Women on boards, firm earnings management (EM) and performance nexus: does gender diversity moderate the EM–performance relationship?

Emmanuel Mensah and Joseph Mensah Onumah

Abstract

Purpose – *This paper aims to shed light on an essential role that "female directors" on boards of companies in sub-Saharan Africa play towards corporate financial performance enhancement. The study observes how board gender diversity moderates the relationship between earnings management (EM) and financial performance of firms in sub-Saharan Africa from a dynamic perspective.*

Design/methodology/approach – *The study's sample comprises 105 companies listed on the respective stock markets of nine sub-Saharan African countries. The data are collected from annual reports over the period 2007–2019, a total of 1,166 firm-year observations. Panel data models are used in the analyses.*

Findings – *The study finds that the performance effect of EM is contingent on board diversity and this finding persists even after controlling for dynamic endogeneity, simultaneity and unobserved time-invariant heterogeneity inherent in the EM and performance relationship.*

Research limitations/implications – *The findings should be understood within the context that, only available annual reports and audited financial statements that were filed with respective capital markets of the nine surveyed countries are used as source of information.*

Originality/value – *The current study is unique, in that, it is the first panel multi-cross-country investigation within Africa to introduce gender diversity in the study of the relationship between EM and firm performance. It therefore extends the agency theory by using gender diversity as a moderating variable in the EM–firm performance nexus.*

Keywords *Earnings management, Board gender diversity, Firm performance, Dynamic modelling, Sub-Saharan Africa*

Paper type *Research paper*

Emmanuel Mensah is based at the Department of Accounting, University of Professional Studies, Accra, Ghana. Joseph Mensah Onumah is based at the Department of Accounting, University of Ghana, Accra, Ghana.

1. Introduction

Boardroom gender diversity has been a topical issue in recent times in the board and governance literature, which spells out various functions of a well-diversified board (Mukarram *et al.*, 2018). The effort to improve gender diversity in the corporate workforce has been gaining momentum in many parts of the world owing to the acclaimed recognisable qualities and attributes females bring on the table (Mathisen *et al.*, 2013), which leads to better decision-making (Davies, 2011). In addition, self-evident social justice view is that a gender-diverse board is a step towards equal opportunities for females at the upper echelons of the firm (Dowling and Aribi, 2013). Some studies in the past have suggested that female directors tend to have a positive effect on a number of corporate outcomes, performance and stock price informativeness (Carter *et al.*, 2003; Gul *et al.*, 2011, 2013; Srinidhi *et al.*, 2011; Kirsch, 2018). Galbreath (2011) argued that gender-diverse boards are more efficient in monitoring of

JEL classification – C33, C38, G30, G34, M41

Received 16 June 2022
Revised 12 November 2022
Accepted 30 December 2022

The authors gratefully acknowledge the journal editors and anonymous reviewers who offered constructive comments and suggestions towards enhancing the quality of their paper.

agents and ensuring that firms maintain ethical standards, thus minimising the ineffective use of shareholders' funds that can be misused (Galbreath, 2011). On the contrary, some other studies such as Adams and Ferreira (2009) find an ambiguous effect of female directors on firm performance, whereas Vuong (2021) found the representation of women on boards to contribute to managerial opportunism. The empirical evidence, therefore, regarding the benefits of a having a gender-diverse board, and particularly the role of gender diversity in monitoring managerial behaviour, as well as the effect of board gender diversity on firm performance, is still emerging and has largely been mixed (Arioglu, 2020; Triki Damak, 2018), which gives the impetus for further investigations.

The role of the board in ensuring that corporate strategic objectives aimed at delivering value to its varied stakeholders are met requires them to bring on board diverse skills, including superior monitoring skills on managerial behaviour to minimise opportunism and promote interest alignment. Corporate board members have different characteristics such as beliefs, personalities, gender, ethnicity and qualification, along with unique attributes, skills and experience sets which they bring to bear on their roles in the boardroom. These characteristics, particularly gender, with its attendant attributes may be able to explain the superior monitoring abilities of boards particularly with respect to earnings management (EM) monitoring towards firm performance enhancements. The influence of women directors on board roles and corporate outcomes, including monitoring a firm's EM practices to enhance performance, deserves theoretical and empirical investigation, because of the emphasis being placed on board room gender diversity as a part of good corporate governance (CG; Adams and Ferreira, 2009; Cumming *et al.*, 2015; Nguyen *et al.*, 2020). Moreover, the phenomenon of managerial EM behaviour which have been noted to occur in firms (Beneish, 2001) can have devastating consequences if it is opportunistically deployed (Healy and Wahlen, 1999; Cimini, 2015), and hence the need for monitoring to limit managerial behavioural excesses. Herein come women directors on boards, who are generally noted to possess superior monitoring abilities and characteristics (Zalata *et al.*, 2019b, 2021).

EM is a persistent financial reporting phenomenon that occurs in every capital market (Beneish, 2001). EM occurs when managers exercise discretion over the accounting numbers either within or without the confines of GAAP. Prior research work on the phenomenon of EM have identified the practice of managerial EM to have a significant effect on the "bottom-line profits" of a firm which often bubbles up in devastating accounting scandals and collapse of businesses (see, e.g. Enron, WorldCom, Tyco, Arthur Andersen, etc.). EM is usually deployed either efficiently when it positively impacts performance, or opportunistically when it negatively impacts performance, with the extant literature documenting largely of opportunistic motives of EM practices. This has raised the demand for research on the reasons for manipulating accounting figures and their effect on performance as well as measures to limit the practice of EM (Cimini, 2005; Filip and Raffournier, 2014). This study therefore seeks to contribute to the debate on the role that a gender-diverse board plays towards constraining EM practices of firms and consequently enhance firm performance, using samples from Anglophone sub-Saharan Africa. The setting for the conduct of this study was motivated by the fact that most African countries are not pro-diversity, and in many instances, women are largely marginalised (Boadi *et al.*, 2022). In addition, progress in terms of gender diversity on corporate boards has been slow and rife with tokenism in spite of the fact that gender equality or equity has featured prominently on the global development agenda for more than two decades (Sotola, 2019). Investigating the role that a gender-diverse board plays in terms of limiting managerial opportunism in corporations within sub-Saharan Africa is envisaged to ignite the awareness and universal appeal for gender-diverse boards in African firms. The motivation of this research may be summed up in two essential questions:

Q1. Does gender diversity matter in the EM–firm performance relationship?

Q2. What role does gender diversity play in the EM–firm performance relationship?

The relationship between EM and firm performance has been widely researched usually from the perspective of agency theory using static frameworks. However, the dynamic nature of this relationship is largely unknown and poorly understood in African markets and elsewhere. The current study, therefore, reinvestigates the causal relationship between EM and performance predicted by the traditional agency theory from a dynamic perspective under the premise that EM and CG mechanisms are by construction dynamically related to firm performance [1]. This dynamic nature implies that the current EM, CG structures and performance of a firm are affected by past performance (Wintoki *et al.*, 2012). The causality may also run in the opposite direction, i.e. from past performance to current governance structures and EM. This is recognised as another source of endogeneity called dynamic endogeneity (Wintoki *et al.*, 2012; Nguyen, 2015a). With the presence of potential dynamic endogeneity, simultaneity and reverse causality in view, we question the efficacy of EM in contributing to firm performance once its dynamic nature is taken into consideration, while at the same time examining the role gender diversity plays in this nexus. By examining the role that gender diversity plays in the EM–firm performance nexus, we hope to shed some light on the ability of female directors to curb opportunistic behaviour of management including EM. Opportunistic EM practices send a negative signal to market participants on the financial health and future growth prospects of the firm, thereby eliciting a negative response from investors and creditors who cut back on their investments with the firm. With the firm experiencing hard capital rationing or financing constraints, it is unable to exploit real opportunities for growth and, consequently, its current and long-term performance suffers. However, with the monitoring and constraining effect of board gender diversity on opportunistic EM, efforts by managers to enhance profitability are undertaken by increasing the operational activities of the firm. Increased corporate operational activities invariably contribute towards corporate performance enhancement, which also inures to the benefit of both managers and shareholders (Mahrani and Soewarno, 2018). Alternatively, the mechanism through which constrained EM would lead to firm performance enhancement could be explained as follows: the monitoring effect of board gender diversity elicits efficient EM practices from managers such as smoothing or postponing real earnings recognition to influence the total corporate tax burden; this sends a positive signal to market participants on a healthier management of the financial state of the firm; investors and creditors extend more investible funds to the firm, thus allowing the firm to exploit real opportunities for growth and enhancement of its financial performance.

The present study is novel in several ways:

- It is the first multi cross-country investigation within Africa to introduce gender diversity in the study of the relationship between EM and firm performance. Panel investigations of the phenomenon of EM and its attendant effects have largely been non-existent within the African context, hence our contribution in this regard.
- It is one of the few studies of this nature to use a dynamic modelling approach in its investigation under the premise that the EM–firm performance relationship is by construction dynamic. This study further contributes to knowledge in this subject area by observing the moderating role of board gender diversity in the EM–firm performance relationship.
- The study also observes that, besides the performance effect of EM being contingent on board–gender diversity within static frameworks, this effect still persists even after controlling for dynamic endogeneity, simultaneity and unobserved time-invariant heterogeneity inherent in the EM and firm performance relationship, which further enhances our understanding in this area. Besides, by doing so, our study also responds to calls from prior researchers in this area for using dynamic panel models in corporate finance, reporting and governance research (Flannery and Hankins, 2013; Tang and Chang, 2013; Wintoki *et al.*, 2012; Zhou *et al.*, 2014).

- The study's findings support the prediction of agency theory regarding the efficient monitoring effect of a gender-diverse board in constraining EM practices, and consequently enhancing the performance of firms.

The structure of the remainder of this paper is as follows. A brief background of the setting and context within which the study was conducted is presented in Section 2. A theoretical literature review is presented in Section 3, followed by an empirical literature review from which research hypotheses are developed in Section 4. Section 5 details the research design, followed by the study's empirical results and discussion in Section 6. Section 7 presents the summary and conclusions indicating the study's limitations with some suggestions for future research.

2. Study background and context

As already noted, the study focuses its investigation on the unique context of Anglophone sub-Saharan African economies that have largely been absent from cross-country panel EM investigations (Callao *et al.*, 2014a, 2014b). Developing countries within sub-Saharan Africa, which are predominantly Anglophone, share similar characteristics. All of them have their CG codes patterned after South Africa's King Report I, II or III (Mangena and Chamisa, 2008; Waweru and Ntui, 2018). In addition, all of them being former British colonies belong to the British Commonwealth of States and have their legal systems originate from British common law. These countries usually uphold certain common values, and have ties that bind them together, for example, adhering to Uniform Corporate Governance Principles such as those promulgated by the Commonwealth Association for Corporate Governance (CACG). Furthermore, many rich and diverse cultures are to be found throughout the Commonwealth countries. However, all have standard features, which means that consensus on a global scale is more easily achieved than among equally diverse countries that do not enjoy such commonalities. It is in this regard that the CACG is better placed to harness the unique characteristic of "commonwealthness" to facilitate the communication and promotion of gender diversity on corporate boards amongst various nations across the globe, and particularly within Anglophone sub-Saharan African countries whose cultural history is inclined towards masculinity, and as such, their corporates are not pro-gender diversity. Even in countries where the political history has encouraged diversity and a more equal role for women on corporate boards such as South Africa, the practice of female representation on corporate boards is still plagued with tokenism (Sotola, 2019). A study such as the current one would thus serve to give more impetus for gender advocate institutions such as the CACG to advance their advocacy and policy conversations on the topic of gender equality and equity on corporate boards of African firms. This role of the Commonwealth is especially significant in the current process of globalisation (see also Cumming *et al.*, 2017). Besides, the findings of the current study would serve to strengthen reform efforts aimed at creating a culture that is pro-gender diversity within sub-Saharan Africa.

It has long been observed that, while some African economies have moved further ahead than others in adopting some policies or programs to address the paucity of women in the ranks of corporate decision makers, there are still far too many who have yet to realise that this is even an issue (Navitidad, 2015). There is a general lack of commitment to women empowerment in Africa as observed by the survey of the African Development Bank (AfDB) reported by Navitidad (2015). Many also commented on the lack of regional information even on the arena of women in the private sector, let alone women in senior management and corporate directorship. The report notes that, before any strategy is undertaken to improve women's access to corporate leadership, data needs to be provided to see precisely the current status of women in these positions. Statistics reported by the AfDB survey relating to women on corporate boards in Africa show that Kenya has the highest percentage of women directors on corporate boards with 19.8%. South Africa, Botswana, Zambia and Ghana follow with above-average percentages of 17.4%, 16.9%, 15.9% and 15.7%, respectively. Cote d'Ivoire has the lowest percentage (5.1%), while the three North African countries of Egypt (8.2%), Tunisia (7.9%) and Morocco (5.9%) had slightly higher

percentages. Tanzania (14.3%), Uganda (12.9%) and Nigeria (11.5%) hover around the continental average of 12.7%. The report acknowledged certain key barriers to women integration into corporate boards in Africa comprising:

- the informal process of making board appointments that are largely based on the proverbial "old boy" networks, fed by family, clan, school and business relations;
- the lack of understanding of the necessity and benefits of a diverse board;
- infantile CG systems without transparent nomination processes; and
- weak regulatory enforcement of current guidelines that often render applying additional regulations difficult.

In view of these challenges, the AfDB study makes recommendations for baseline research on the status and contribution of women on boards, as well as incorporating gender quotas on corporate listing requirements, coupled with having mandates for women directors as part of corporate strategy. The current study seeks to make a contribution in the line of baseline research which highlights an essential role that women on corporate boards in Africa play with respect to EM monitoring towards firm performance enhancements, as part of the advocacy for diversity on corporate boards.

3. Theoretical literature review

Conceptually, EM may be defined as the process of taking deliberate steps within the constraints of generally accepted accounting principles to bring about the desired level of reported earnings (Davidson *et al.*, 1988). EM may be opportunistic or firm value enhancing depending on how managers use it (Rezaei and Roshani, 2012). The agency theory by Jensen and Meckling (1976) underscores the essential role of effective CG systems (Proimos, 2005) in mitigating agency problems such as opportunistic EM (Krishnan, 2003; Shen and Chih, 2007; Cornett *et al.*, 2009) or managerial mischief (Nyberg *et al.*, 2010) arising from the separation of ownership and control. The monitoring role of CG actors such as females on the board, independent commissioners and good external auditors have been noted to constrain fraudulent actions by companies such as opportunistic EM, which results in favourable performance consequences (Mahrani and Soewarno, 2018). Krishnan (2003) observed that CG mechanisms play a crucial role in constraining opportunistic EM and influencing the type of EM used. CG mechanisms, and particularly, gender diversity, thus play an important role in investigations of EM and its attendant effect on firm performance.

