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Article

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Cogent Business & Management

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Suggested Citation: Afenya, Millicent Selase; Arthur, Benedict; Kwarteng, Williams; Opoku, Pious (2022) : The impact of audit committee characteristics on audit fees; evidence from Ghana, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 9, Iss. 1, pp. 1-20,
<https://doi.org/10.1080/23311975.2022.2141091>

This Version is available at:

<https://hdl.handle.net/10419/289323>

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To cite this article: Millicent Selase Afenya, Benedict Arthur, Williams Kwarteng & Pious Opoku (2022) The impact of audit committee characteristics on audit fees; evidence from Ghana, Cogent Business & Management, 9:1, 2141091, DOI: [10.1080/23311975.2022.2141091](https://doi.org/10.1080/23311975.2022.2141091)

To link to this article: <https://doi.org/10.1080/23311975.2022.2141091>



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Received: 19 December 2021
Accepted: 25 October 2022

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Reviewing editor:
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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

The impact of audit committee characteristics on audit fees; evidence from Ghana

Millicent Selase Afenya¹, Benedict Arthur^{2*}, Williams Kwarteng³ and Pious Opoku⁴

Abstract: The purpose of the study was to establish the impact of audit committee characteristics on audit fees from listed companies in Ghana. Audit committee size, gender diversity, meeting, and financial expertise were adopted to measure audit committee characteristics against the fees charged by the audit firms. The study utilized a different set of empirical specifications on standard panel data, particularly to address the endogeneity issues of the extant literature on the audit fees-audit committee characteristics nexus condone. Applying the IV-2SLS and two-step dynamic GMM estimators, which are robust to endogeneity issues, we present evidence that audit committee size, gender diversity, audit meetings, and financial expertise are associated with lower audit fees. We also find evidence that the magnitude of the impact of the audit committee characteristics on audit fees is more pronounced in financial firms than non-financial firms. We interpret this insight as suggesting that highly regulated firms such as financial firms with audit committees incur relatively lower audit costs.

Subjects: Auditing; Financial Statement Analysis; Corporate Governance

Keywords: Audit committee; audit fees; board size; financial expertise; gender diversity

JEL Codes: G30; G34

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PUBLIC INTEREST STATEMENT

The connection between audit committees and external audit is a complex one, originating from both the request for audit services by the client and the delivery of audit services by the external auditor. From the request end, the presence of an audit committee may yield in an increase in audit fees because the committee should guarantee audit hours are at a level that does not affect the quality of the audit adversely. Audit committee members must be motivated to secure a high-quality audit in order to reduce the dangers of indictments and the loss of credibility in the event of fraudulent financial reporting. From the delivery end, the audit committee's participation in building up internal checks may lead the external auditor to reduce the evaluated level of control risk. Consequently, the auditor's dependence on internal checks should result in less substantive testing and hence a lower audit fee.

1. Introduction

The audit committee's role in corporate governance is becoming increasingly important to regulators across the globe following the corporate scandals of some giant companies such as Enron, Tyco, and WorldCom. More specifically, in Ghana, the efficacy of the audit committees in the country has been questioned owing to the recent corporate mismanagement and collapse of some companies in the country. There have been a series of reported corporate scandals in Ghana since 2013 especially in the financial sector of Ghana. A classic example is the collapse of microfinance, DKM, in 2015, which caused depositors' gross financial loss of millions of dollars. More recently, in 2018, five commercial banks collapsed, whereas other banks were consolidated as a result of unearthing another corporate scandal in the country.

In response to this corporate mismanagement, some regulatory bodies in Ghana have recently called for a series of mandatory legislations to strengthen the legal framework of audit committees' composition and activities in light of the Sarbanes-Oxley Act (SOX) 2002. This is because the audit committee's significant role in enhancing the standard of financial news, overseeing the firm's control system and work of external auditors, and watching and evaluating the firm's risk management and speech act practices cannot be neglected. The roles and responsibilities of the audit committee square measure that the committee shall be obligated to ascertain applicable accounting procedures and accounting controls for the firm and supervise compliance with these procedures. It will additionally monitor compliance with enactment applicable to the bank and report back to the board on it, implement internal economic controls of all the corporations' transactions and review such controls regularly (Afenya et al., 2022).

From the regulator's perspective, mandatory legislation of some key provisions in the SOX Act, such as section 301(audit committee's oversight of the issuers accounting, auditing, appointing, determining the remuneration of the external auditor and internal control procedures) in Ghana will increase accountability and transparency within the organizations. The mandatory legislation will get audit committees more involved and deepen their understanding of their organization's financial reporting process and accounting policies, improving audit quality and fees.

Conceptually, the knowledge about the determinants of audit fee variation is extended by suggesting that the audit committee's effectiveness will partly drive the cost of the audit. Audit committees facilitate the role of internal auditors and otherwise strengthen internal controls. If audit committees are a substitute for external auditors in monitoring management, more effective audit committees will reduce the need for an external audit, reducing audit fees. Alternatively, if audit committees complement the work performed by external auditors, better audit committees may be associated with more significant external audit effort, hence increasing audit fees.

This line of argument suggests that in well-managed firms, there is a lower workload (risk) for an external audit, whereas poorly managed firms may call for the increased workload (risk) for external audit efforts. However, the impulse of the issue still remains an empirical question. Therefore, this paper empirically examines the relationship between audit committee characteristics (Audit committee financial expertise, size, gender diversity, and audit committee meetings) and audit fees in Ghana. Assessing the effectiveness of audit committees and audit fees charged is an intriguing issue since the transparency of unconnected audit fees disclosed by Ghanaian listed firms in their financial statements remains low, given the recurrent corporate scandals in the country over the years. As a result, a study on the openness of audit fees charged and audit committee effectiveness (characteristics) becomes imperative.

In light of the above, we hypothesize that audit committee characteristic (specifically financial expertise, size, diversity, and meeting) will lead to lower audit fees. Two assumptions underpin our

hypotheses. One, prior research indicates that audit committees can take measures within their scope of control that will result in consequences linked to a higher level of audit quality, like increased going-concern adjustments for distressed firms (Carcello & Neal, 2000). Consequently, this will reduce the workload and service fees charged by external auditors. This is because audit committees can affect the level of audit coverage (Blue Ribbon Committee (BRC), 1999; DeZoort, 1997). Therefore, an audit committee seeking a higher level of monitoring will ensure a fundamental robust internal control mechanism, given the investor's wealth-maximization role. Two, previous research indicates that certain audit committee characteristics, such as the level of financial expertise and diversity, significantly impact the execution of the committee's duties (Carcello & Neal, 2000; Raghunandan et al., 2001). To this end, it leads to an increase in the firm's negotiating power and, thus, a decrease in fees, with no variation in audit coverage or quality.

