovered that more ACM increases AC effectiveness and meeting attendance, thus leading

to better QFSs. Regarding the control variables, as Table 6 confirms, *SIZE*, *ROA* and *LEV* all have insignificant relationships with DA.

An alternative estimate for the dependent variable was used to examine the robustness of the study's primary models. The Kothari et al.'s (2005) model was used to check the robustness of Models 1 and 2, following prior research, such as Nwoye et al. (2021). This test was conducted to confirm that the preliminary results were accurate and robust. Therefore, Models 3 and 4 test the robustness of Models 1 and 2, respectively.

The outcomes of Model 3 (Table 6) demonstrate that ACZ, ACM, ACC and ACI are negatively linked to DA. In this model, the relationship of ACE with DA is still insignificant. According to Model 4, Big4 has a significant moderating influence on the association of ACZ with DA, while it has no impact on the relationships of ACM, ACC, ACI or ACE with DA. These results support the findings of the primary Models 1 and 2. Thus, the findings of Models 3 and 4 indicate that the results of the main Models 1 and 2 outcomes are consistent and robust when an alternative measure is used for the DA (Table 6).

6. CONCLUSION

This research proposes to confirm the role of AC attributes in curbing DA. More significantly, it seeks to fully explore the moderating impact of AQ on the relationships of AC attributes with DA using eight years of data from Tadawul-listed insurance firms (2014–2021). This paper utilized ACZ, ACM, ACC, ACI and ACE as measurements of the attributes of the AC. It has used auditing by Big4 as a dimension of AQ.

The outcomes of the analysis show that ACZ, ACM, ACC, ACI negatively and significantly impact DA. In contrast, ACE was not linked to DA. The results also show that auditing by Big4 has a significant and negative moderating effect on the association of ACZ with DA. The model shows that Big4 has an insignificant moderating effect on the impacts of ACM, ACC, ACI, and ACE on DA.

This research does hold a few limitations that must be carried into deliberation. First, the analysed data were taken from companies in the financial sector, specifically insurance companies. Future research on this topic includes data from other financial companies or companies in non-financial sectors. Second, this research was carried out in Saudi Arabia; as a result, the findings may not be applicable to other nations. Therefore, future research should include data from companies in other countries. Third, this study has utilized DA as a calculation of EM and auditing by Big4 as a measure of AQ. Future studies are strongly recommended to use alternative factors to calculate AQ and EM.

Despite its shortcomings, this research has important policy and Tadawul investment implications. Initially, the results of this study may provide investors with information on the degree of DA in Saudi insurance companies. These results may aid investors in assessing how AC works to reduce DA and improve QFSs. Additionally, they could make it easier for investors to understand how Big4 strengthens the effect of AC qualities on DA. Therefore, while determining whether to invest in

Tadawul-listed firms, these findings may assist shareholders and investors in assessing the QFSs and dependability.

Saudi Arabian entities release business results and compile the financial accounts of companies listed on Tadawul's market. These official bodies may thus benefit from the current research's

findings as they create and enhance legislation and regulations that will motivate businesses to generate high-quality, dependable QFSs. Its discoveries will benefit scholars and researchers worldwide; thus, the implications of this work go beyond Saudi Arabia.

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