Theoretically, female representation on corporate boards has been argued to bring balance in perspectives in decision-making in the boardroom, provide effective monitoring on board governance, curb opportunistic behaviour and improve corporate performance both in the private (Khidmat *et al.*, 2022) and public sectors (Abanga *et al.*, 2022). Catalyst (2004) argues that firms with gender-diverse boards produce better financial results. Diversity in skills, knowledge and experience is recognised as a prerequisite for better decision-making, which ultimately affects a firm's "bottom-line" favourably. The mechanism or conduit via which board gender diversity could affect firm performance may also be through its EM monitoring (Low *et al.*, 2015; Zalata *et al.*, 2021).

Board gender diversity can be supported by using various theoretical perspectives. The critical mass theory indicates that when a sub-group of people (in this case, females on the board) reaches a certain critical mass in terms of size, then, that is when that sub-group may be able to affect the decisions of the group as a whole (Torchia *et al.*, 2011). Women on corporate boards can be divided into four common groups based on the work of Kanter (1977) as follows: uniform groups (0% women), skewed groups (up to 20% women), tilted groups (20%–40% women) and balanced groups (40%–60% women). The "critical mass" of

women directors has generally been measured based on the number of women on boards (at least three female board members) (Torchia *et al.*, 2011) or the percentage (about 30% of women on boards) (Joecks *et al.*, 2013). Some studies such as Kristie (2011) and Liu *et al.* (2014) have suggested under critical mass theory that, having one female member on a corporate board may be considered as "a token", having two female members on the board may be considered as "presence" and having three female members on a corporate board may be considered as "voice". This implies that under the critical mass theory perspective, women on corporate boards can have a positive impact on firm performance only if there is a sufficient number of women on boards such that they can have real influence on board decisions (Torchia *et al.*, 2011). Studies supporting the critical mass theory (Torchia *et al.*, 2011) find that the relationship between women on boards and accounting performance has changed from negative to positive in firms that have increased their women on boards proportion from below to equal or more than 30% (Arena *et al.*, 2015; Elmagrhi *et al.*, 2018; Joecks *et al.*, 2013; Wiley and Monllor-Tormos, 2018; Gharbi and Othmani, 2022). It is worth noting, however, that the critical mass of women on corporate boards for a positive impact on corporate outcomes is still an ongoing theoretical and empirical debate because existing studies from different contexts have shown different results, such as critical mass being 20% rather than 30% (Gröschl and Arcot, 2014). Interestingly, no African country, not even Kenya which has the highest women representation on its corporate boards (i.e. 19.8%), meets the baseline critical mass threshold of 20% advanced in the literature.

Besides the critical mass theory, several other theories have been used to explain women on corporate boards. According to agency theory, the board is entrusted with the monitoring of management actions to reduce agency problems (Finegold *et al.*, 2007; Reguera-Alvarado *et al.*, 2017). Female directors add another facet to the oversight lens because the diversity of backgrounds is argued to increase effectiveness in monitoring (Low *et al.*, 2015). The effectiveness in the monitoring abilities of a gender-diverse board is expected to limit or moderate EM practices and translate to enhanced performance. On the other hand, other studies (Carter *et al.*, 2010; Chapple and Humphrey, 2014) show that agency theory does not directly support the view that women on boards can necessarily have a positive effect on corporate outcomes. Thus, women on boards may have a positive, negative or even no effect on firm performance (Labelle *et al.*, 2015; Marinova *et al.*, 2016). Stakeholder theory suggests that the board should look after the interests of not only the shareholders but also other stakeholders, for example, customers, employees, suppliers and other parties that are of importance to the firm (Finegold *et al.*, 2007). Female directors exhibit increased sensitivity to social and environmental concerns, and it is, therefore, expected that firms will perform better in these areas, which will increase the firms' reputation (Finegold, 2007). Moreover, resource dependence theory argues that female directors on boards tend to enhance board human and relational capital, and provide better understanding especially about female consumer markets, as well as wider and sustained ties with external parties (Carter *et al.*, 2003; Hillman and Dalziel, 2003). Besides, legitimacy theory suggests that by adopting more gender-diverse boards, firms can respond to the pressures from institutional investors and labour markets, and attain increased legitimacy and business advantages (Singh *et al.*, 2007). This, in turn, can strengthen firm performance. Lastly, from a behavioural theoretical perspective, prior studies indicate that female directors are more sensitive to ethical issues (Bernardi and Arnold, 1997) and exhibit greater risk aversion (Sunden and Surette, 1998) and have better board meetings attendance record (Adams and Ferreira, 2009) than male directors. Female board participation is likely to create formal and informal discussions between board of directors and results in greater accountability for managerial decisions (Adams and Ferreira, 2009). Further, female board participation can assist boards to benefit from a wide pool of talent by bringing different skills and experiences into the boardroom, including soft, but intelligent feminine beliefs, emotions, experiences, feelings and values (Elghuweel *et al.*, 2017). Thus, this can improve the boards' professionalism in evaluating firms' financial reports and detecting any financial reporting irregularities (Pfeffer, 1972; Nielsen and

Huse, 2010). Arguably, a mix of male and female non-executive directors on a board may not only help in improving managerial monitoring as inherent in the rational agency theoretical perspective, but also in reaching better satisficing decisions by bringing stronger emotional intelligence into the corporate board decision-making process and thereby potential minimising incidences of EM (Adams and Ferreira, 2009; Srinidhi *et al.*, 2011; Elghuweel, 2017).

4. Empirical literature review and hypothesis development

4.1 Earnings management and firm performance

It has long been established by prior research that EM is related with firm financial performance. The agency and positive accounting theories have often been used to explain the incentive for EM practices by firms, which also demonstrates its association with firm performance. The examination of the relationship between EM and firms' performance has continued to be an ongoing debate in recent times (Gill *et al.*, 2013; Debnath, 2017; Chakroun and Amar, 2022) owing to investors demand for credibility in corporate financial reports as well as the quest to prevent future accounting scandals which resulted in the last financial crises of 2007/2008. The empirical evidence on the EM–performance relationship, however, presents mixed results. Chakroun and Amar (2022) in consonance with Gill *et al.* (2013) find that EM is negatively related to firm performance as measured by ROAs. The findings of Ardekani *et al.* (2012), who investigated the association between acquisition EM and firm's performance in Malaysian firms during 2004–2010, show EM activities to be negatively correlated with firm's financial performance after the acquisition date for share acquirer firms. On the other hand, positive linkages between EM and firms' performance have been documented by other studies. For example, Lee *et al.* (2016) from a sample of 67 non-financial firms studied over a period of 1988 to 2001 show that, managed earnings positively affected a firm's performance and growth. Kasznik (1999) in tandem with Dechow *et al.* (1995) demonstrate that discretionary accruals (DAs) are positively correlated with firm performance. Recently, Mangala and Dhanda (2019), who investigated EM and performance of IPOs in India, demonstrated that post-issue performance of Indian initial public offering firms is a derivation of issue year EM. Furthermore, Hernawati *et al.* (2021) reported that Indonesian manufacturing firms that go public use income-increasing EM strategy to transfer potential welfare from the company to stakeholders. Traditionally, the causal relationship between EM and firm performance predicted by agency theory implies that the causality should run from EM to firm performance, although some other studies have challenged this relationship (Watts and Zimmerman, 1978; Alexander and Hengky, 2017; Sari *et al.*, 2021). The empirical evidence also demonstrates that EM may be endogenously determined by the profit-maximisation process (Tang and Chang, 2013), as well as observable and unobservable firm characteristics. This suggests that endogeneity is an issue that needs to be considered in investigations of the EM–firm performance relationship. Given that both EM and performance are simultaneously determined in a system in which performance goal is a component, variations in EM should not be systematically related to variations in firm performance. In other words, EM should be unrelated to firm performance when endogeneity which stems from simultaneity and unobserved heterogeneity exists. Besides, another source of endogeneity, namely, dynamic endogeneity, can be observed with studies in the EM–performance relationship (Kumar *et al.*, 2021; Ndu *et al.*, 2019) and in CG–performance relationship in general (Wintoki *et al.*, 2012). Based on the confliction of theoretical predictions regarding the EM and CG–performance relationship, coupled with inconclusive empirical arguments, we propose from a dynamic perspective a significant link between EM and performance, but do not determine any particular direction for this relationship. Our first hypothesis is thus formulated as follows:

H1. EM is significantly related with firm financial performance in sub-Saharan Africa.

4.2 Board gender diversity and firm performance

A key assumption underlying the "business/economic" case for the global push for the inclusion of more women on corporate boards is that women are systematically (e.g. behaviourally, cognitively, physiologically and psychologically) different from men (Adams and Funk, 2012; Zalata *et al.*, 2019a). In particular, researchers have identified two main factors that might drive the different business behaviour among women and men, namely, attributes relating to their ethical stands and risk preferences (Croson and Gneezy, 2009; Palvia *et al.*, 2015). Thus, women may bring diverse/new beliefs, experiences, perspectives, values and work ethic that may enhance board decision-making and effectiveness. Such attributes can ultimately enhance governance structures and corporate outcomes (Brinkhuis and Scholtens, 2018).

Firm strategy and behaviours have been noted to have a strong relationship with corporate financial performance (e.g. Artz *et al.*, 2010; Dechow, 1994; Kreiser and Davis, 2010; Lee and Jungbae Roh, 2012; Siegel and Simons, 2010). Researchers investigating the association between women on corporate boards and firm performance appear to follow two main approaches. The first approach is to compare the financial performance of firms that are mainly managed by men and firms that are primarily managed by women. The second approach is to directly test the impact of women on boards on firm performance. First of all, some studies find no difference in profit margin, employment growth, sales, service quality and return on portfolio between male and female directors (e.g. Ali and Shabir, 2017; Atkinson *et al.*, 2003; Bardasi *et al.*, 2011; Chirwa, 2008; Ellwood and GarciaLacalle, 2015; Lee *et al.*, 2016). Fewer studies show that women on boards usually engage less in risk-taking, EM and mergers and acquisitions (e.g. Belot and Serve, 2018; Farag and Mallin, 2016; Huang and Kisgen, 2013; Iqbal *et al.*, 2006; Yordanova and Alexandrova-Boshnakova, 2011). In this vein, Gottschalk and Niefert (2013) found that in the context of Germany, female-founded firms sell a small number of products, and have slower employment growth and lower return on sales because of their less professional experience compared with male-founded firms. However, women executives generate better firm performance than their male counterparts do when they work in the hospitality industry (del Mar Alonso-Almeida, 2012; Marco, 2012) or family business (Bjuggren *et al.*, 2018). A great number of studies only focus on the second trend of researching the relationship between female directors and firm performance. This relationship is inconclusive because of mixed findings such as positive, negative, non-linear or no relationship. Studies that report of a positive association between gender diversity and firm performance explain it in terms of women having greater analytical skills and their ability to coordinate activities with much greater ease than men while upholding company values and strategy (Heskett, 2015; Ali *et al.*, 2021; Meah *et al.*, 2021; Simeonescu *et al.*, 2021; Nyeadi *et al.*, 2021; Awan and Raza, 2022). Those that report of negative or insignificant relationship between gender diversity and firm performance mostly adduce it to the "reduced powers of female directors on corporate boards", for example, by not making them serve on any advisory or monitoring committees (Zalata *et al.*, 2019b), which often culminates in a weaker monitoring and advisory role (Alshirah *et al.*, 2022; Post and Byron, 2014; Vuong, 2021; Simeonescu, 2021). Besides, studies thta report of nonlinear or threshold effects (Gharbi and Othmani, 2022) often support the critical mass theory, which posits that a sufficient number of women on boards are required so that they can have real influence on board decisions and consequently affect corporate outcomes favourably (Torchia *et al.*, 2011; Gharbi and Othmani, 2022). It stands to reason that, without a sufficient number or proportion of women on corporate boards, their influence on corporate outcomes may be negligible or even adverse. In spite of the contrasting evidences, prior studies generally acknowledge that gender diversity seems to have some correlation with firm financial performance. Against this backdrop, and from the perspective of the agency theory, the current study tests the following hypothesis:

H2. Board gender diversity is significantly correlated with firm financial performance in sub-Saharan Africa.

4.3 Earnings management and firm performance: the moderating role of board gender diversity

Prior studies from the behavioural theoretical perspective have indicated that female directors are more sensitive to ethical issues (Bernardi and Arnold, 1997) and exhibit greater risk aversion (Sunden and Surette, 1998) and have better board meetings attendance record (Adams and Ferreira, 2009) than male directors. Female board participation is likely to create formal and informal discussions between board of directors and result in greater accountability for managerial decisions (Adams and Ferreira, 2009). Further, it has been argued that female board participation can assist boards to benefit from a wide pool of talent by bringing different skills and experiences into the boardroom, including soft, but intelligent feminine beliefs, emotions, experiences, feelings and values. Thus, this can improve the boards' professionalism in evaluating firms' financial reports and detecting any financial reporting irregularities (Pfeffer, 1972; Nielsen and Huse, 2010). Arguably, a mix of male and female non-executive directors on a board may not only help in improving managerial monitoring as inherent in the rational agency theoretical perspective, but also in reaching better satisficing decisions by bringing stronger emotional intelligence into the corporate board decision-making process and thereby potentially minimising incidences of EM (Adams and Ferreira, 2009; Srinidhi *et al*., 2011).

The current study, following the agency theoretical perspective, intimates that board gender diversity would significantly moderate EM, and consequently, enhance the profitability of firms. Ullah *et al.* (2020) have earlier noted that board diversity disciplines management reduces agency conflicts and thereby improves CG, resulting in higher efficiency. Orazalin (2020) also showed that board gender diversity effectively constrains EM in Kazakhstan. Boadi *et al.* (2022), whose study supports pro-gender diversity on boards, demonstrate that greater boardroom gender diversity generates technical efficiencies for banks in Ghana. Li *et al.* (2022) also found that board gender diversity is associated with lower firm risk worldwide. The results of Guizani and Abdalkrim (2022) also show that board gender diversity could help to improve board effectiveness by preventing corporations from being too exposed to financial distress and bankruptcy. Dakhli (2022) further indicated that the presence of women in corporate boardrooms negatively affects tax avoidance, which is a tool for managing earnings. From the foregoing, it is apparent that board gender diversity plays a role in the EM–firm performance nexus.