This study adds to the audit literature by shedding light on the inconclusive association between the audit committee and audit fees by adopting the generalized panel method of moments (GMM) model to mitigate the probable endogeneity problem between the various variable of interest of which the extant literature condones. On the one hand, studies (DeZoort, 1997; Farooq et al., 2018; Felix et al., 2001; Vafeas & Waagelein, 2007) document that audit committees may substitute for the work to be done by external auditors. Thus, the presence of more effective audit committees may result in lower external audit fees. On the other hand, other studies suggest that audit committees may complement the work to be done by external auditors (Carcello et al., 2002; Lee & Mande, 2005; Vafeas & Waagelein, 2007). Thus, the audit committee will demand higher assurance, which might call for a greater level of audit scope, resulting in higher audit fees. The inconsistency in priori of whether audit committees and external auditors are substitutes or complement opens up for further examination of the nexus. Therefore, this study offers a fresh indication of the subject matter by using a more robust model (GMM) and data from a Sub-Saharan country like Ghana, which has received little to no attention on this critical nexus despite the recent rampant corporate scandals.

Furthermore, this study adds to the growing literature on gender diversity by exploring gender diversity as a variable of Measurement for audit committee characteristics. Almost all the extant related literature has condoned on the nexus under consideration. Finally, the study's outcome will offer insightful information to managers, policymakers, and regulatory bodies in Ghana and other countries in the sub-Saharan region on the vital role of the audit committee characteristics in improving the audit.

The rest of the paper is structured as follows: Section two provides the literature review and hypotheses development; Section three explains the research data and methodology; Section four provides empirical results and interpretations, and Section five offers research conclusions and recommendations.

2. Literature review and hypotheses development

2.1. Theoretical framework

An audit is a critical component of corporate governance, providing an independent review of the organization's financial position. The distinction between ownership and control in new business results in conflicts of interest between managers and stakeholders. Following this conflict between the principal and the agent, companies are obliged to use control mechanisms to reduce agency costs and Information asymmetry like the audit committees (Kalbers, 1998). Similarly, Pincus and Rusbarsky (1989) argue that audit committees are used primarily when agency costs are high to improve the quality of information flows from the agent to the principal. According to the agency theory, to secure the success of an audit committee, managers are encouraged to prepare financial statements adequately to specify the company's return. Hence, the agency theory states that the presence of an audit committee within the board of directors is sufficient to ensure the

reliability of financial statements. However, extant studies (Carcello and Neal 2003; Abbott and Parker 2000, 2001; Beasley et al., 2000; Raghunandan et al., 2001) have concluded that the mere presence of an audit committee does not necessarily mean that this committee is useful in performing its oversight but rather certain key characteristics it possesses. Consistent with these prior research arguments, this study concentrated on audit committee characteristics, including size, expertise, meetings, and gender diversity.

2.1.1. *Audit Committee*2003

According to the KPMG audit guide, an audit committee is a standing committee of the board of directors charged with overseeing the company's financial processes and internal controls over financial reporting (ICOFR) and the audit of the company's financial statement. This committee, according to Abu et al. (2018), is one of the instruments or mechanisms used by most corporations' boards of directors to direct delegated roles of supervisory, monitoring, and oversight of financial and non-financial reporting and information disclosure. This implies that the audit committee serves as a bridge between the management, internal audit, and external audit functions.

In Ghana, the corporate, institutional framework enshrined in the companies' code, Act 2019 (ACT992), authorizes all entities subject to audit, including ministries, departments, and agencies (MDAs), to establish audit committees. Specifically, the corporate governance code 2020 for listed companies by the Ghana securities and exchange commission (SEC) requires all listed companies to form an audit committee. Regarding the composition of the audit committee, the commission demand that the Audit Committee shall consist of at least three members, of which at least one person should have accounting or accounting expertise. That is, at least one of the independent non-executive members shall be a Chartered Accountant with recent and relevant financial experience. Also, independent non-executive directors shall constitute a majority on the committee. Likewise, the Chairman of the committee shall be a Chartered Accountant and an independent non-executive director. Generally, the functions of the audit committees in Ghana are to direct and check the audit process and settle any conflict that may arise between the auditors and management. Along with these, the audit committee's responsibilities, particularly with respect to external audit, is to consider the appointment of the external auditor, the audit fee, and, if such an event occurs, the resignation or dismissal of the external auditor. As a regulation, the Securities and Exchange Commission (SEC) of Ghana issued a rule directing national securities exchanges and national securities associations to restrict the listing of any company that does not follow these corporate governance codes of the audit committee requirements, which is enthused by the Section 301 of the Sarbanes-Oxley Act of 2002.

2.1.2. *Audit committee size*

An audit committee size refers to a selected member of a company's board of directors whose principal function is to ensure that auditors remain separate of the influence of management. It also refers to a group of people who are usually chosen from outside the company and are tasked with providing an objective and unbiased assessment of the company's practices (Abu et al., 2018). This signifies that the audit committee's standpoint is transparent, accurate, reliable, neutral, unbiased, and free of favor, fear, or prejudice. The securities exchange commission stipulates that the audit committee ought to be of a considerate number to ensure the effective execution of their duties. Many audit committee members indicate adequate resources so that the supervisory function can run more effectively. On the supply side, when supervision is effective, the audit fees paid to the public accounting firm are low because the risk borne by the auditor is small.

2.1.3. *Audit committee expertise*

According to the Public Oversight Board (POB; 1993), the audit committee's effectiveness is influenced, most importantly, by the expertise of audit committee members in internal controls, accounting, and financial reporting, and auditing. To fulfill their responsibility of oversight of internal control and financial reporting, the audit committee must have the required skill set,

primarily in accounting and financial predictions, according to Yang and Krishnan (2005). Indeed, the study by Choi et al. (2004) classifies the expertise of members of audit committees in five categories: Financial expertise, accountancy, the expertise of university professors or former, the expertise of employees, and expertise in law. The SEC (security and exchange commission) regulations require a company to disclose whether any member of its audit committee is eligible for “audit committee financial expert” (ACFE). Hence, audit committees that are well-versed in auditing are capable of comprehending auditor judgments and discerning the substance of squabbles between management and the external auditor.