From a dynamic framework using the system generalised method of moments (SGMMs) estimation approach, Karim *et al.* (2021) observed the moderating role of gender diversity on the relationship between ownership structure and corporate sustainable performance in Malysia but not in Pakistan. They therefore suggested for reforms in CG structures in Pakistan where weak economic conditions leave a frail impact of ownership structure on corporate sustainable performance and an insignificant moderating impact of board gender diversity. Nadeem *et al.* (2019) revealed a negative relationship between women on boards and firm risk, but a positive impact of women on boards and firm risk on profitability. The study further reported a positive significant impact of women on boards on observable dynamics of the board, thus supporting the group dynamics mechanism through which women on boards may reduce risk but improve profitability, and hence nullifying the stereotypical misconception of women as generally being risk averse (Li *et al*., 2022; Ozdemir and Erkmen, 2022). Janssen (2019) also demonstrated in his thesis how EM and gender diversity complement in explaining firm performance, in that, EM mediates as well as moderates the relationship between gender diversity and performance of firms sampled from ten countries of the European Economic Area without a gender quota. Proença *et al*. (2020) also showed that the differentiating characteristics of women

such as greater ethical concern and risk aversion help mitigate the adverse effects of personal agendas.

Vuong (2021) also argued that mere women's representation on boards encourages more EM in Vietnam. By contrast, she demonstrates that women occupying chair positions on boards are associated with less EM. The author reasoned that, the mere presence of women on boards without clearly defined leading roles could likely lead to weaker EM monitoring. This is corroborated by the arguments advanced by Zalata *et al.* (2019b) that, when female directors are not made to directly serve or take centre stage on advisory or monitoring sub-committees of the board of directors, they are unable to exhibit their superior monitoring abilities on executive management to influence performance outcomes. Therefore, Vuong (2021) suggested that policies and reforms emphasise the promotion of women to leading positions such as chairwomen instead of merely putting pressure on increasing the number of women in the boardroom, as this may be counterproductive and weaken firm performance. Zalata *et al.* (2021) also demonstrated that female directors possessing relevant financial background and having fewer outside directorships are able to mitigate EM, and therefore, overcommitting expert female directors with more outside directorships would diminish their monitoring ability. The authors found no evidence that female directors without relevant financial background are able to mitigate EM irrespective of their outside directorships or tenure. The current study submits that an examination of EM and its association with performance would be incomplete without the presence of CG variable(s), particularly board gender diversity. EM seems to be practised within the implicit bounds of CG systems and structures. Poor or weak CG structures allow managers wanton discretion in exercising their stewardship responsibilities. This often leads to unacceptable practices, including EM which makes firms unattractive for investment. However, excellent and robust CG structures that include gender-diverse boards are expected to limit EM practices and subsequently enhance the credibility and profitability of firms (Tang and Chang, 2013). Based on the arguments mentioned above and with the dynamic endogeneity in mind, we propose our third hypothesis as follows:

H3. The relationship between EM and financial performance of firms is moderated by board gender diversity in sub-Saharan Africa.

5. Research design

A sample is drawn from listed non-financial firms in nine Stock Exchanges within sub-Saharan Africa. Following previous studies (Dittmar and Mahrt-Smith, 2007; Schultz *et al.*, 2010), we exclude insurance companies and banks from our sample because financial firms are very different in many respects from non-financial firms, and the choice of a suitable EM model adopted for non-financial firms may not be appropriate for financial firms. The choice of the study's final sample was guided by the availability and adequacy of firms' audited annual reports and corresponding financial data sourced from the databases of African Financials and Machame Ratios covering a period of 13 years from 2007 to 2019. Table 1 presents how the final sample selection was arrived at.

The audited annual reports data on listed firms sourced from AfricanFinancials and MachameRatios databases were converted into a panel data set for analysis. Data on firm-level CG mechanisms were hand-collected from firms' annual reports using respective country codes as well as the CACG CG principles as guides, because all the countries from which the sampled firms were sourced happen to be Anglophone, and belong to the British Commonwealth of States. As such, these share common characteristics that allow them to be targeted for a study such as this. The variables used in the study's analysis have been explained under the sub-sections of Section 5.1, and also summarised in Table 2.

Table 1 Sample selection

Country of sampled firms	*No. of non-financial firms whose annual reports data were sourced from AfricanFinancials and MachameRatios databases for the study period*	*No. of firms with missing annual reports data over the study period*	*No. of firms whose missing annual reports data were deemed inadequate (i.e. having less than half of the annual reports data covering the study period), hence excluded from the sample*	*No. of firms with annual reports data deemed adequate (i.e. covering more than half of the study period) and therefore retained in the study sample*
Ghana	5	0	0	5
Kenya	11	3	0	11
Malawi	2	2	0	2
Mauritius	5	3	0	5
Nigeria	40	8	2	38
Namibia	2	2	0	2
South Africa	35	13	0	35
Tanzania	3	0	0	3
Zambia	4	2	0	4
Total	*107*	*33*	*2*	*105*

Source: Authors' compilation of annual reports from AfricanFinancials and MachameRatios websites

5.1 Description of study variables

5.1.1 Dependent variable: firm performance. Performance may be conceived and measured in several ways for different organisations such as ROA, return on equity and Tobin's *Q*. Performance, however, refers to how well a firm has generated returns or value for its finance providers and other stakeholders. This research uses ROA as a measure of performance. ROA measures the competitiveness of the company and the efficiency of management. The current study uses ROA as its measure of financial performance, similar to other studies conducted (Bhagat and Bolton, 2008; Farooqi *et al.*, 2014; Sow and Tozo, 2019; Lin and Fu, 2017; Pham *et al.*, 2015; Zhou *et al.*, 2017). ROA was computed as follows:

$$\mathrm{ROA}_{i,t} = EBIT_{i,t}/TA_{i,t}$$

where $\mathrm{EBIT}_{i,t}$ refers to profit before interest and tax for firm (i) in year (t), and $\mathrm{TA}_{i,t}$ also refers to total assets for firm (i) in year (t).

Firm performance is a key variable having an association with EM. Gunawan *et al.* (2015) intimate that managers will undertake EM to show the best performance of their company. This suggests that, to make the firm more attractive, managers tend to manage their firm's earnings upwardly (Kothari *et al.*, 2005; Machuga and Teitel, 2007). Managers of a stable profit-making company would have little need to modify their earnings. Studies such as Ali *et al.* (2015) and Debnath (2017) report that EM affects company performance negatively. Besides, Sow and Tozo (2019) found mixed evidence of different CG mechanisms affecting firm performance, with CEO duality and board size having a negative effect on performance, whereas board independence had a positive effect on performance. Other authors, such as Wallison (2006), who found a negative effect of board independence on performance, argue that having independent directors on the board is for better governance instead of better performance. The literature on the association between EM and firm performance reports mixed shreds of evidence; hence, the issue is still deemed an open question.

5.1.2 Independent variable: earnings management measured via discretionary accruals. Khan (2012) explains DA as a non-mandatory expense or asset recorded within the accounting system that has yet to be realised. An example is an anticipated bonus for management. Using the raw accruals amounts as a proxy for EM is a simple method to evaluate earnings quality because firms can have high accruals for legitimate business reasons such as sales growth. A more complicated proxy can be created by attempting to

Table 2 Measurement of variables used in the study's models

Variable	*Scale*	*Source*	*Expected sign*
Dependent variable: *ROA* Return on assets (proxy for firm-performance/ profitability)	This is measured by $ROA_{i,t} = EBIT_{i,t}/TA_{i,t}$ where: $EBIT_{i,t}$ = profit before interest and tax for firm i in year t; and $TA_{i,t}$ = total assets for firm i in year t	Annual reports of firms	
Independent variables: *DA* Discretionary accruals (proxy for earnings management)	This is measured using the Pae (2005) discretionary accrual's model; $NA_t = a_1 1/A_{t-1} + a_2 \Delta Rev_t/A_{t-1} + a_3 PPE_t/A_{t-1} + a_4 CFO_t/A_{t-1} + a_5 CFO_{t-1}/A_{t-1}$ where: A_{t-1} = total assets in year $t-1$; ΔRev_t = the change in revenues from the preceding year; PPE_t = the gross value of property, plant and equipment in year t; CFO_t = operating cashflows in year t; CFO_{t-1} = operating cashflows in year $t-1$; and a_1, a_2, a_3, a_4, a_5 = firm-specific parameters Estimates of the firm specific parameters are done via the model: $TA_t/A_{t-1} = \alpha_1 1/A_{t-1} + \alpha_2 \Delta Rev_t/A_{t-1} + \alpha_3 PPE_t/A_{t-1} + \alpha_4 CFO_t/A_{t-1} + \alpha_5 CFO_{t-1}/A_{t-1} + \varepsilon_t$ where: Total accruals (TAs) is defined as income before extraordinary items and discontinued operations minus operating cash flows, that is, $TA_t = NOPI_t - CFO_t$ ε_t is discretionary accruals (DAs) in year t	Annual reports of firms	+/–
BGENDIV Gender diversity	This is measured as the proportion of female directors on the board to the total size of the board. It has been represented in both logarithmic form and original ratio form for analysis	Annual reports of firms	+/–
Control variables			
BSIZE Board size	This is measured as the total number of directors on the board	Annual reports of firms	+/–
BREM Board remuneration	This is measured as annual total directors' emoluments scaled by total sales for firm i in year t	Annual reports of firms	+/–
BINDE Board independence	This is measured as proportion of non-executive directors on the board to the total board size. It has been represented in logarithmic form	Annual reports of firms	+/–
BMEET Board meetings	This is measured as the number of times the board meets in a year	Annual reports of firms	+/–
OWNCON Ownership concentration	This is measured as the proportion of shares owned by the largest block shareholder for firm i in year t. It has been represented in logarithmic form	Annual reports of firms	+/–
AUDQ Audit quality	This is a dummy variable measured as 1 where a firm has engaged one of the big-4 audit firms or 0 otherwise	Annual reports of firms	+/–
LEV Leverage	This is measured by the total liabilities to total assets. It is represented in logarithm form	Annual reports of firms	–
SIZE Firm size	This is measured as the logarithm of a firm's total assets	Annual reports of firms	+
GRWTH Growth opportunities	This is measured as the price-to-book ratio for firm i in year t	Annual reports of firms	+
AGE Age of firm	The is measured as the age of a firm from the date of listing on the stock market to the end of the sample period. It is represented in logarithm form	Annual reports of firms	+
$\varepsilon_{i,t}$ Error term	The error term		

Source: Authors' compilation (2022)

categorise total accruals (TAs) into nondiscretionary (NDA) and discretionary (DA) accruals. The nondiscretionary component reflects business conditions such as growth and length of the operating cycle that naturally destroy accruals, while the discretionary part identifies management choices (Keefe, 2013). The result of pulling DA amounts from the TA amounts is a metric that reflects accruals because of management's choice alone. Thus, there appears to be no business reason for these accruals; hence, DA is a better proxy for EM. Of the several aggregate accruals proxies advanced in the literature for measuring EM, the current study settles on the Pae's (2005) model of DA. Pae (2005) extends the widely used Jones model by adding either lagged TAs or cashflows, or lagged cashflows and lagged TAs based on the fact that accruals are negatively correlated with current cashflow from operations (CFOs), but positively correlated with lagged CFOs (Dechow, 1994; Dechow and Dichev, 2002). Further, Pae (2005) makes the same adjustments to the modified Jones model. His empirical results prove that the inclusion of the current and lagged CFOs significantly improves the explanatory power of the Jones model. There is, however, no qualitative difference between the Pae model and the Jones or modified Jones model in the demonstrated explanatory power of the added items. That notwithstanding, the present study adopts the Pae (2005) model of DA as suitable for the characteristics of the study's sample data. The following Pae (2005) model for TAs was specified for the present study:

$$TA_t = \alpha_1 1/A_{t-1} + \alpha_2 \Delta Rev_t/A_{t-1} + \alpha_3 PPE_t/A_{t-1} + \alpha_4 CFO_t/A_{t-1} + \alpha_5 CFO_{t-1}/A_{t-1} + \varepsilon_t \quad (1)$$

Whereas the non-DAs component is specified by the following model:

$$NDA_t = \alpha_1 1/A_{t-1} + \alpha_2 \Delta Rev_t/A_{t-1} + \alpha_3 PPE_t/A_{t-1} + \alpha_4 CFO_t/A_{t-1} + \alpha_5 CFO_{t-1}/A_{t-1} \quad (2)$$

where TA_t is total accruals calculated as net operating income (NOPI) minus cashflows from operations for each year t (i.e. $TA_t = NOPI_t - CFO_t$); NDA_t is the non-discretionary accruals for each year t; $CFO_{t(t\ -\ 1)}$ is cashflows from operations for each year t, or $(t - 1)$; ΔRev_t is the changes in the revenue (from credit sales) for each year t; PPE_t is the property, plant and equipment for each year t; A_{t-1} is the total assets at the end of period $(t - 1)$; ε_t is the random error, which is used as the estimate for DA (i.e. DAs which are ordinarily calculated as TAs minus non-DAs). The coefficients α_1, α_2 and α_3 are estimates of firm-specific parameters a_1, a_2 and a_3, respectively, through ordinary least squares (OLS) regression from equation (1).

The causal effects and relationships between EM and profitability or between CG and profitability have been studied extensively in the literature both theoretically and empirically. While some studies such as Fang (2008) and Ngunjiri (2017) found positive effects of EM on firms' profitability, others such as Alhadad and Al-Own (2017), Amarjit *et al.* (2013), Chakroun and Amar, (2022), Debnath (2017) and Gong *et al.* (2008) found a negative effect of EM on the profitability of firms. However, some other studies found mixed or insignificant results (Lee *et al.*, 2016; Moshi, 2016). Concerning CG, EM and performance relationship, Abbadi *et al.* (2016) reported that EM is negatively affected by overall CGQ index categories in Jordan. Ashfaq *et al.* (2017) also reported that the CG index has a significant positive impact on firms' performance for conventional and Islamic financial institutions. Their findings indicate that, as CGQ improves, its ability to constrain EM also improves, leading to performance enhancements in firms. Overall, the results of prior studies regarding the association between EM, CG and performance appear inconclusive and thus lend themselves for further studies in this area.

5.1.3 Moderating variable: board gender diversity. Board gender diversity refers to the proportion of the board size that is represented by females. Diversity has been advocated from several theoretical perspectives, including the agency theory (Finegold *et al.*, 2007; Low *et al.*, 2015), critical mass theory (Torchia *et al.*, 2011; Gharbi and Othmani, 2022), stakeholder theory (Finegold *et al.*, 2007), resource dependence theory (Carter *et al.*, 2003; Hillman and Dalziel, 2003), legitimacy theory (Singh *et al.*, 2007) and behavioural theory

(Bernardi and Arnold, 1997; Adams and Ferreira, 2009). Generally, diversified firms have been argued to produce better financial results (Catalyst, 2004). However, empirical studies regarding the contribution of female directors to corporate outcomes are still producing mixed evidences with plausible reasons adduced for each study's findings. The current study therefore seeks to contribute to the empirical debate by providing fresh evidence from an emerging African context, a context which is not pro-diversity and has its policy conversations on gender diversity on boards often rife with tokenism.

5.1.4 Control variables. Aside board gender diversity, other CG variables representing board characteristics that have been controlled in the study's estimation include board size, board remuneration, board independence, board meetings, ownership concentration and audit quality. Furthermore, firm size (Zhou *et al.*, 2017), growth opportunities (Kothari *et al.*, 2002), leverage (Pham *et al.*, 2015) and listing tenure (Lin and Fu, 2017) have also been controlled for in the study's estimations in line with recommendations from the literature. The measures for these variables are summarised in Table 2.

5.2 Model specification

The study specifies an AR(1) panel model which recognises the dynamic nature of the EM cum CG–performance relationship by including a one-year lagged ROA variable as an additional explanatory variable to capture the influence of the past on the current realisations of performance (Dezsö and Ross, 2012; Munisi and Randøy, 2013; Ndu *et al.*, 2019; Nguyen *et al.*, 2014, 2015a). This is in line with the argument of Zhou *et al.* (2014) that, given the limitation of the time dimension in corporate finance panel data sets, an AR(1) panel model seems to be unavoidable in almost all empirical corporate finance studies.

Using the measures of EM and CG mechanisms together with other firm-level characteristics controlled for, the study specifies the following model for empirical investigation using Stata Version 15 as the analysis tool:

$$\begin{aligned} ROA_{it} &= \alpha_0 + \alpha_1 ROA_{it-1} + \alpha_2 DA_{it} + \alpha_3 BSIZE_{it} + \alpha_4 BINDE_{it} + \alpha_5 BMEET_{it} \\ &\quad + \alpha_6 AUDQ_{it} + \alpha_7 OWNCON_{it} + \alpha_8 BGENDIV_{it} + \alpha_9 BGENDIV\#DA_{it} \\ &\quad + \alpha_{10} LEV_{it} + \alpha_{11} GRWTH_{it} + \alpha_{12} AGE_{it} + \nu_t + \mu_t + \eta_t + \varepsilon_{it} \end{aligned} \tag{3}$$

where firm i in year t, ROA is a proxy for financial performance; α_0 is the constant; and α_1 to α_{12} are unknown estimated coefficients; DA is discretionary accruals; the proxy for EM, BSIZE is board size, BINDE is board independence, BMEET is board meetings, AUDQ is audit quality, OWNCON is ownership concentration, BGENDIV is board gender diversity, LEV is firm leverage, GRWTH is firm growth and AGE is firm age. The model also controls for unobserved country heterogeneity (ν_t), firm-fixed effects (μ_t) as well as time-specific effects (η_t) that are time-variant and common to all companies such as the effects of inflation rates, GDP growth, market fluctuations or other macroeconomic conditions. And finally, ε_{it} represents the classical error term which is assumed to be independent and identically distributed.

5.3 Estimation approach

One of the most documented problematic issues in corporate finance and governance literature relates to the credibility of causal inferences about the relationship between firm-specific financial as well as governance characteristics and performance (Brown *et al.*, 2011). Recognising that the endogenous determination as well as the dynamic correlation between current EM-cum-CG structures with past performance has been documented by previous research (Wintoki *et al.*, 2012), a regression of performance variable on EM variable in which CG variable(s) are controlled should be examined in a dynamic framework as displayed in equation (3). Moreover, it is necessary to consider a suitable estimation strategy which is capable of dealing with biases that stem from the presence of the AR(1)

structure and endogenous explanatory variable(s) in equation (3). Consequently, the current study uses the SGMMs by Blundell and Bond (1998), which is acclaimed capable of dealing with most of the endogeneity issues that arise from estimations of models such as the one in the current study. The Blundell–Bond estimator is justified as well suited for the characteristics of this study's data set, namely:

- an unbalanced panel with short to moderate length (T = 13) and larger sample size (N = 105);
- CG considered endogenous;
- CG-cum-EM–performance relationship is, by nature, dynamic; and
- financial performance may be driven by individual fixed effects which are unobservable.

Simulation analyses undertaken by Flannery and Hankins (2013) and Zhou *et al.* (2014) further demonstrate that the Blundell–Bond SGMM emerges as the best-performing estimator across the data sets with conditions as mentioned above. This econometric technique has also been used in several CG as well as EM studies (Meah *et al.*, 2021; Karim *et al.*, 2021; Munisi and Randøy, 2013; Ndu *et al.*, 2019; Nguyen *et al.*, 2014, 2015a; Wintoki *et al.*, 2012). The two-step SGMM technique involves a system of equations in different levels, allowing the authors to treat all or some of the explanatory variables in equation (4) as endogenous (see also, Baum *et al.*, 2007). As such, all the explanatory variables except *firm age* were considered endogenous. We also used a finite-sample robust corrected estimate of variance, suggested by Windmeijer (2005), to consider the concern of Blundell and Bond (1998) about the downward-biased tendency of resistive standard errors estimated by the two-step SGMM approach for small samples. Finally, we tested for instrument validity or over-identification of our SGMM model using the Hansen-J test of over-identification, which proved that our model was over-identified and hence well specified. This finding was also supported by the Difference-in-Hansen test of exogeneity of instrument subsets, which showed that the instruments used in our estimations were exogenous. To check the robustness of our findings across different econometric estimation techniques and to facilitate comparison of our findings with those of prior relevant studies, the pooled OLS and the fixed-effects (FEs; within-groups) estimators were also applied to the study's data set. Our estimation practice is in line with the suggestion of Bond (2002) that the consistent SGMM estimator should be compared with simpler estimators such as the OLS and FEs estimators to detect potential biases in empirical results as well as to ensure dynamic stability (Nickell, 1981). For additional robustness test, we applied the Prais Winston panel-corrected standard errors (PCSEs) estimator which is feasible when the absolute value of the off-diagonal elements of the Pesaran test is different from zero (in this case 0.313). Moreover, the PCSE estimator demonstrates dynamic stability in that, its coefficient estimate of the lagged dependent variable lies in between the FE (lower bound) and OLS (upper bound) estimates.

6. Empirical results and discussion

6.1 Descriptive statistics

Table 3 summarises the descriptive statistics for the study's sample firms. The mean of ROA is 6.03%, suggesting that the returns generated for all providers of finance of firms in sub-Saharan Africa during the sample period are, on average, low relative to returns on government securities in these countries. This reflects the poor capability of firms in exploiting their resources to generate decent returns for investors. The average level of DAs or the proportion of managed earnings for sampled firms was about 2.00%, suggesting that EM practices of firms are relatively high within sub-Saharan Africa compared with those reported by other developing economies (Tangs and Chang, 2013; Zimon *et al.*, 2021). The average size of sampled firms was 5.13 with a standard deviation of 0.80, whereas leverage was 3.75 with a standard deviation of 0.78. The sampled firms showed high growth

Table 3 Descriptive statistics

Variables	*(1)* N	*(2)* *Mean*	*(3)* *SD*	*(4)* *Min*	*(5)* *Max*
BSIZE	1,295	9.569	2.952	2	25
BGENDIV	1,295	12.86	12.35	0	71.43
BREM	1,295	0.791	1.328	0.00430	17.59
BMEET	1,295	4.669	1.342	2	13
AUDQ	1,295	0.731	0.443	0	1
SIZE	1,295	5.125	0.802	2.754	7.183
GRWTH	1,288	3.134	6.085	−36.47	96.98
ROA	1,294	6.032	15.53	−179.9	295.7
DA	1,295	0.0200	0.755	−2.268	26.10
BINDE	1,286	4.215	0.250	2.659	4.605
OWNCON	1,285	3.462	0.664	1.609	4.554
BGENDIV(a)	861	2.837	0.495	1.715	4.269
AGE	1,295	2.887	0.887	0	4.331
LEV	1,295	3.387	0.853	−1.927	4.575
Number of groups	97	97	97	97	97

Notes: This table reports descriptive statistics based on aggregate samples of which the sizes may be various because of missing values. The variables are as defined in Table 1. For interpretation purposes, the descriptive statistics are calculated on the basis of levels with the exception of *AUDQ* which was computed from a dummy scale. *BINDE*, *OWNCON*, *AGE*, *LEV SIZE* and *BGENDIV* were calculated on the basis of logarithmic form. The *ROA*, being the dependent variable in our model, was not transformed but allowed to retain its original form for ease of interpretations because its histogram distribution appears normal

opportunities represented by a mean price-to-book ratio of 3.13 with a standard deviation of 6.09, and ownership concentration for sampled firms is 3.462 indicating that a high proportion of the sampled firms have concentrated ownership structures. The CG statistics for sampled firms shows an average board size of approximately 10, board diversity of 2.88, board independence of 4.22, average annual board meeting days of 5 and about 73% of sampled firms having engaged the services of one of the big-4 external audit firms.

The correlation diagnostics as presented in Table 4 show that, almost all the independent variables included in the study's models have a statistically significant correlation with the dependent variable, which is likely to offer at least some evidence for the proposition that, these independent variables interact with the performance variable. This evidence confirms the necessity of including these independent variables in our empirical models to alleviate potential bias caused by variable omission. Notably, the correlation coefficient between ROA and its one-year lagged (L.ROA) is positive and statistically significant (0.47***), supporting the well-documented proposition that firm performance is path-dependent (Bebchuk and Roe, 1999). Moreover, one-year L.ROA is significantly correlated with EM and some of the other independent variables. Together, these findings tentatively reveal the dynamic nature of the EM cum CG–firm performance relationship, which has important implications for the choice of estimation method.

It is also evident from Table 4 that multicollinearity seems an unlikely problem in the study's empirical models as none of the correlation coefficients among the independent variables is larger than the value of 0.80. As suggested by Damodar (2004), unless correlation coefficients among regressors exceed the threshold of 0.80, multicollinearity will not be a severe problem for multiple regression analysis. This is confirmed by the variance inflation factors (VIFs) formally calculated to detect multi-collinearity among the study's independent variables. Chatterjee and Hadi (2012, p. 236) suggest that a value of VIF larger than 10 is usually considered an indication of the presence of collinearity problems. Because all the computed VIFs of the independent variables are within 1.02–2.09, multicollinearity is not deemed an issue in the study's regression analysis.

Table 4 Pair-wise correlation coefficients

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
(1) ROA	1.000						
(2) L.ROA	0.472*** (0.000)	1.000					
(3) DA	0.545*** (0.000)	0.053* (0.068)	1.000				
(4) BREM	−0.364*** (0.000)	−0.274*** (0.000)	−0.016 (0.567)	1.000			
(5) BSIZE	0.036 (0.196)	0.020 (0.501)	−0.042 (0.134)	−0.149*** (0.000)	1.000		
(6) BINDE	−0.017 (0.537)	−0.013 (0.643)	−0.054* (0.051)	−0.045* (0.107)	0.171*** (0.000)	1.000	
(7) BMEET	−0.079*** (0.004)	−0.052* (0.072)	−0.014 (0.623)	−0.055** (0.048)	0.180*** (0.000)	0.149*** (0.000)	1.000
(8) OWNCON	0.027 (0.331)	0.031 (0.290)	0.032 (0.254)	−0.026 (0.354)	−0.162*** (0.000)	−0.001 (0.959)	−0.226*** (0.000)
(9) AUDQ	0.146*** (0.000)	0.162*** (0.000)	−0.025 (0.376)	−0.214*** (0.000)	0.203*** (0.000)	0.127*** (0.000)	0.153*** (0.000)
(10) BGENDIV	−0.108*** (0.002)	−0.038 (0.277)	0.009 (0.789)	0.039 (0.252)	−0.138*** (0.000)	−0.045 (0.189)	0.118*** (0.001)
(11) AGE	−0.029 (0.299)	−0.018 (0.529)	−0.055** (0.046)	−0.053* (0.057)	0.181*** (0.000)	0.141*** (0.000)	0.067** (0.016)
(12) LEV	−0.058** (0.036)	−0.071** (0.014)	0.017 (0.542)	0.030 (0.287)	0.077*** (0.006)	−0.060** (0.031)	0.119*** (0.000)
(13) SIZE	0.161*** (0.000)	0.172*** (0.000)	−0.007 (0.810)	−0.452*** (0.000)	0.542*** (0.000)	0.169*** (0.000)	0.276*** (0.000)
(14) GRWTH	0.226*** (0.000)	0.261*** (0.000)	−0.011 (0.700)	−0.094*** (0.001)	0.042 (0.130)	−0.117*** (0.000)	−0.080*** (0.004)

Notes: This table presents pair-wise correlation coefficients which are based on samples of which the sizes may be various because of missing values. The variables are as defined in Table 1. Asterisks indicate significance at 10 (*), 5 (**) and 1% (***)

(*continued*)

Table 4

Variables	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*
(1) ROA							
(2) L.ROA							
(3) DA							
(4) BREM							
(5) BSIZE							
(6) BINDE							
(7) BMEET							
(8) OWNCON	1.000						
(9) AUDQ	0.145*** (0.000)	1.000					
(10) BGENDIV	−0.060* (0.082)	0.014 (0.678)	1.000				
(11) AGE	0.077*** (0.006)	0.257*** (0.000)	0.041 (0.232)	1.000			
(12) LEV	0.114*** (0.000)	0.078*** (0.005)	0.010 (0.768)	0.120*** (0.000)	1.000		
(13) SIZE	−0.162*** (0.000)	0.365*** (0.000)	0.040 (0.236)	0.079*** (0.005)	0.006 (0.823)	1.000	
(14) GRWTH	0.097*** (0.000)	0.085*** (0.002)	−0.038 (0.269)	0.045* (0.105)	0.031 (0.261)	0.051* (0.065)	1.000