2.1.4. Audit committee gender diversity

In this study, audit committee gender diversity refers to the inclusive or fair representation of people of different genders on the committee, both male and female. Gender diversity on the audit committee also implies an equal ratio of men and women on the committee. Li and Wearing (2004) documented that there is less likelihood of female non-executive directors in the audit committee gaining promotions to roles such as the head of the audit committee. Audit committees with more than one female director would likely function differently from an all-male directors’ audit committee. However, little to no studies have scrutinized the impact of gender differences on audit committee characteristics. Dennis and Kunkel (2004) argue that female audit committee members, in general, are more equipped, active, potent, emotionally stable, circumspect, independent, and less vicious than male managers. For this reason, a female audit committee member may be more sensitive to the firm’s potential fraudulent financial reporting.

2.1.5. Audit fees

Audit fees refer to the money paid to auditors for their professional services determined by the complexity of the services and the level of expertise. Sukrisno Agoes (2012) defines an audit fee as “the amount of the charge depends, among others, the risk of the assignment, the complexity of the services provided, the level of expertise required to carry out the services of proficiency level, the cost structure of the firm concerned and other professional considerations.” The cost of external audits (audit fees) is the amount paid for services performed by external auditors. The remuneration for the services is related to the length of work and the worth of services provided to the client or the firm.

2.2. Relationship between audit committees and audit fees

The connection between audit committees and external audits is a complex one, originating from both the request for audit services by the client and the delivery of audit services by the external auditor (Collier & Gregory, 1996). From the request end, the presence of an audit committee may yield an increase in audit fees because the committee should guarantee audit hours are at a level that does not adversely affect the quality of the audit. Audit committee members must be motivated to secure a high-quality audit to reduce the dangers of indictments and the loss of credibility in the event of fraudulent financial reporting. From the delivery end, the audit committee’s participation in building up internal checks may lead the external auditor to reduce the evaluated level of control risk. Consequently, the auditor’s dependence on internal checks should result in less substantive testing and hence a lower audit fee (Collier & Gregory, 1996).

2.2.1. Audit committee size and audit fees

The securities exchange commission specifies that the audit committee should have a minimum of 3 members. In line, using a sample of 126 listed companies on the Athens Stock Exchange, Dragalas et al. (2021) found that audit committee size is positively linked to audit fees. Similarly, Ali et al. ((2018)) also reported that there is a positive relationship between audit committee size and audit fees. Abu (2021) examines audit committee characteristics and audit fees of listed consumer goods companies in Nigeria. Fifteen companies were selected out of 26 listed consumer goods companies on the Nigerian Stock Exchange; their result reveals that audit committee size has a significant positive association with audit fees. In contrast, Farooq et al. (2018) find a negative and significant relationship between the audit committee size and audit fees. Sultana and Van der Zahn (2015)

argued that a higher range of audit committee size has the power to handle companies' problems in an economical and effective method and hence a fall in audit price. Yatim et al. (2006) offered an indication that the audit committee has a substantially negative effect on audit fees. In the same vein, Farooq et al. (2018) investigate the impact of the audit committee and board quality on audit fees in Pakistan. Using data extracted from KSE-100 index listed firms on the Pakistan Stock Exchange, the study shows that the size of the audit committee has a negative and significant effect on audit fees. Consequently, the researchers hypothesized that

H1: There is a negative relationship between audit committee size and audit fee.

2.2.2. Audit committee financial expertise and audit fees

Financial reporting requires accounting and financial experts to produce high financial reporting. Findings from Mustapha et al. (2020); Ghafran and O'Sullivan (2017) reveal a positive and significant relationship between audit committee expertise and audit fees. Similarly, Joshi et al. (2021) examined the effects of internal audit, audit committee, and firm characteristics on audit fees in a multi-country and industry setting. They reported a positive and significant relationship between audit committee expertise and audit fees. They argued that Audit Committee members across the countries represented in our sample demand high-quality audits from the auditor, thereby increasing the audit efforts and time commitment, resulting in higher audit fees. Additionally, Bala et al.'s (2018) study reveal that AC financial expertise is a significant positive factor in determining the amount of audit fees in Nigeria. Sultana et al. (2019) concluded that the audit committee's experienced members might require auditors to perform additional tests and hence pay higher audit fees. Moreover, Abu (2021) reported that the audit committee's financial expertise has a 2019 positive and insignificant relationship with audit fees. On the contrary, Januarti et al. (2020) argue that AC financial expertise is negatively related to audit fees since it helps reduce the workload of external auditors. Furthermore, Azmi et al. (2013) find a negative relationship between financial expertise and audit fees in Malaysia. In line, the current study believes that the audit committee, which contains members with financial and accounting knowledge, is more likely to support external auditors who will reduce the scope of external audits leading to audit fees. Hence, we hypothesized that

H2: There is a negative relationship between audit committee financial expertise and audit fee.

2.2.3. Audit committee gender diversity and audit fees

Though studies connecting the gender diversity of audit committees to audit fees are rare, the few existing ones suggest ambiguous conclusions. A study conducted by Abu (2021) in Nigeria concluded that audit committee diversity has no significant association with the audit fees of listed consumer goods companies in Nigeria. Miglani and Ahmed (2019) also reveal in their findings that there is a positive and significant relationship between audit committee diversity and audit fees. In contrast, other studies also assert that audit committee with female representatives are conscientious and tends to pay lesser audit fees (Ittonen et al., 2010). Thus, a significant negative relationship exists between audit committee diversity and audit fees. For instance, the result of Ittonen et al. (2010); Nekhili et al. (2020) find a negative and significant association between audit committee diversity and audit fees. Moreover, using the logit binary regression, Miglani and Ahmed (2019) find evidence of the significant negative impact of audit committee gender diversity on audit fees. Hence, the study argues that having females on the audit committee reduces the scope of audit work, thereby decreasing the associated audit fees. In view of this argument, the researchers also hypothesized that

H3: There is a negative relationship between audit committee gender diversity and audit fee.