6.2 Multiple regression analysis

6.2.1 Effect of earnings management on performance – the moderating role of board gender diversity. The results of the two-step SGMM estimator with the Windmeijer (2005) finite-sample correction are reported in Column 2 of Tables 5 and 6. It is suggested that board gender diversity matters if the coefficient on the *BGENDIV* variable is statistically significant. However, the role of board gender diversity cannot be fully explained without looking at its interaction effects with EM on firm performance. As can be observed from the results of Tables 5 and 6, board gender diversity does matter as a determinant of corporate performance. We observed that our board gender diversity variable exhibits a curvilinear function with financial performance; hence, we considered a squared-term of the gender diversity variable in our baseline model estimation (see Table 5). Cheong (2022) also demonstrated this potential curvilinear relationship of board gender diversity with financial performance. For robustness test, we transformed the gender diversity variable with logarithm so as to linearise and normalise it. Thereafter, we re-estimated our model. We found out that the results were still robust, with board gender diversity showing a significant negative relationship with firm performance. Our findings appear to support the critical mass theory where a sufficient number or proportion of women on corporate boards are required to favourably affect corporate outcomes (Torchia *et al.*, 2011; Gharbi and Othmani, 2022). Moreover, this finding largely corroborates those of prior studies that report women on corporate boards to have a negative impact on accounting performance in

Table 5 Moderating effect of board gender diversity on the earnings management and firm performance nexus

Variables	*(1) Fixed-effect estimator*	*(2) SGMM estimator*	*(3) OLS estimator*	*(4) PCSE estimator*
L.ROA	0.118 (0.0893)	0.227* (0.127)	0.286** (0.126)	0.249*** (0.0690)
DA	33.16** (16.29)	32.08* (19.14)	34.10*** (9.527)	32.65*** (5.009)
BREM	−3.760** (1.866)	−3.872*** (1.153)	−3.070*** (0.815)	−2.979*** (0.496)
BGENDIV	0.158 (0.110)	0.170** (0.0827)	0.257*** (0.0661)	0.313*** (0.0730)
BGENDIV_2	−0.00540** (0.00233)	−0.00644*** (0.00217)	−0.00747** (0.00256)	−0.00839*** (0.00200)
BGENDIV_2#DA	0.0273*** (0.0103)	0.0297*** (0.00990)	0.0280*** (0.00583)	0.0274*** (0.00699)
BSIZE	0.00299 (0.203)	0.163 (0.142)	0.114 (0.183)	0.143 (0.123)
BINDE	−2.250 (1.745)	−1.645 (1.183)	−0.0538 (2.018)	1.355 (1.467)
BMEET	−0.142 (0.474)	−0.394 (0.348)	−0.336 (0.243)	−0.538** (0.245)
OWNCON	0.578 (1.589)	0.437 (0.656)	0.911** (0.412)	0.476 (0.548)
AUDQ	−0.701 (2.479)	0.910 (1.363)	0.457 (1.172)	1.335 (0.986)
LEV	−2.125** (0.862)	−1.022* (0.612)	−0.932** (0.351)	−1.333** (0.522)
SIZE	−2.907 (5.601)	−1.323 (1.091)	−1.109 (0.770)	−1.671** (0.672)
GRWTH	0.104 (0.0836)	0.165 (0.113)	0.185 (0.131)	0.156** (0.0733)
AGE	2.617 (2.508)	−0.0364 (0.507)	0.559* (0.275)	0.748 (0.458)
Constant	1,087** (459.0)		749.1*** (135.6)	807.8*** (288.7)
Country-fixed effects	No	Yes	Yes	Yes
Time-fixed effects	Yes	Yes	Yes	Yes
Firm-fixed effects	No	Yes	Yes	No
Observations	1,166	1,166	1,166	1,166
R-squared	0.503		0.578	0614
Number of groups	105	105	105	105
F-statistic	11.81***		340.25***	
Wald Chi-squared statistic		569.20***		343.64***
Number of instruments		20		
Hansen-J test of over-identification, chi2(1) (*p*-value)		(0.623)		
Difference-in-Hansen tests of exogeneity of instrument subsets, chi2(1) (*p*-value)		(0.623)		

Notes: This table reports empirical results from estimating equation (3) through the use of SGMM approach (Column 2). Columns 1 and 3 present the results of robustness checks with alternative estimators, i.e. FE and OLS. Asterisks indicate significance at 10 (*), 5 (**) and 1% (***). The notations in all the regression tables are as defined and measured in Table 1

Table 6 Robustness test of the moderating effect of board gender diversity on the earnings management and firm performance nexus

Variables	*(1) Fixed-effect estimator*	*(2) System GMM estimator*	*(3) OLS estimator*	*(4) PCSE estimator*
L.ROA	0.0488 (0.0613)	0.219 (0.145)	0.222* (0.121)	0.201*** (0.0782)
DA	−63.64 (63.82)	−79.99 (74.06)	−79.03 (51.23)	−81.74*** (25.88)
BREM	−3.743*** (1.260)	−4.551*** (1.088)	−4.042*** (0.858)	−4.330*** (0.793)
BGENDIV(a)	−0.00478 (1.200)	−2.049** (0.851)	−1.156 (1.060)	−0.681 (0.994)
BGENDIV(a)#DA	38.23* (20.16)	43.34** (21.43)	44.68** (19.07)	45.12*** (9.081)
BSIZE	0.0155 (0.236)	0.0901 (0.182)	−0.00124 (0.122)	0.140 (0.133)
BINDE	−1.685 (1.801)	−1.848 (1.584)	0.273 (2.274)	3.488* (2.067)
BMEET	−0.619 (0.554)	−0.930*** (0.335)	−0.755** (0.289)	−1.043*** (0.315)
OWNCON	0.660 (2.137)	0.128 (0.780)	0.573 (0.348)	0.500 (0.480)
AUDQ	3.793 (3.698)	2.876* (1.611)	1.605 (1.142)	3.903*** (1.339)
LEV	−2.757** (1.162)	−1.407* (0.839)	−1.255*** (0.356)	−1.913*** (0.723)
SIZE	−6.856 (7.269)	−2.573* (1.559)	−1.890** (0.750)	−3.373*** (0.739)
GRWTH	0.115 (0.144)	0.202 (0.185)	0.273 (0.202)	0.272*** (0.0820)
AGE	2.341 (3.720)	0.430 (0.613)	1.020* (0.522)	1.241** (0.566)
Constant	1,387** (643.9)		808.9*** (73.46)	1,105*** (355.0)
Country-fixed effects	No	Yes	Yes	Yes
Time-fixed effects	Yes	Yes	Yes	Yes
Firm-fixed effects	No	Yes	Yes	No
Observations	786	786	786	786
R-squared	0.509		0.577	0.650
Number of groups	97	97	97	97
F-statistic	7.68***		7.51e + 10***	
Wald Chi-squared statistic		527.78***		332.91***
Number of instruments		19		
Hansen-J test of over-identification, chi2(1) (*p*-value)		(0.316)		
Difference-in-Hansen tests of exogeneity of instrument subsets, chi2(1) (*p*-value)		(0.316)		

Notes: This table reports empirical results from estimating equation (4) through the use of SGMM approach (Column 2). Columns 1 and 3 present the results of robustness checks with alternative estimators, i.e. FE and OLS. Asterisks indicate significance at 10 (*), 5 (**) and 1% (***). The notations in all the regression tables are as defined and measured in Table 1

developing countries largely because they fail to reach a critical mass (e.g. Ujunwa, 2012; Zhang and Qu, 2016). Our findings regarding the effect of board gender diversity on financial performance within the African context where women representation on corporate boards is generally below the minimum advocated critical mass proportion of 20% seems to lend credence to the critical mass theory. In addition, firms in Africa are generally not pro-gender diversity (Boadi *et al.*, 2022); hence, females who manage to find their way on corporate boards are mostly on the basis of tokenism (Sotola, 2019) and are often not given the necessary voice and support to contribute meaningfully to board discussions and consequently affect corporate performance.

Our study also finds that EM (i.e. DA) appears to be positively related to firm performance (see Table 5), although this association seems neutralised after re-estimating our model with the log-transformed *BGENDIV* variable (see Table 6). More revealing, however, is the fact that the interaction or moderating effect of board gender diversity in the EM–performance relationship consistently churns out significant positive results in all our models and estimations with or without transformations, which serves to establish and magnify the performance effects of EM. Thus, we affirm that board gender diversity significantly and favourably moderates the relationship between EM and firm performance. This finding supports the agency theory's proposition of the effectiveness of a gender-diverse board in monitoring managerial opportunism and consequently contribute favourably towards corporate outcomes.

Our results are robust across different econometric estimators: being the fixed effect (FE), pooled OLS and the PCSE in addition to our baseline SGMM estimator. Additional tests with the log-transformed *BGENDIV* variable as well as alternative measurements for EM also yield consistent results [2]. Hence, we conclude that the performance effect of EM may be contingent on its board gender diversity. In support of the critical mass theory, we advocate for a sufficient women representation on corporate boards so that collectively, they are able to leverage their unique skills and competencies to affect corporate outcomes favourably. Moreover, our findings reveal that the role of female directors on corporate boards tends to magnify the favourable performance effects of EM practices, which further lends support for the advocacy for gender diversity on corporate boards. Evidently, the representation of females in the boardroom who do not reach a critical mass appears not to independently yield favourable corporate outcomes. However, their role in EM monitoring seems to result in efficiency outcomes of EM practices and thereby contributes to performance enhancement in firms. This should inspire the advocacy for diversity on African corporate boards, to be able to leverage on their unique abilities to contribute towards favourable corporate outcomes. The practice of tokenism may be a good start, but ultimately, a voluntary approach to diversity on corporate boards should be encouraged. Noteworthy here is the fact that prior studies have documented the connection between female board members and accounting performance to be negative in countries that apply a regulation approach of gender requirements, but positive in countries imposing a voluntary approach of gender requirements (Labelle *et al.*, 2015; Nguyen *et al.*, 2020). Furthermore, it has been reported that, contextually, women on corporate boards have a negative impact on accounting performance in developing countries (e.g. Ujunwa, 2012; Zhang and Qu, 2016), but a positive association with accounting performance is observed in developed countries (Carter *et al.*, 2003; Lyngsie and Foss, 2017) except those with gender quotas or women working in family business (e.g. Ahern and Dittmar, 2012; Bøhren and Strøm, 2010; D'Amato, 2017). Our findings from an African context corroborate the findings from other developing economies which report of a negative association between board gender diversity and performance. One possible explanation of the difference in the findings on the direction of the women on corporate boards–accounting performance association between developed countries (positive association) and developing countries (negative association) is the level of gender equality and empowerment (Kwaw *et al.*, 2015), view of which is also supported by the critical mass theory and the findings of the current study. Our findings regarding the moderating role of gender diversity on the EM–firm performance relationship is a pointer for firms in Africa to embrace gender equality and empowerment of women on corporate boards such that they are able to affect decisions and corporate outcomes as they reach a critical mass (Gharbi and Othmani, 2022), or, through their instrumentality in board advisory and monitoring roles (Zalata *et al.*, 2019b), especially with regard to EM monitoring as the current study reveals.

Our study also finds that board remuneration, board meetings, firm size and leverage have adverse effects on firm performance, whereas the engagement of a big-4 external audit firm has a positive effect on firm performance. Board size, board independence, ownership concentration, firm age and growth opportunities turned out as insignificant determinants of firm performance. Similar mixed evidences exist in the literature in this area (Aslam and Haron, 2020). Our findings regarding board independence and board size are corroborated by that of Nguyen *et al.* (2015b), whereas our finding regarding big-4 auditor engagement is corroborated by that of Meah *et al.* (2021). Nadeem *et al.* (2019) present mixed evidences regarding the effect of leverage on firm performance. While their OLS estimation presents consistent findings with our study, their FE estimation contradicts those findings.

Intuitively, board remuneration and board meetings with attendant "huge" sitting allowances are avenues through which funds are expended in an organisation. Given that the oversight responsibilities of the board, coupled with their strategic decision-making duties, do not

contribute towards enhanced operational efficiencies, then, their existence and operations tend to become detrimental to the current and long-term performance of their firms.

7. Summary and conclusion

The present study sought to investigate the role played by female directors on corporate boards with regard to EM and its effect on firm performance. The study does this by examining how female representation on corporate boards moderates EM practices towards performance enhancements in firms within sub-Saharan Africa. By following a dynamic panel data modelling and estimation approach which is capable of dealing with estimation biases that stem from endogeneity, simultaneity and reverse causality, the present study tests its hypotheses regarding the EM–firm performance relationship, and the moderating role of gender diversity in this nexus.

First, given the conflicting evidences regarding the effect of EM on firm performance from our baseline and robustness test models using different estimation approaches (see Tables 4 and 5), we are unable to conclude that EM has a significant effect on the performance of firms in sub-Saharan Africa. Therefore, we are unable to accept our first hypothesis that *EM is significantly related with firm financial performance in sub-Saharan Africa*. Second, we conclude on the basis of the consistency of our empirical results regarding the individual dynamic effect of board gender diversity on firm performance that, board gender diversity does influence firm performance and therefore matters in the EM–firm performance relationship. This finding supports the critical mass theory where a critical mass of female directors on corporate boards is able to affect decisions of the board and, consequently, corporate outcomes favourably. On the contrary, inadequate female representation on corporate boards tends to adversely affect corporate performance. Third, the performance effect of EM is contingent on its board gender diversity, in that gender diversity is able to affect performance positively through its moderating role on EM practices. Our findings therefore confirm our second and third hypotheses. Hence, we conclude that *gender-diversity indeed matters in firm performance determination and also moderates the relationship between EM and firm performance strongly*.

The contribution of this study to the EM and CG literature is at least twofold. First, unlike most prior studies examining the EM–firm performance relationship from a static perspective, our study re-investigates this relationship in a dynamic framework within which the possible impact of EM, CG structures and other firm-specific characteristics on performance are fully controlled. By considering dynamic endogeneity and other forms of endogeneity that stem from simultaneity and time-invariant unobserved heterogeneity, we expect to achieve more reliable inferences about the causal link between EM and performance. Secondly, by providing robust empirical evidence from sub-Saharan Africa, we support the emergent proposition that the performance effect of EM practices can be contingent upon the CG systems of firms (Tang and Chang, 2013), in this case board gender diversity. Our findings in this regard thus support and extend the agency theory by using board gender diversity as a moderating variable in the EM–firm performance relationship. Therefore, shareholders and regulators of firms in sub-Saharan Africa may observe that instituting sound CG mechanisms including a gender-diversified board where female directors reach a critical mass, and/or are empowered in their board advisory and monitoring roles could serve as an effective tool to constrain the EM behaviour of managers, which usefully would reflect in performance enhancements for firms. Again, we support the critical mass theory for sufficient representation of females on corporate boards so as to draw on their diverse abilities and characteristics for firm performance enhancement. Arbitrarily resorting to mere female representation in the boardroom, or the practice of tokenism with respect to board gender diversity, may be counterproductive for firm performance unless they are interacted with EM (Mazzotta and Ferraro, 2020; Vuong, 2021; Zalata *et al.*, 2021). Instituting gender quotas for listed firms in Africa as suggested by the AfDB may be a good start towards the advocacy for diversity on boards of listed firms in sub-Saharan Africa.

Similar to other studies, this study suffers from some limitations. Our study observes an adverse role played by board gender diversity on corporate performance in contradiction with findings of many other studies (Nyeadi *et al.*, 2021; Awan and Raza, 2022; Khidmat *et al.*, 2022). We reason this may be because of the fact that CG structures are still underdeveloped in sub-Saharan Africa, and the representation of females on corporate boards is still plagued with tokenism with "no voice" of females on corporate boards. Consequently, females represented on boards are unable to contribute meaningfully to board discussions and exert any positive effect on board and corporate performance. Again, in agreement with Oldford *et al.* (2021), the negative relationship between board gender diversity and financial performance observed in this study may also be explained in light of the fact that the social networks of firms in sub-Saharan Africa are not pro-diversity, hence females represented on corporate boards are not empowered enough to affect board decisions and contribute favourably towards firm performance. Further studies are welcomed to validate this study's findings in other jurisdictions, including within contexts which are pro-diversity, and also not rife with tokenism so as to be able to compare results for any cues and significant differences. Furthermore, the curvilinear nature of the relationship between board gender diversity and firm performance suggests the possibility of an optimal level of women on corporate boards, beyond which the performance effect of women on corporate boards would neutralise or diminish. Hence, future research can investigate this. Besides, we found board independence, board size and ownership concentration not to be significantly associated with firm performance. Could it be that, within the African context, having concentrated ownership structures and non-executive directors serves other purposes other than contribution to firm performance as some other studies (Wallison, 2006) have indicated? Future research may need to probe further on some of these findings. Finally, in agreement with Zalata *et al.* (2021), we invite future research, especially from a developing market perspective such as Africa, to probe the several characteristics and skills of female directors on corporate boards that drive their superior monitoring abilities with regard to EM, and which tend to allow them to contribute favourably to corporate performance .

Notes

1. Performance is used synonymously with profitability in this study. Again, by performance, we mean financial performance as measured by return on assets (ROAs).
2. The additional tests have been omitted from the paper to save space, but can be made available upon request.

References

Abanga, A.O., Tauringana, V., Wangombe, D. and Achiro, L.O. (2022), "Corporate governance and financial performance of state-owned enterprises in Kenya", *Corporate Governance: The International Journal of Business in Society*, Vol. 22 No. 4, pp. 798-820, doi: 10.1108/CG-01-2021-0007.

Abbadi, S.S., Hijazi, Q.F. and Al-Rahahleh, A.S. (2016), "Corporate governance quality and earnings management: evidence from Jordan", *Australasian Accounting, Business and Finance Journal*, Vol. 10 No. 2, pp. 54-75.

Adams, R.B. and Ferreira, D. (2009), "Women in the boardroom and their impact on governance and performance", *Journal of Financial Economics*, Vol. 94 No. 2, pp. 291-309.

Adams, R. and Funk, P. (2012), "Beyond the glass ceiling: does gender matter?", *Management Science*, Vol. 58 No. 2, pp. 219-235.

Ahern, K.R. and Dittmar, A.K. (2012), "The changing of the boards: the impact on firm valuation of mandated female board representation", *The Quarterly Journal of Economics*, Vol. 127 No. 1, pp. 137-197.

Alexander, N.H. (2017), "Factors affecting earnings management in the Indonesian stock exchange", *Journal of Finance and Banking Review*, Vol. 2 No. 2, pp. 8-14.

Alhadab, M.M. and Al-Own, B. (2017), "Earnings management and banks performance: evidence from Europe", *International Journal of Academic Research in Accounting, Finance and Management Sciences*, Vol. 7 No. 4, pp. 134-145.

Ali, J. and Shabir, S. (2017), "Does gender make a difference in business performance? Evidence from a large enterprise survey data of India", *Gender in Management: An International Journal*, Vol. 32 No. 3, pp. 218-233.

Ali, A., Ali, R., Rehman, R., Naseem, M.A. and Ahmad, M.I. (2021), "Female presence in corporate governance, firm performance, and the moderating role of family ownership", *Economic Research-Ekonomska Istraživanja*, Vol. 35 No. 1, doi: 10.1080/1331677X.2021.1952086.

Ali, U., Noor, M.A., Khurshid, M.K. and Mahmood, A. (2015), "Impact of firm size on earnings management: a study of textile sector of Pakistan", *European Journal of Business and Management*, Vol. 7 No. 28, pp. 47-56.

Alshirah, M.H., Alfawareh, F.S., Alshirah, A.F., Al-Eitan, G., Bani-Khalid, T. and Alsqour, M. (2022), "Do corporate governance and gender diversity matter in firm performance (ROE)? Empirical evidence from Jordan", *Economies*, Vol. 10 No. 4, pp. 1-21, doi: 10.3390/economies10040084.

Amarjit, G., Nahum, B., Harvinder, S.M. and Neil, M. (2013), "Earnings management, firm performance, and the value of Indian manufacturing firms", *International Research Journal of Finance and Economics*, Vol. 116 No. 1, pp. 120-133, ISSN 1450-2887.

Ardekani, M.A., Nejat, Y. and Hashemijo, M. (2012), "Acquisition, earnings management and firm's performance: evidence from Malaysia", *Journal of Business Studies Quarterly*, Vol. 4 No. 1, pp. 91-110.

Arena, C., Cirillo, A., Mussolino, D., Pulcinelli, I., Saggese, S. and Sarto, F. (2015), "Women on board: evidence from a masculine industry", *Corporate Governance*, Vol. 15 No. 3, pp. 339-356.

Arioglu, E. (2020), "The affiliations and characteristics of female directors and earnings management: evidence from Turkey", *Managerial Auditing Journal*, Vol. 35 No. 7, pp. 927-953, doi: 10.1108/MAJ-07-2019-2364.

Artz, K.W., Norman, P.M., Hatfield, D.E. and Cardinal, L.B. (2010), "A longitudinal study of the impact of R&D, patents, and product innovation on firm performance", *Journal of Product Innovation Management*, Vol. 27 No. 5, pp. 725-740.

Ashfaq, S., Kayani, G.M. and Saeed, M.A. (2017), "The impact of corporate governance index and earnings management on firms' performance: a comparative study on the Islamic versus conventional financial institutions in Pakistan", *Journal of Islamic Business and Management*, Vol. 7 No. 1, pp. 126-139, doi: https://doi.org/10.26501/jibm/2017.0701-010.

Aslam, E. and Haron, R. (2020), "Does corporate governance affect the performance of Islamic banks? New insight into Islamic countries", *Corporate Governance*, Vol. 20 No. 6, pp. 1073-1090, doi: 10.1108/CG-11-2019-0350.

Atkinson, S.M., Baird, S.B. and Frye, M.B. (2003), "Do female mutual fund managers manage differently?", *Journal of Financial Research*, Vol. 26 No. 1, pp. 1-18, doi: 10.1111/14756803.00041.

Awan, S. and Raza, K. (2022), "Female directors on corporate boards and their impact on corporate social responsibility (CSR): evidence from China", *Management Research Review*, Vol. 45 No. 4, pp. 563-595, doi: 10.1108/MRR-09-2020-0560.

Bardasi, E., Sabarwal, S. and Terrell, K. (2011), "How do female entrepreneurs perform? Evidence from three developing regions", *Small Business Economics*, Vol. 37 No. 4, pp. 417-441, doi: 10.1007/s11187-011-9374-z.

Baum, C., Scaffer, M. and Stillman, S. (2007), "Enhanced routines for instrumental variables/generalized method of Moments estimation and testing", *The Stata Journal: Promoting Communications on Statistics and Stata*, Vol. 7 No. 4, pp. 465-506.

Bebchuk, L.A. and Roe, M.J. (1999), "A theory of path dependence in corporate ownership and governance", *Stanford Law Review*, Vol. 52 No. 1, pp. 127-170.

Belot, F. and Serve, S. (2018), "Earnings quality in private SMEs: do CEO demographics matter?", *Journal of Small Business Management*, Vol. 56, pp. 323-344.

Beneish, M.D. (2001), "Earnings management: a perspective", *Managerial Finance*, Vol. 27 No. 12, pp. 3-17.

Bernardi, R.A. and Arnold, D.F. (1997), "An examination of moral development within public accounting by gender, staff level, and firm", *Contemporary Accounting Research*, Vol. 14 No. 4, pp. 653-668.

Bhagat, S. and Bolton, B. (2008), "Corporate governance and firm performance", *Journal of Corporate Finance*, Vol. 14 No. 3, pp. 257-273, doi: 10.1016/j.jcorpfin.2008.03.006.

Bjuggren, P.-O., Nordström, L. and Palmberg, J. (2018), "Are female leaders more efficient in family firms than in non-family firms?", *Corporate Governance: The International Journal of Business in Society*, Vol. 18 No. 2, pp. 185-205.

Blundell, R. and Bond, S. (1998), "Initial conditions and moment restrictions in dynamic panel data models", *Journal of Econometrics*, Vol. 87 No. 1, pp. 115-143.

Boadi, I., Dziwornu, R. and Osarfo, D. (2022), "Technical efficiency in the Ghanaian banking sector: does boardroom gender diversity matter?", *Corporate Governance: The International Journal of Business in Society*, doi: 10.1108/CG-04-2021-0144.

Bøhren, Ø. and Strøm, R.Ø. (2010), "Governance and politics: regulating independence and diversity in the board room", *Journal of Business Finance & Accounting*, Vol. 37 Nos 9/10, pp. 1281-1308, doi: 10.1111/j.1468-5957.2010.02222.x.

Bond, S.R. (2002), "Dynamic panel data models: a guide to micro data methods and practice", *Portuguese Economic Journal*, Vol. 1 No. 2, pp. 141-162.

Brinkhuis, E. and Scholtens, B. (2018), "Investor response to appointment of female CEOs and CFOs", *The Leadership Quarterly*, Vol. 29 No. 3, pp. 423-441, doi: 10.1016/j.leaqua.2017.08.002.

Callao, S., Jarne, J.I. and Wróblewski, D. (2014a), "Debates and studies on earnings management: a geographical perspective", *Zeszyty Teoretyczne Rachunkowości*, Vol. 75 No. 131, pp. 145-169.

Callao, S., Jarne, J.I. and Wróblewski, D. (2014b), "The development of earnings management research: a review of literature from three different perspectives", *Zeszyty Teoretyczne Rachunkowości*, Vol. 79 No. 135, pp. 135-177.

Carter, D.A., D'Souza, F., Simkins, B.J. and Simpson, W.G. (2010), "The gender and ethnic diversity of US boards and board committees and firm financial performance", *Corporate Governance: An International Review*, Vol. 18 No. 5, pp. 396-414.

Carter, D.A., Simkins, B.J. and Simpson, W.G. (2003), "Corporate governance, board diversity, and firm value", *The Financial Review*, Vol. 38 No. 1, pp. 33-53.

Catalyst (2004), "The bottom line: connecting corporate performance and gender diversity", available at: www.catalyst.org/research/the-bottom-line-connecting-corporate-performance-and-gender-diversity/ (accessed 10 June 2022).

Chakroun, S. and Amar, A.B. (2022), "Earnings management, financial performance and the moderating effect of corporate social responsibility: evidence from France", *Management Research Review*, Vol. 45 No. 3, pp. 331-362, doi: 10.1108/MRR-02-2021-0126, available at: www.emerald.com/insight/2040-8269.htm

Chatterjee, S. and Hadi, A.S. (2012), *Regression Analysis by Example*, John Wiley & Sons, Hoboken, NJ.

Cheong, C.W.H. (2022), "Political regimes and its influence on the diversity–performance relationship in Malaysia", *Asia-Pacific Journal of Business Administration*, doi: 10.1108/APJBA-07-2021-0321.

Cimini, R. (2015), "How has the financial crisis affected earnings management? A European study", *Applied Economics*, Vol. 47 No. 3, pp. 302-317.

Cornett, M., McNutt, J. and Tehranian, H. (2009), "Corporate governance and earnings management at large US bank holding companies", *Journal of Corporate Finance*, Vol. 15 No. 4, pp. 412-430.

Croson, R. and Gneezy, U. (2009), "Gender differences in preferences", *Journal of Economic Literature*, Vol. 47 No. 2, pp. 448-474.

Cumming, D., Leung, T.Y. and Rui, O. (2015), "Gender diversity and securities fraud", *Academy of Management Journal*, Vol. 58 No. 5, pp. 1572-1593.

D'Amato, A. (2017), "Do women perform better in family firms? Exploring the moderating role of family firm status", *International Journal of Wine Business Research*, Vol. 29 No. 3, pp. 299-315, doi: 10.1108/IJWBR-12-2016-0039.

Dakhli, A. (2022), "Do women on corporate boardrooms have an impact on tax avoidance? The mediating role of corporate social responsibility", *Corporate Governance*, Vol. 22 No. 4, pp. 821-845, doi: 10.1108/CG-07-2021-0265.

Damodar, G. (2004), *Basic Econometrics*, 4th ed., The McGraw-Hill, New York, NY.

Davidson, S., Stickney, C.P. and Weil, R.L. (1988), *Financial Accounting: An Introduction to Concepts, Methods and Uses*, 5th ed., Dryden Press, Chigago, MA.

Davies, L. (2011), "Women on boards", available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/31480/11-745-women-on-boards.pdf

Debnath, P. (2017), "Assaying the impact of firm's growth and performance on earnings management: an empirical observation of Indian economy", *International Journal of Research in Business Studies and Management*, Vol. 4 No. 2, pp. 30-40, doi: 10.22259/ijrbsm.0402003.

Dechow, P.M. and Dichev, I.D. (2002), "The quality of accruals and earnings: the role of accrual estimation errors", *The Accounting Review*, Vol. 77 No. s-1, pp. 35-59.

Dechow, P.M.S. and R.G., Sweeney, A.P. (1995), "Detecting earnings management", *The Accounting Review*, Vol. 70 No. 2, pp. 193-225.

del Mar Alonso-Almeida, M. (2012), "Water and waste management in the Moroccan tourism industry: the case of three women entrepreneurs", *Women's Studies International Forum*, Vol. 35 No. 5, pp. 343-353, doi: 10.1016/j.wsif.2012.06.002.