2.2.4. Audit committee meeting and audit fees

The Audit committee's commitment is measured by the number of audit committee meetings held during the fiscal year according (Alaswad & Stanišić, 2016); it is expected that frequent meetings of the committee enable the committee to discharge its duties efficiently and effectively. Some authors find a positive relationship between audit committee meetings and audit fees, indicating that the frequency of audit meetings increases the audit cost since committee members will demand a high-quality audit. For instance, Abu (2021) examines audit committee characteristics and audit fees of listed consumer goods companies in Nigeria. The results reveal that audit committee meetings positively and significantly correlate with audit fees. Also, Awinbugri and Prince (2019) find a positive and significant correlation between audit committee meetings and audit fees. Furthermore, Januarti et al. (2020) investigated the relationship between Audit Committee effectiveness and audit Fees in Indonesia. They found consistent evidence of the (2019) negative impact of audit committee meetings on audit fees. Omesi and Appah 2022, investigated the relationship between risk management and audit committees on audit pricing of listed consumer goods manufacturing firms in Nigeria. The study submits a significant positive relationship between audit committee meetings and audit fees. On the other hand, some studies suggest a negative relationship between committee meetings and audit fees. Those studies expound that the more audit committees hold meetings, the more effective their role in supervising the formulation and production of combined reports and, accordingly, the more items will be unveiled in integrated reports leading to a fall in audit effort and cost (Farooq et al., 2018; Lisic et al., 2016). For instance, Farooq et al. (2018) find evidence in their study that a high frequency of meetings leads to a low risk of quality financial reports, and therefore the audit fees are lessened. Similarly, according to Hoque et. al (2013), the audit committee that often holds meetings carries out supervisory duties well; therefore, the audit risk is less, and problems in financial reporting and service fees are reduced. Chariri and Januarti (2017) also find evidence supporting high audit 2013 committee meetings reducing the cost of external auditing. In view of this, the current study hypothesized that

H4 has a negative relationship between audit committee meetings and audit fees.

3. Research methodology

This section will discuss the main methodological strategy employed in this study. This encompasses the variables used in the study, how they were measured, and where they were obtained.

3.1. Data sources and measurement of study variables

The study utilized secondary data collected from 2008 to 2019 financial statements of companies listed on the Ghana stock exchange. This study sample was restricted to 25 companies out of the 38 companies listed on the Ghana stock exchange due to the non-availability of data on the key study variables. The audit fee is the dependent variable in the study. This variable is measured by the natural log of the total amount of money paid to external auditors. The independent variables deployed in the study are the audit committee characteristics, including size, expertise, gender diversity, and audit committee meetings. The audit committee size was estimated by the total number of people who makes up the committee. Audit committee financial expertise was also measured by the number of audit committee members with a financial background. Also, audit committee gender diversity was calculated by the ratio of the total number of females on the audit committee, whereas audit committee meetings are measured by the number of meetings of the audit committee per year.

Moreover, inconsistent with previous literature (Abbott et al., 2003; Benedict et al., 2021; Miglani & Ahmed, 2019), we control the likelihood of other variables influencing the relationships between the independent variable and dependent variables. As such, based on the findings from the

literature reviewed, we captured board independence, the board size, leverage, firm age, and firm size in the regression analysis as a covariate to control for the heterogeneity among the firms (Abbott et al., 2003; Afenya et al., 2022; Miglani & Ahmed, 2019). The academic literature expounds that more audit work or procedures are necessary in the case of large businesses to produce an audit opinion. A higher audit price is expected, given the increased audit activity. Regarding firms' leverage, most of the literature posits that higher debt burdens signal more financial risk and need more audit work, which results in higher audit costs. Also, the extant literature documents that, unlike the firms' executive directors, external directors are more likely concerned with high audit quality, encouraging more intensive audits with high audit costs. Furthermore, Board size and firm age are also documented in the literature to substantially influence audit fees.

Regarding the variable measurements, the non-executive director is estimated with the percentage of non-executive board members to the total of corporate board members. The company leverage was calculated by dividing total debts by total assets. The big4 audit firm is estimated as with a value of 1 if the firm is audited by any of the big four, 0 if otherwise. The measure of board size is the total number of people on the governing board. Firm age is the number of years the firm has been in existence. Lastly, firm Size is measured as the natural log of total assets.

3.2. The empirical strategy and models

3.2.1. Baseline estimation

To examine the relationship between external audit fees and audit committee characteristics (Size, expertise, gender diversity, and audit committee meetings), the study employed a baseline multi-variate ordinary least square panel data regression with fixed effect wittingly to control for various unobservable time-invariant firm-level heterogeneity features that might potentially affect the empirical relation between the main variables of interest. Also, robust standard errors were introduced in the regression to control for possible serial correlation and hetreoscedacity issues. Following prior studies such as Nguyen et al. (2020), and Abbott et al. (2003), the baseline empirical model utilized in the study is expressed as in equation one below.

$$AF_0 = \beta_0 + \beta_1 ACS_{it} + \beta_2 ACE_{it} + \beta_3 ACG_{it} + \beta_4 ACM_{it} + \beta_5 FS_{it} + \beta_6 BS_{it} + \beta_7 BI_{it} + \beta_8 BIG4_{it} + \beta_9 F.Age_{it} + \beta_{10} Lev_{it} + \varepsilon_{it} + Yeardummy + Firmdummy \quad (1)$$

Where AF is audit fees, ACS is audit committee size; ACE is the audit committee financial expertise, ACG is the audit committee gender diversity, BS is the board size, ACM is audit committee meetings, BI is the board independence (non-executive director), Big4 is audit by the big four audit firm, F.Age is firm age, FS is firm Size, Lev is firm leverage, year dummy is year fixed effect and firm dummy is a firm fixed effect.

3.2.2. Addressing endogeneity concerns

To overcome the obvious concerns that the cost of audit may be endogenous and thus, the ordinary least square estimations outcome will be misleading or biased, the conventional two-stage least squares with instrumental variable (IV-2SLS) estimation was deployed to help address this concern. Audit fees, for instance, may be correlated with unobserved information determining the characteristics or compositions of the audit committee. Thus, endogeneity may arise due to simultaneity (i.e., the explanatory variable is also a function of the dependent variable). Specifically, the issue of simultaneity can surface when a firm's endogenic operations and financial characteristics are linked with the nature of monitoring and a consequent choice of the audit firm. An appropriate instrument variable is a variable that correlates with the explanatory variable but does not have direct effects on the dependent variable or the error term. Thus, two main instrumental variables (IV) model diagnosis tests were employed to ensure that this prerequisite condition for the IV model is met. These diagnostic tests are the Durbin-Wu-Hausman test for endogeneity and the Hansen test for over-identifying restrictions.

The null hypothesis of the Durbin-Wu-Hausman test posits that all the variables are exogenous, and thus, a rejection of the null confirms the presence of endogeneity and a probable need for instrument variable technique. The null hypothesis of the Hansen test for over-identifying restrictions submits that instrument is valid, and a rejection of the null means the instrument is not.

Additionally, the generalized panel method of moments (GMM) estimator was applied to ensure robustness and consistency of estimate from the IV technique. According to Wintoki et al. (2012), it may be appropriate to consider the dynamic panel GMM estimator in corporate governance research to alleviate endogeneity concerns. Endogeneity is an important concern in investigating the relation between audit committee characteristics and audit fees due to the endogenous nature of the variables, especially audit fees. Endogeneity may arise due to the dynamic nature of the relation (i.e., when current values of the explanatory variable are a function of past values of the dependent variable), which may also be a potential endogeneity concern in our study settings. The reason is that the previous year's external audit fees charged might substantially influence the current year's audit fees, *ceteris paribus*. Thus, the two-step GMM model was deployed to help mitigate this concern owing to its inherent advantage in curbing endogeneity rising from the dynamic nature of a relationship, plus other sources of endogeneity issues. The GMM model estimate is expressed in equation 2.

$$AF_{i,t} = \delta_0 + \delta_1 AF_{i,t-\tau} + \delta_2 ACM_{i,t} + \delta_3 ACS_{i,t} + \delta_4 ACE_{i,t} + \delta_5 ACG_{i,t} \sum_{n=1}^n \theta_j W_{n,i,t-\tau} + \eta_i + \xi_t + \varepsilon_{i,t} \quad (2)$$

Where $AF_{i,t}$ and $AF_{i,t-\tau}$ is audit fees and lag of audit fees of firm I at period t , respectively. δ_0 is a constant, and τ is the autoregression coefficient. ACS is the audit committee size, ACE is the audit committee financial expertise, ACG is the audit committee gender diversity, and ACM is audit committee meetings. W is also a vector of independent control variables to control the firm heterogeneity (BS is the board size, BI is the board independence (non-executive director), Big4 is an audit by the big four audit firm, F.Age is firm age, FS is firm Size, Lev is firm leverage). η_i represents firm-specific effect, ξ_t is also the time-specific effect and $\varepsilon_{i,t}$ is the error term.

4. Empirical results and discussion

4.1. Descriptive statistics

Table 1 shows that in Ghana, the Audit committee size ranges from 3 to 10 members, with an average of 4.62 and an average of 2 members of a committee of financial expertise, thus at least a degree in finance and accounting. The summary statistics show that companies listed on the stock exchange comply with Securities exchange commission rules which instruct that at least there should be three (3) members on the audit committee board. It was also found that members of the audit committee in some listed companies have one (1) minimum of one (1) member as a financial expert. In the meanwhile, all members in several other companies have that experience. However, table exhibits the average number of audit committee gender diversity of 21% of members. Some of the companies recorded 0.00% gender diversity which implies that there was no female on their audit committee. The minimum value of non-executive directors (board independence) for this study was 29 percent; the average meeting for the audit committee was barely five (5) times in a year. The average audit fee paid was GHS 252,891.00. Also, from Table 1, the minimum board size is 4 and a maximum of 12, with an average board size of 8.03 and a standard deviation of 1.813. The average firm age was 46.54 (minimum of 3 and maximum of 124), with a standard deviation of 24.539. The size of the firms averaged 8.522, a standard deviation of 0.902 (minimum of 6.648 and maximum of 10.12), while the average number of big4 firms was 0.859 with a standard deviation of 0.349 (minimum of 0 and maximum of 1). Furthermore, leverage has a minimum value of 0.022 and a maximum of 0.958, with an average of 0.602 and a standard deviation of 0.245. The minimum value of board independence of companies in the sample was 29%, with a maximum of 91%, with a corresponding average of 0.731 and a standard deviation of 14.547.

Table 1. Summary statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
Dependent variables					
AF (GHc)	308	252,891.00	6100.00	2905.00	2,675,000.00
Independent variables					
ACS	308	4.6209	1.142	3.00	10.00
ACE	308	2.0141	1.196	1.00	4.00
ACG	308	0.178	0.231	0.00	0.60
ACM	308	4.8072	6.132	4.00	14.00
Control variables					
BS	308	8.03	1.813	4	12
BI	308	0.731	0.145	0.29	0.91
F.Age	308	46.54	24.539	3	124
BIG4	308	0.859	0.349	0	1
FS	308	8.522	0.902	6.648	10.12
Lev	308	0.602	0.245	0.022	0.958

AF is audit fees, ACS is audit committee size, ACE is the audit committee financial expertise, ACG is the audit committee gender diversity, BS is the board size, ACM is audit committee meetings, BI is the board independence (non-executive director), Big4 is audit by the big four audit firm, F.Age is firm age, FS is firm size, Lev is firm leverage.

4.2. Correlation matrix

Correlation analysis was performed to check for possible multicollinearity issues among the variables. Table 2 shows the Pearson pair-wise correlation results between our main variables. All of the independent variables are significantly correlated with audit fees except firm age. Most importantly, there are some significant but weak correlations among the explanatory variables. In other words, the correlation among the independent variables was not strong except for the correlation between the dependent and independent variables. To be precise, among the explanatory variables, except audit committee size and board size, which have the highest correlation of 0.36, and no other correlation among the independent variables is greater than 0.27. According to Hair et al. (2009), serious multicollinearity exists if the correlation between two or more explanatory variables is above 0.8. Hence, in line with this assertion, it is concluded that the data or the variables do not suffer multicollinearity problems.

4.3. Regression analysis

Table 3 presents the baseline regression outcomes for the impact of audit committee characteristics on audit fees.