Dezsö, C.L. and Ross, D.G. (2012), "Does female representation in top management improve firm performance? A panel data investigation", *Strategic Management Journal*, Vol. 33 No. 9, pp. 1072-1089.

Dittmar, A. and Mahrt-Smith, J. (2007), "Corporate governance and the value of cash holdings", *Journal of Financial Economics*, Vol. 83 No. 3, pp. 599-634.

Dowling, M. and Aribi, Z.A. (2013), "Female directors and UK company acquisitiveness", *International Review of Financial Analysis*, Vol. 29, pp. 79-86.

Elghuweel, M.I., Ntim, C., Opong, K. and Avison, L. (2017), "Corporate governance, Islamic governance and earnings management in Oman: a new empirical insights from a behavioural theoretical framework", *Journal of Accounting in Emerging Economies*, Vol. 7 No. 2, pp. 190-224, doi: 10.1108/JAEE-09-2015-0064.

Ellwood, S. and Garcia-Lacalle, J. (2015), "The influence of presence and position of women on the boards of directors: the case of NHS foundation trusts", *Journal of Business Ethics*, Vol. 130 No. 1, pp. 69-84, doi: 10.1007/s10551-014-2206-8.

Elmagrhi, M.H., Ntim, C.G., Malagila, J., Fosu, S. and Tunyi, A.A. (2018), "Trustee board diversity, governance mechanisms, capital structure and performance in UK charities", *Corporate Governance: The International Journal of Business in Society*, Vol. 18 No. 3, pp. 478-508.

Fang, D. (2008), "Research on the relationship between firm performance and earnings management", Master's thesis, University of Amsterdam.

Farag, H. and Mallin, C. (2016), "The influence of CEO demographic characteristics on corporate risk-taking: evidence from Chinese IPOs", *European Journal of Finance*, pp. 1-30, doi: 10.1080/1351847X.2016.1151454.

Farooqi, J., Harris, O. and Ngo, T. (2014), "Corporate diversification, real activities manipulation, and firm value", *Journal of Multinational Financial Management*, Vol. 27, pp. 130-151, doi: 10.1016/j.mulfin.2014.06.010.

Filip, A. and Raffournier, B. (2014), "Financial crisis and earnings management: the European evidence", *The International Journal of Accounting*, Vol. 49 No. 4, pp. 455-478.

Finegold, D., Benson, G.S. and Hecht, D. (2007), "Corporate boards and company performance: review of research in light of recent reforms", *Corporate Governance: An International Review*, Vol. 15 No. 5, pp. 865-878.

Flannery, M.J. and Hankins, K.W. (2013), "Estimating dynamic panel models in corporate finance", *Journal of Corporate Finance*, Vol. 19 No. C, pp. 1-19.

Galbreath, J. (2011), "Are there gender-related influences on corporate sustainability? A study of women on boards of directors", *Journal of Management & Organization*, Vol. 17 No. 1, pp. 17-38.

Gharbi, S. and Othmani, H. (2022), "Threshold effects of board gender diversity on firm performance: panel smooth transition regression model", *Corporate Governance: The International Journal of Business in Society*, doi: 10.1108/CG-10-2021-0373.

Gill, A., Biger, N., Mand, H.S. and Mathur, N. (2013), "Earnings management, firm performance, and the value of Indian manufacturing firms", *International Research Journal of Finance and Economics*, Vol. 116 No. 1, pp. 121-131.

Gong, G., Louis, H. and Sun, A. (2008), "Earnings management, lawsuits, and stock-for-stock acquirers' market performance", *Journal of Accounting and Economics*, Vol. 46, pp. 62-77.

Gottschalk, S. and Niefert, M. (2013), "Gender differences in business success of German start-up firms", *International Journal of Entrepreneurship and Small Business*, Vol. 18 No. 1, pp. 15-46, doi: 10.1504/IJESB.2013.050750.

Gröschl, S. and Arcot, S. (2014), "Female hospitality executives and their effects on firm performance", *Tourism and Hospitality Research*, Vol. 14 No. 3, pp. 143-151, doi: 10.1177/1467358414538997.

Guizani, M. and Abdalkrim, G. (2022), "Does gender diversity on boards reduce the likelihood of financial distress? Evidence from Malaysia", *Asia-Pacific Journal of Business Administration*, doi: 10.1108/APJBA-06-2021-0277.

Gul, F.A., Hutchinson, M. and Lai, K.M. (2013), "Gender-diverse boards and properties of analyst earnings forecasts", *Accounting Horizons*, Vol. 27 No. 3, pp. 511-538.

Gul, F.A., Srinidhi, B. and Ng, A.C. (2011), "Does board gender diversity improve the informativeness of stock prices?", *Journal of Accounting and Economics*, Vol. 51 No. 3, pp. 314-338.

Gunawan, I.K., Darmawan, N.A.S. and Purnamawati, I.G.A. (2015), "The influence of company size, profitability, and leverage on earnings management at manufacturing companies listed on Indonesia stock exchange (IDX)", *JIMAT*, Vol. 3 No. 1, pp. 1-18, doi: 10.23887/jimat.v3i1.5272.

Healy, P.M. and Wahlen, J.M. (1999), "A review of the earnings management literature and its implications for standard setting", *Accounting Horizons*, Vol. 13 No. 4, pp. 365-383.

Hernawati, R.I., Ghozali, I., Yuyetta, E.N.A. and Prastiwi, A. (2021), "The effect of income and earnings management on firm value: empirical evidence from Indonesia", *Journal of Asian Finance, Economics and Business*, Vol. 8 No. 4, pp. 105-112.

Heskett, J.L. (2015), "Why does gender diversity improve financial performance?", *Business Research for Business Leaders*, available at: https://hbswk.hbs.edu (accessed 17 October 2022).

Hillman, A.J. and Dalziel, T. (2003), "Boards of directors and firm performance: integrating agency and resource dependence perspectives", *Academy of Management Review*, Vol. 28 No. 3, pp. 941-952.

Huang, J. and Kisgen, D.J. (2013), "Gender and corporate finance: are male executives overconfident relative to female executives?", *Journal of Financial Economics*, Vol. 108 No. 3, pp. 822-839, doi: 10.1016/j.jfineco.2012.12.005.

Iqbal, Z. and O., S., Baek, H.Y. (2006), "Are female executives more risk-averse than male executives?", *Atlantic Economic Journal*, Vol. 34 No. 1, pp. 63-74, doi: 10.1007/s11293-006-6123-9.

Janssen, J. (2019), "The influence of gender diversity and earnings management on short- and long-term financial performance of European firms", Master's thesis, Radboud University Nijmegen.

Jensen, M. and Meckling, W. (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-360.

Joecks, J., Pull, K. and Vetter, K. (2013), "Gender diversity in the boardroom and firm performance: what exactly constitutes a 'critical mass'?", *Journal of Business Ethics*, Vol. 118 No. 1, pp. 61-72, doi: 10.1007/s10551-012-1553-6.

Kanter, R.M. (1977), "Some effects of proportions on group life: skewed sex ratios and responses to token women", *American Journal of Sociology*, Vol. 82 No. 5, pp. 965-990.

Karim, S., Naeem, M.A., Meero, A.A. and Rabbani, M.R. (2021), "Examining the role of gender diversity on ownership structure-sustainable performance nexus: fresh evidence from emerging markets", *Environmental Science and Pollution Research*, doi: 10.1007/s11356-021-17459-6.

Kasznik, R. (1999), "On the association between voluntary disclosure and earnings management", *Journal of Accounting Research*, Vol. 37 No. 1, pp. 57-81.

Khidmat, W.B., Habib, M.D., Awan, S. and Raza, K. (2022), "Female directors on corporate boards and their impact on corporate social responsibility (CSR): evidence from China", *Management Research Review*, Vol. 45 No. 4, pp. 563-595, doi: 10.1108/MRR-09-2020-0560.

Kirsch, A. (2018), "The gender composition of corporate boards: a review and research agenda", *The Leadership Quarterly*, Vol. 29 No. 2, pp. 346-364.

Kothari, S.P., Laguerre, T.E. and Leone, A.J. (2002), "Capitalization versus expensing: evidence on the uncertainty of future earnings from capital expenditures versus R&D outlays", *Review of Accounting Studies*, Vol. 7 No. 4, pp. 355-382, doi: 10.1023/A:1020764227390.

Kothari, S.P., Leone, A.J. and Wasley, C.E. (2005), "Performance matched discretionary accrual measures", *Journal of Accounting and Economics*, Vol. 39 No. 1, pp. 163-197.

Kreiser, P.M. and Davis, J. (2010), "Entrepreneurial orientation and firm performance: the unique impact of innovativeness, proactiveness, and risk-taking", *Journal of Small Business & Entrepreneurship*, Vol. 23 No. 1, pp. 39-51.

Krishnan, G. (2003), "Audit quality and the pricing of discretionary accrual", *Auditing: A Journal of Practice & Theory*, Vol. 22 No. 1, pp. 109-126.

Kristie, J. (2011), "The power of three", *Directors & Boards*, Vol. 35 No. 5, pp. 22-32.

Kumar, M., Vij, M. and Goswami, R. (2021), "Effect of real earnings management on firm performance: evidence from India", *Vision, the Journal of Business Perspective*, pp. 1-11, doi: 10.1177/09722629211007577.

Kwaw, K., Olugbode, M. and Petracci, B. (2015), "Does gender diverse board mean less earnings management?", *Finance Research Letters*, Vol. 14, pp. 135-141, doi: 10.1016/j.frl.2015.05.006.

Labelle, R., Francoeur, C. and Lakhal, F. (2015), "To regulate or not to regulate? Early evidence on the means used around the world to promote gender diversity in the boardroom", *Gender, Work & Organization*, Vol. 22 No. 4, pp. 339-363, doi: 10.1111/gwao.12091.

Lee, J. and Jungbae Roh, J. (2012), "Revisiting corporate reputation and firm performance link", *Benchmarking: An International Journal*, Vol. 19 Nos 4/5, pp. 649-664.

Lee, C.W.J., Li, L.Y. and Yue, H. (2016), "Performance, growth and earnings management", *Review of Accounting Studies*, Vol. 11 Nos 2/3, pp. 305-334.

Li, Z., Jia, J. and Chapple, L. (2022), "Board gender diversity and firm risk: international evidence", *Managerial Auditing Journal*, Vol. 37 No. 4, pp. 438-463, doi: 10.1108/MAJ-05-2021-3157.

Lin, Y.R. and Fu, X.M. (2017), "Does institutional ownership influence firm performance? Evidence from China", *International Review of Economics & Finance*, Vol. 49, pp. 17-57, doi: 10.1016/j.iref.2017.01.021.

Liu, Y., Wei, Z. and Xie, F. (2014), "Do women directors improve firm performance in China?", *Journal of Corporate Finance*, Vol. 28, pp. 169-184, available at: www.sciencedirect.com/science/journal/09291199

Low, D.C.M., Roberts, H. and Whiting, R.H. (2015), "Board gender diversity and firm performance: empirical evidence from Hong Kong, South Korea, Malaysia and Singapore", *Pacific-Basin Finance Journal*, Vol. 35 No. Part A, pp. 381-401.

Lyngsie, J. and Foss, N.J. (2017), "The more, the merrier? Women in top-management teams and entrepreneurship in established firms", *Strategic Management Journal*, Vol. 38 No. 3, pp. 487-505, doi: 10.1002/smj.2510.

Machuga, S. and Teitel, K. (2007), "The effects of the Mexican corporate governance code on quality of earnings and its components", *Journal of International Accounting Research*, Vol. 6 No. 1, pp. 37-55, doi: 10.2308/jiar.2007.6.1.37.

Mahrani, M. and Soewarno, N. (2018), "The effect of good corporate governance mechanism and corporate social responsibility on financial performance with earnings management as mediating variable", *Asian Journal of Accounting Research*, Vol. 3 No. 1, pp. 41-60, doi: 10.1108/AJAR-06-2018-0008.

Mangala, D. and Dhanda, M. (2019), "Earnings management and performance of IPO firms: evidence from India", *Indian Journal of Corporate Governance*, Vol. 12 No. 1, pp. 39-58.

Mangena, M. and Chamisa, E. (2008), "Corporate governance and incidences of listing suspension by the JSE securities exchange of South Africa: an empirical analysis", *The International Journal of Accounting*, Vol. 43 No. 1, pp. 28-44.

Marinova, J., Plantenga, J. and Remery, C. (2016), "Gender diversity and firm performance: evidence from Dutch and Danish boardrooms", *The International Journal of Human Resource Management*, Vol. 27 No. 15, pp. 1777-1790, doi: 10.1080/09585192.2015.1079229.

Mathisen, G.E., Ogaard, T. and Marnburg, E. (2013), "Women in the boardroom: how do female directors of corporate boards perceive boardroom dynamics?", *Journal of Business Ethics*, Vol. 116 No. 1, pp. 87-97.

Mazzotta, R. and Ferraro, O. (2020), "Does the gender quota law affect bank performances? Evidence from Italy", *Corporate Governance*, Vol. 20 No. 6, pp. 1135-1158, doi: 10.1108/CG-08-2019-0252.

Meah, M.R., Sen, K.K. and Ali, H. (2021), "Audit characteristics, gender diversity and firm performance: evidence from a developing economy", *Indian Journal of Corporate Governance*, Vol. 14 No. 1, pp. 48-70.

Mukarram, S.S., Ajmal, T. and Saeed, A. (2018), "Women directors' propensity towards risk in technology firms", *Corporate Governance: The International Journal of Business in Society*, Vol. 18 No. 2, pp. 353-367, doi: 10.1108/CG-09-2017-0213.

Munisi, G. and Randøy, T. (2013), "Corporate governance and company performance across Sub-Saharan African countries", *Journal of Economics and Business*, Vol. 70 No. C, pp. 92-110.

Nadeem, M., Suleman, T. and Ahmend, A. (2019), "Women on boards, firm risk and the profitability nexus: does gender diversity moderate the risk and return relationship?", *International Review of Economics & Finance*, Vol. 64, pp. 427-442.

Navitidad, I. (2015), *Where Are Women: Inclusive Boardrooms in Africa's Top Listed Companies*? Corporate Women Directors International, African Development Bank, Abidjan, pp. 7-117.

Ndu, I., Chuwuogor, C., Arize, C.A. and Malindretos, J. (2019), "Modelling earnings management, corporate governance, capital management and risk using dynamic panel data estimation: the case of listed deposit banks in an emerging market", *African Journal of Accounting, Economics, Finance and Banking Research*, Vol. 12 No. 12, pp. 19-47.