Model one and two of the regression results offered in Table 3 show simple pooled OLS estimator regression results with and without control variables, respectively. Models three and four show the regression outcome with fixed effects estimators. It is evident from the regression results that the R-squared improves significantly and with more filtered parameters in models 3 and 4, where the fixed effects and control variables were introduced. This finding implies that some observable factors and unobserved firm-level time-invariant factors, respectively, have significant explanatory power on the relationship and hence, are necessary for controlling for. Hence, the control variables and the firm fixed effects estimation help mitigate concerns that time-invariant unobservable factors cause the relation between audit committee characteristics and audit fees. It is evident from the outcomes in Table 3 that despite a fall in the value of the coefficients of the audit committee characteristics in models 3 and 4 (regression with controls variables and fixed effects), the direction of impact on audit fees remains consistently negative and significant across all the

Table 2. Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) AF	1.000										
(2) ACS	-0.093**	1.000									
	(0.043)										
(3) ACE	-0.016***	-0.007	1.000								
	(0.003)	(0.810)									
(4) ACG	-0.290***	-0.023	0.135*	1.000							
	(0.000)	(0.467)	(0.000)								
(5) ACM	-0.004*	-0.020	-0.036	-0.022	1.000						
	(0.079)	(0.515)	(0.246)	(0.475)							
(6) BS	0.035*	-0.360*	-0.075*	-0.025	-0.040	1.000					
	(0.056)	(0.004)	(0.016)	(0.425)	(0.200)						
(7) BI	0.061**	0.008	0.044	-0.006	-0.028	0.069*	1.000				
	(0.040)	(0.795)	(0.152)	(0.841)	(0.368)	(0.025)					
(8) F.Age	-0.029	0.034	-0.047	0.024	-0.012	-0.046	-0.004	1.000			
	(0.355)	(0.269)	(0.127)	(0.446)	(0.693)	(0.138)	(0.895)				
(9) BIG4	0.003***	0.036	-0.025	0.019	-0.011	-0.104*	-0.043	-0.016	1.000		
	(0.012)	(0.250)	(0.418)	(0.540)	(0.725)	(0.001)	(0.164)	(0.615)			
(10) FS	0.139*	0.077*	0.138*	0.053	-0.014	-0.272*	0.028	0.024	0.033	1.000	
	(0.000)	(0.013)	(0.000)	(0.085)	(0.642)	(0.000)	(0.371)	(0.435)	(0.291)		
(11) Lev	0.028*	-0.122*	-0.142*	0.092*	-0.031	0.649*	0.108*	-0.070*	-0.234*	-0.349*	1.000
	(0.073)	(0.000)	(0.000)	(0.003)	(0.312)	(0.000)	(0.000)	(0.024)	(0.000)	(0.000)	

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. AF is audit fees, ACS is audit committee size, ACE is the audit committee financial expertise, ACG is the audit committee gender diversity, BS is the board size, ACM is audit committee meetings, BI is the board independence (non-executive director), Big4 is audit by the big four audit firm, F.Age is firm age, FS is firm size, Lev is firm leverage.

model specification. By implication, on average, a unit increase in the respective audit committee characteristics will result in a corresponding individual decrease in audit fees, all things being equal.

Specifically, conferring to model 4, a unit increase in audit committee size will result in a 0.191 unit decrease in audit fees, indicating that audit fees are relatively lower in companies with larger audit committee sizes. By implication, the large size of the audit committee makes it more effective in ensuring intensive control, which goes a long way to reduce the audit effort (risk) and, consequently cost of external audit. The results support hypothesis 1, which states that there is a negative relationship between audit committee size and audit fee. The results are consistent with prior studies such as Sultana and Van der Zahn (2015) and Farooq et al. (2018), who argue that a higher range of audit committee size has the power to handle companies' problems in an economical and effective method. However, this finding contrasts with the finding of such as Bédard and Gendron (2010); and Vafeas and Waagelein (2007), who documented a positive relationship between audit committee size and audit fees.

Regarding audit committee financial expertise, an increase in the number of financial experts on the audit committee will lead to a corresponding decrease of 0.320 units in audit fees paid to external auditors. The results suggest that audit committee members with financial and accounting skills and expertise assist the audit committee in developing more effective internal control and risk management processes which eventually reduces the workload of the external auditor and fees. By implication, audit fees are comparatively lower in companies with at least one member with accounting or finance expertise. The results also affirm hypothesis 2, which asserts that there is a negative relationship between audit committee financial expertise and audit fee. The study results are consistent with the study of the finding of Kee (2015) and Mat Yasin and Puat Nelson (Mat & Puat, 2012), who posit that audit committees with more financial expertise tend to pay lesser external audit fees. In contrast, this finding disagrees with previous studies that established a positive relationship between audit committee expertise and audit fees (Suryanto et al., 2017; Asiriwa et al., 2018).

Concerning audit committee gender diversity, the results in model four also reveal that a percentage increase in the number of females on the audit committee will lead to a corresponding 0.212 unit decrease in audit fees paid to external auditors. We interpret the results as female presence in the audit committee reinforces the audit committee's monitoring activities which causes a decrease in demand for audit effort and hence, a fall in audit fees. Thus, firms with more females on audit committees tend to pay lower audit fees to external auditors. Similarly, this result agrees with hypothesis 3, which states that there is a negative association between audit fees and audit committee gender diversity. The study results are also consistent with Thiruvadi (2012), Xiang et al. (2015), and others who documented that audit committees made up of men and women incur significantly smaller audit fees. However, this finding contradicts the result of Miglani and Ahmed (2019) and others, who also find a positive and significant relationship between audit committee diversity and audit fees.

Additionally, the audit committee meetings have a negative but insignificant impact on audit fees, indicating that the committee's frequent meetings may facilitate it to ensure robust internal monitoring to prevent fraudulent practices, which might go a long way to reduce the demand for audit effort and the cost of the audit. This finding from the fixed effect setting is contrary to the pooled ols outcome, where a statistically significant positive relationship is found between audit committee meetings and audit fees. We interpret the difference in results as suggesting possible endogeneity issues, which both models, especially the OLS, don't account for. Thus, the results should be interpreted with caution, and additional robustness tests should be carried out.

The results of the control variables also offer some valuable insights. The results revealed that board size, board independence, Big4 audit firms, firm size, and firm leverage have a positive

Table 3. Baseline regression results

Audit Fees	Model	Model	Model	Model
	(1)	(2)	(3)	(4)
ACS	−0.530*** (0.021)	−0.241*** (0.053)	−0.196*** (0.007)	−0.191*** (0.008)
ACE	−0.411*** (0.004)	−0.404*** (0.062)	−0.321*** (0.002)	−0.320*** (0.004)
ACG	−0.322*** (0.009)	−0.274** (0.096)	−0.201** (0.109)	−0.212** (0.106)
ACM	0.122*** (0.029)	0.039** (0.013)	−0.016 (0.018)	−0.028 (0.025)
BS		0.024*** (0.006)	0.037*** (0.010)	0.131*** (0.018)
BI		0.036*** (0.008)	0.019** (0.009)	0.028** (0.014)
F.Age		−0.023 (0.066)	−0.032 (0.046)	−0.004 (0.002)
BIG4		0.406*** (0.111)	0.512** (0.139)	0.555** (0.140)
FS		0.028* (0.015)	0.027** (0.011)	0.024** (0.012)
Lev		0.042*** (0.010)	0.063*** (0.013)	0.115*** (0.013)
Constant	0.140** (0.070)	0.472*** (0.048)	0.512*** (0.046)	0.172** (0.068)
Obs.	308	308	308	308
R-squared	0.383	0.446	0.587	0.596
Year FE	NO	NO	NO	YES
Firm FE	NO	NO	YES	YES

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. robust errors are in parenthesis. AF is audit fees, ACS is audit committee size, ACE is the audit committee financial expertise, ACG is the audit committee gender diversity, BS is the board size, ACM is audit committee meetings, BI is the board independence (non-executive director), Big4 is audit by the big four audit firm, F.Age is firm age, FS is firm size, Lev is firm leverage.

association with audit fees, whereas firm age has a negative relation with audit fees. Specifically, we find consistent evidence that audit fees are significantly higher in larger firms, firms that use the big four audit firms, and firms that are high leverage. Furthermore, audit fee is found to be high in firms with large board size and firms with more independent board members. These outcomes are consistent with prior studies, such as the findings from Farooq et al. (2018) and (2004) Kane and Veluri (2004), who also reported that board size, board independence, big4, firm size, and audit fees have a positive relationship. However, firm age was found to be statistically insignificant on audit fees in this study, indicating that external audit fees are not influenced by the age of firms (experience) in Ghana. This outcome supports the study finding of Nguyen et al. (2020), who also finds no statistical influence of firm age on auditor choice.

4.4. Robustness test

To ensure the robustness of the results obtained from the baseline regression of audit committee characteristics on audit fees, alternative estimation techniques or models that are robust to endogeneity concerns were deployed. Thus, to address this probable endogeneity, the study first employed an instrumental variable two-stage least square model.

Following Simunic's (1980) theory which states that audit fees are determined by the cost of allocating resources to execute an audit, the amount of inventory and account receivables were utilized as an instrument for audit fees. This is because the size of a firm's inventory or receivables are exogenous variables that strongly affect the cost of the firm's external audit but have no direct effect on the characteristics of the firm's audit committee. Hence, the selection of the variables, size of inventory, and account receivables meet the appropriateness requirement for instrumental variables.

Table 4, column one, reports the results of the instrumental variable two-stage least square estimator (IV-2SLS). Overall, the results of the IV-2SLS are largely consistent with the findings

Table 4. Robustness test results- mitigation of endogeneity concerns

Audit Fees	Model (1)	Model (2)
	IV-2SLS	GMM
ACS	-0.055*** (0.010)	-0.051*** (0.007)
ACE	-0.021*** (0.003)	-0.034** (0.016)
ACG	-0.020** (0.010)	-0.013** (0.005)
ACM	-0.038** (0.008)	-0.036** (0.008)
LAG_AF		0.357*** (0.096)
BS	0.011** (0.005)	0.043** (0.019)
BI	0.018*** (0.002)	0.021*** (0.006)
F.Age	-0.015** (0.006)	-0.013** (0.006)
BIG4	0.086*** (0.013)	0.071*** (0.017)
FS	0.048*** (0.016)	0.053*** (0.013)
Lev	0.021*** (0.002)	0.036*** (0.006)
Constant	0.234*** (0.060)	0.343*** (0.058)
Obs.	308	308
R-squared	0.579	0.581
Specification test		
Durbin-Wu-Hausman test	0.000	-
AR (1)	-	0.0310
AR (2)	-	0.8972
Hansen test	0.2611	0.2530
Difference-Sargan tests	0.1301	0.2322

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. standard errors are in parenthesis. AF is audit fees, ACS is audit committee size, ACE is the audit committee financial expertise, ACG is the audit committee gender diversity, BS is the board size, ACM is audit committee meetings, BI is the board independence (non-executive director), Big4 is audit by the big four audit firm, F.Age is firm age, FS is firm size, Lev is firm leverage.

of the baseline models (pooled OLS and fixed-effects estimators), which indicates that an increase in the characteristics of the audit committee will result in a fall in external audit fees by reducing the external audit effort through better supervision. However, the only notable variation is in audit committee meetings and firm age, where the estimated parameters now become negative and statistically significant, as revealed in Columns (1) of table four, showing higher frequency of audit committee meetings and older firms are associated with lower audit fees. It is worth noting that the model diagnostic or specification test indicates that the inventory size is a valid instrument, as shown by the probability value of the Hansen test. Thus, using the variable inventory as an instrumental variable was appropriate in addressing the presence of endogeneity confirmed by the significance of the Durbin-Wu-Hausman test. Hence, the model is identified.

In addition to the IV-2SLS, the two-step GMM estimator was also implemented as an alternate approach to dealing with the probable endogeneity concerns to ensure the robustness of the results obtained from the endogeneity technique. To estimate the two-step GMM, first, equation one was expanded by including lagged audit fees as an independent variable, as shown in equation two of section three, to make the model dynamic. Then the system of two equations enshrined in the Arellano-Bond system GMM estimator was applied. The system of equations transforms the dynamic model into level form and first difference form using specifically the lagged values of the endogenous variables as instruments. We utilize four-period lags of endogenous variables as instruments in our estimation.

Results from the dynamic system GMM estimation are offered in column two (2) of Table 4. The results are consistent with the outcome of the IV-2SLS though the coefficient of the GMM estimator seems more filtered. Overall, we continue to find a significantly negative coefficient on audit fees, implying that the negative relation between audit committee characteristics and audit fees holds after controlling for endogeneity based on the dynamic two-step GMM estimator. The model specification or diagnostic test suggests that our model is identified and the instrument is valid, as shown by the insignificant value of the Hansen and difference-in-Sargan test of exogeneity. Moreover, the probability value of the Arellano-Bond second-order autoregressive AR (2) test confirms that the model estimates are consistent and do not suffer serial correlation issues.

In sum, the direction and magnitude of the coefficients for the IV-2SLS and two-step GMM estimations are consistent and in line with the study hypotheses indicating that the audit committee characteristics are indeed significantly negatively related to audit fees. However, the findings of the baseline regression differ slightly from the two-step approaches (IV-2SLS and GMM), particularly for the pooled OLS regression, where the audit committee meeting was statistically positive, which is contrary to that of the IV-2SLS and GMM. The disparity is due to the endogeneity in the audit fees and audit committee characteristics (audit committee size, expertise, gender diversity, and audit committee meetings) relationship, which the OLS model does not account for.

4.5. Sensitivity test

To draw further inferences on the relationship between the audit committee characteristics and audit fees, we perform a sensitivity analysis by grouping the total sample into two main groups: financial firms and non-financial firms, to check how the relationship may vary across industries. The two-step model approach (IV-2SLS and two-step dynamic GMM) are re-run for the respective groups owing to their inherent capacity to account for endogeneity. The results for the subsample analysis of financial and non-financial firm grouping are presented in Table 5 below. The same control variables were included in the respective regressions but were not reported for brevity's sake. The results based on the subsamples indicate consistent audit committee characteristics reducing the cost of audit in both the financial and non-financial firms. However, the magnitude of the impact of audit committee characteristics on

Table 5. Further test-sensitivity analysis based on financial and non-financial firms

	Financial firms		Non-financial firms	
	IV-2SLS (1)	GMM (2)	IV-2SLS (1)	GMM (2)
ACS	-0.048** (0.023)	-0.041** (0.019)	-0.021** (0.010)	-0.032** (0.015)
ACE	-0.071*** (0.011)	-0.066*** (0.018)	-0.064** (0.028)	-0.058** (0.053)
ACG	-0.023** (0.009)	-0.033** (0.014)	-0.021* (0.011)	-0.029* (0.015)
ACM	-0.018** (0.009)	-0.021** (0.010)	-0.014** (0.007)	-0.017** (0.008)
CONTROLS	YES	YES	YES	YES
Obs.	111	111	197	197
R-squared	0.422	0.475	0.401	0.444
Specification test				
Durbin-Wu-Hausman test	0.000	-	0.000	-
AR (1)		0.0220		0.0280
AR (2)		0.7361		0.7012
Hansen test	0.2314	0.2613	0.2361	0.2510
Difference-Sargan tests	0.2243	0.2561	0.2402	0.2684
Coefficient difference test between the financial and non-financial firms				
ACS	chi2 (1) = 4.021		Prob > chi2 = 0.0341**	
ACE	chi2 (1) = 6.031		Prob > chi2 = 0.0124**	
ACG	chi2 (1) = 5.036		Prob > chi2 = 0.0214**	
ACM	chi2 (1) = 3.033		Prob > chi2 = 0.0424**	

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors in parenthesis. The difference in coefficient test was reported only for the gmm estimation.

audit fees is found to be more pronounced in financial firms than the non-financial firms, as shown by the significance values of the difference in the coefficient test. We interpret the revelation of our results as suggesting that firms in strongly regulated industries (financial institutions or firms) incur lower audit costs. This is because the presence of effective audit committees coupled with the high regulatory presence in these industries, which functions fairly like additional controls, causes an increase in internal control, lowering the relative audit effort required to execute the audit and, thus, reducing the service fees.

5. Conclusion and recommendations

The study sought to examine the impact of audit committee characteristics on audit fees in the sub-Saharan region using the case of listed companies in Ghana. The study sample comprises 25 listed companies on the Ghana stock exchange from 2008–2019. The study utilized a different set of empirical specifications on standard panel data. Applying specifically the IV-2SLS and two-step dynamic GMM estimators, which are robust to endogeneity issues, the study document that the audit committee characteristics, size, meeting, expertise, and gender diversity have a significantly negative impact on audit fees as hypothesized. We interpret our results as supporting the assertion that audit committees help internal auditors by facilitating their work and strengthening internal controls. Thus, the audit committee replaces the external auditors in monitoring management, lowering audit fees by reducing the firms' audit efforts. In other words, our results suggest that the increment in the audit committee characteristics (specifically financial expertise, size, diversity, and meeting) solidify the committee in ensuring effective internal control, lowering the required audit effort and cost. The study also finds that the magnitude of audit committee characteristics' impact on audit fees is more pronounced in financial firms than non-financial firms. We interpret this insight as suggesting that highly regulated firms such as financial firms with audit committees incur relatively lower audit costs.

To this end, the study's overall finding offers further insight into the relationship between the external auditor, management, and the audit committee in the financial reporting process. Specifically, as a contribution, it sheds light on the inconclusive association between audit committees and audit fees by adopting a more robust model like the panel generalized method of moments (GMM) model and IV-2SLS to mitigate the probable endogeneity problem between the various variable of interest of which the extant literature condone. Moreover, the findings offer useful information to business leaders and policymakers since it advances our awareness of the dynamic relationship between audit committee characteristics and audit fees, which may inspire revolutions in management methods and legislative laws linked to corporate governance mechanism and financial reporting systems.

Accordingly, the researchers recommend that firms prioritize gender diversity and financial expertise in a large audit committee size with frequent committee meetings to ensure adequate oversight leading to a lower cost of external audit. This is because a large, gender-diversified audit committee with financial expertise enhances the committee's monitoring role on financial reporting, which reduces the company's risk level and the amount paid for a quality audit.

Our study, like any other, has some limitations that may open the door for future related lines of research. First, the boundary of this study limits the finding of this study to Ghana. Therefore, future research can conduct a comparative study of Ghana with other developing or African countries. This kind of study will be useful to see the influence of institutional setting on the level of audit efficiency. Moreover, these studies will help explain how diverse regulatory requirements affect the level of audit efficiency in a different institutional settings. Lastly, the study mainly describes audit committee characteristics from four perspectives: size, financial expertise, gender diversity, and audit committee meetings, but the such description may not be

comprehensive enough. As such, it is recommended that future studies capture other characteristics like the ethnicity and age of audit committee members.

Funding

The authors received no direct funding for this research.

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Disclosure statement

The authors reported no potential conflict of interest.

Citation information

Cite this article as: The impact of audit committee characteristics on audit fees: evidence from Ghana, Millicent Selase Afenya, Benedict Arthur, Williams Kwarteng & Pious Opoku, *Cogent Business & Management* (2022), 9: 2141091.

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