Ngunjiri, G.G. (2017), "The effect of earnings management on financial performance of quoted companies in Kenya", Master's Thesis, University of Nairobi, Kenya.

Nguyen, T., Locke, S. and Reddy, K. (2014), "A dynamic estimation of governance structures and financial performance for Singaporean companies", *Economic Modelling*, Vol. 40 No. C, pp. 1-11.

Nguyen, T., Locke, S. and Reddy, K. (2015a), "Does boardroom gender diversity matter? Evidence from a transitional economy", *International Review of Economics & Finance*, Vol. 37 No. C, pp. 184-202.

Nguyen, T.V., Locke, S.M. and Reddy, K. (2015b), "Ownership concentration and corporate performance from a dynamic perspective: does national governance quality matter?", *International Review of Financial Analysis*, Vol. 41, pp. 148-161, doi: 10.1016/j.irfa.2015.06.005.

Nguyen, T.H.H., Ntim, C.G. and Malagila, J.K. (2020), "Women on corporate boards and corporate financial and non-financial performance: a systematic literature review and future research agenda", *International Review of Financial Analysis*, Vol. 71, p. 101554, doi: 10.1016/j.irfa.2020.101554.

Nickell, S. (1981), "Biases in dynamic models with fixed effects", *Econometrica*, Vol. 49 No. 6, pp. 1417-1426.

Nielsen, S. and Huse, M. (2010), "The contribution of women on boards of directors: going beyond the surface", *Corporate Governance: An International Review*, Vol. 18 No. 2, pp. 136-148.

Nyberg, A., Fulmer, I., Gerhart, B. and Carpenter, M. (2010), "Agency theory revisited: CEO return and shareholder interest alignment", *Academy of Management Journal*, Vol. 53 No. 5, pp. 1029-1049.

Nyeadi, J.D., Kamasa, K. and Kpinpuo, S. (2021), "Female in top management and firm performance nexus: empirical evidence from Ghana", *Cogent Economics & Finance*, Vol. 9 No. 1, pp. 1-19, doi: 10.1080/23322039.2021.1921323.

Oldford, E., Ullah, S. and Hossain, A.T. (2021), "A social capital view of women on boards and their impact on firm performance", *Managerial Finance*, Vol. 47 No. 4, pp. 570-592, doi: 10.1108/MF-02-2020-0091.

Orazalin, N. (2020), "Board gender diversity, corporate governance, and earnings management: evidence from an emerging market", *Gender in Management: An International Journal*, Vol. 35 No. 1, pp. 37-60, doi: 10.1108/GM-03-2018-0027.

Ozdemir, O. and Erkmen, E. (2022), "Top management team gender diversity and firm risk-taking in the hospitality industry", *International Journal of Contemporary Hospitality Management*, Vol. 34 No. 5, pp. 1739-1767, doi: 10.1108/IJCHM-06-2021-0719.

Pae, J. (2005), "Expected accrual models: the impact of operating cash flows and reversals of accruals", *Review of Quantitative Finance and Accounting*, Vol. 24 No. 1, pp. 5-22.

Palvia, A., Vahamaa, E. and Vahamaa, S. (2015), "Are female CEOs and chairwomen more conservative and risk averse? Evidence from the banking industry during the financial crisis", *Journal of Business Ethics*, Vol. 131, pp. 577-594.

Pfeffer, J. (1972), "Size and composition of corporate boards of directors: the organisation and its environment", *Administrative Science Quarterly*, Vol. 17 No. 2, pp. 218-228.

Pham, N., Oh, K.B. and Pech, R. (2015), "Mergers and acquisitions: CEO duality, operating performance and stock returns in Vietnam", *Pacific-Basin Finance Journal*, Vol. 35, pp. 298-316, doi: 10.1016/j.pacfin.2015.01.007.

Post, C. and Byron, K. (2014), "Women on boards and firm financial performance: a meta-analysis", *Academy of Management Journal*, Vol. 58 No. 5, pp. 1546-1571, doi: 10.5465/amj.2013.0319.

Proença, C., Augusto, M. and Murteira, J. (2020), "Political connections and banking performance: the moderating effect of gender diversity", *Corporate Governance*, Vol. 20 No. 6, pp. 1001-1028, doi: 10.1108/CG-01-2020-0018.

Proimos, A. (2005), "Strengthening corporate governance regulations", *Journal of Investment Compliance*, Vol. 6 No. 4, pp. 75-84.

Reguera-Alvarado, N., de Fuentes, P. and Laffarga, J. (2017), "Does board gender diversity influence financial performance? Evidence from Spain", *Journal of Business Ethics*, Vol. 141 No. 2, pp. 337-350.

Rezaei, F. and Roshani, M. (2012), "Efficient or opportunistic earnings management with regards to the role of firm size and corporate governance practices", *Interdisciplinary Journal of Contemporary Research in Business*, Vol. 3 No. 9, pp. 1312-1322.

Sari, M.R., Djohanputro, B. and Kountur, R. (2021), "Past performance and earnings management: the effect of free cash flow", *Journal of Asian Finance, Economics and Business*, Vol. 8 No. 1, pp. 37-43.

Schultz, E.L., Tan, D.T. and Walsh, K.D. (2010), "Endogeneity and the corporate governance – performance relation", *Australian Journal of Management*, Vol. 35 No. 2, pp. 145-163.

Shen, C. and Chih, H. (2007), "Earnings management and corporate governance in Asia's emerging markets", *Corporate Governance: An International Review*, Vol. 15 No. 5, pp. 999-1021.

Siegel, D.S. and Simons, K.L. (2010), "Assessing the effects of mergers and acquisitions on firm performance, plant productivity, and workers: NEWL evidence from matched employer-employee data", *Strategic Management Journal*, Vol. 31 No. 8, pp. 903-916.

Simeonescu, L.N., Gherghina, ŞC., Tawil, H. and Sheikha, Z. (2021), "Does board gender diversity affect firm performance? Empirical evidence from standard and poor's 500 information technology sector", *Financial Innovation*, Vol. 7 No. 1, pp. 1-45, doi: 10.1186/s40854-021-00265-x.

Singh, V., Vinnicombe, S. and Terjesen, S. (2007), "Women advancing onto the corporate board", in Bilimoria, D. and Piderit, S.K. (Eds), *Handbook on Women in Business and Management*, Edward Elgar Publishing, Massachusetts, pp. 304-329.

Sotola, D.O. (2019), "Women on corporate boards in Africa. Beyond tokenism", Policy Briefing, Centre for International Governance and Innovation, South African Institute of International Affairs.

Sow, I. and Tozo, K.W. (2019), "The impact of corporate governance on firms' performance and earnings management: the case of china's listed firms", *International Journal of Science and Business*, Vol. 3 No. 1, pp. 84-96, doi: 10.5281/zenodo.2550622.

Srinidhi, B., Gul, F.A. and Tsui, J. (2011), "Female directors and earnings quality", *Contemporary Accounting Research*, Vol. 28 No. 5, pp. 1610-1644.

Sunden, A.E. and Surette, B.J. (1998), "Gender differences in the allocation of assets in retirement savings plans", *American Economic Review*, Vol. 88 No. 2, pp. 207-211.

Tang, H. and Chang, C. (2013), "Does corporate governance affect the relationship between earnings management and firm performance? An endogenous switching regression model", *Review of Quantitative Finance and Accounting*, Vol. 45 No. 1, pp. 33-58, doi: 10.1007/s11156-013-0427-z.

Tang, H.W. and Chang, C.C. (2015), "Does corporate governance affect the relationship between earnings management and firm performance? An endogenous switching regression model", *Review of Quantitative Finance and Accounting*, Vol. 45 No. 1, pp. 33-58.

Torchia, M., Calabrò, A. and Huse, M. (2011), "Women directors on corporate boards: from tokenism to critical mass", *Journal of Business Ethics*, Vol. 102 No. 2, pp. 299-317, doi: 10.1007/s10551-011-0815-z.

Triki Damak, S. (2018), "Gender diverse board and earnings management: evidence from French listed companies", *Sustainability Accounting, Management and Policy Journal*, Vol. 9 No. 3, pp. 289-312, doi: 10.1108/SAMPJ-08-2017-0088.

Ujunwa, A. (2012), "Board characteristics and the financial performance of Nigerian quoted firms", *Corporate Governance: The International Journal of Effective Board Performance*, Vol. 12 No. 5, pp. 656-674, doi: 10.1108/14720701211275587.

Ullah, I., Zeb, A., Khan, M.A. and Xiao, W. (2020), "Board diversity and investment efficiency: evidence from China", *Corporate Governance*, Vol. 20 No. 6, pp. 1105-1134, doi: 10.1108/CG-01-2020-0001.

Vuong, P.T. (2021), "The relationship between corporate governance, earnings management and stock price informativeness. Empirical studies in a Vietnamese context", PhD thesis, Grenoble Alpes University.

Wallison, P.J. (2006), *All the Rage: Will Independent Directors Produce Good Corporate Governance*?, American Enterprise Institute for Public Policy Research, Washington, DC.

Watts, R.L. and Zimmerman, J.L. (1978), "Towards a positive theory of the determination of accounting standards", *The Accounting Review*, Vol. 53 No. 1, pp. 112-134.

Waweru, N.M. and Ntui, P. (2018), "Corporate governance compliance and accrual earnings management in Eastern Africa: evidence from Kenya and Tanzania", *Managerial Auditing Journal*, Vol. 33 No. 2, pp. 171-191, doi: 10.1108MAJ-2016-1438.

Wiley, C. and Monllor-Tormos, M. (2018), "Board gender diversity in the STEM&F sectors: the critical mass required to drive firm performance", *Journal of Leadership & Organizational Studies*, Vol. 25 No. 3, pp. 290-308.

Windmeijer, F. (2005), "A finite sample correction for the variance of linear efficient two-step GMM estimators", *Journal of Econometrics*, Vol. 126 No. 1, pp. 25-51.

Wintoki, M.B., Linck, J.S. and Netter, J.M. (2012), "Endogeneity and the dynamics of internal corporate governance", *Journal of Financial Economics*, Vol. 105 No. 3, pp. 581-606.

Yordanova, D.I. and Alexandrova-Boshnakova, M.I. (2011), "Gender effects on risk-taking of entrepreneurs: evidence from Bulgaria", *International Journal of Entrepreneurial Behaviour & Research*, Vol. 17 No. 3, pp. 272-295, doi: 10.1108/13552551111130718.

Zalata, A.M., Ntim, C.G., Aboud, A. and Gyapong, E. (2019a), "Female CEOs and core earnings quality: new evidence on the ethics versus risk-aversion puzzle", *Journal of Business Ethics*, Vol. 160 No. 2, pp. 515-534, doi: 10.1007/s10551-018-3918-y.

Zalata, A.M., Ntim, C.G., Choudhry, T., Hassanein, A. and Elzahar, H. (2019b), "Female directors and managerial opportunism: monitoring versus advisory", *The Leadership Quarterly*, Vol. 30 No. 5, pp. 1-16, doi: 10.1016/j.leaqua.2019.101309.

Zalata, A.M., Ntim, C.G., Alsohagy, M.H. and Malagila, J. (2021), "Gender diversity and earnings management: the case of female directors with financial background", *Review of Quantitative Finance and Accounting*, Vol. 58 No. 1, pp. 101-136, doi: 10.1007/s11156-021-00991-4.

Zhang, Y. and Qu, H. (2016), "The impact of CEO succession with gender change on firm performance and successor early departure: evidence from china's publicly listed companies in 1997-2010", *Academy of Management Journal*, Vol. 59 No. 5, pp. 1845-1868, doi: 10.5465/amj.2014.0176.

Zhou, Q., Faff, R. and Alpert, K. (2014), "Bias correction in the estimation of dynamic panel models in corporate finance", *Journal of Corporate Finance*, Vol. 25, pp. 494-513.

Zhou, F., Fan, Y., An, Y. and Zhong, L. (2017), "Independent directors, non-controlling directors, and executive pay-for-performance sensitivity: evidence from Chinese non-state owned enterprises", *Pacific-Basin Finance Journal*, Vol. 43, pp. 55-71, doi: 10.1016/j.pacfin.2017.02.003.

Zimon, G., Andrea, A., Hossein, T., Shahmohammadi, S. and Daneshpou, E. (2021), "Earnings management, related party transactions and corporate performance: the moderating role of internal control", *Risks*, Vol. 9 No. 8, p. 146, doi: 10.3390/risks9080146.

Further reading

Lakhal, F., Aguir, A., Lakhal, N. and Malek, A. (2015), "Do women on boards and in top management reduce earnings management? Evidence in France", *Journal of Applied Business Research (JABR)*, Vol. 31 No. 3, pp. 1107-1118.

Mazumder, M.M.M. (2017), "Re-examination of the non-linear relationship between management ownership and earnings management: evidence from Japan", *Indian Journal of Corporate Governance*, Vol. 10 No. 1, pp. 1-23.

Mnif, Y. and Cherif, I. (2021), "Female board directorship and earnings management", *Pacific Accounting Review*, Vol. 33 No. 1, pp. 114-141, doi: 10.1108/PAR-04-2020-0049.

About the authors

Emmanuel Mensah holds BSc and MPhil degrees in accounting from University of Ghana Business School (UGBS), and is currently a PhD candidate in Business Administration with Open University of Malaysia. His background is largely in accounting and finance with interest in econometric applications to accounting and finance. His current research interests are in financial reporting quality, earnings management, corporate governance, mergers and acquisitions and financial literacy. He has attended and presented papers at international conferences organised in Ghana, Liberia, Amsterdam, Dubai and Croatia. Emmanuel has held adjunct positions at Maranatha University College, and is an independent reviewer for some international journals. He has worked with companies in the financial services as well as architectural and construction services industry in Ghana. Emmanuel Mensah is the corresponding author and can be contacted at: emmanuel.mensah@upsamail.edu.gh

Dr Joseph Mensah Onumah holds a BSc Administration and MBA degrees from UGBS, and PhD (Accounting & Finance) from Birmingham Business School, University of Birmingham, UK. He started as a Graduate/Teaching Assistant at UGBS and was Examiner for the Institute of Chartered Accountants, Ghana (ICAG). He was an Adjunct Lecturer and later external Examiner for GIMPA at Greenhill and Institute of Public Administration and Management (IPAM), University of Sierra Leone, Freetown. He currently examines for the University of Cape Coast, University of Education, Winneba, Methodist University College and Islamic University College. His research and consulting interests are in accounting education, corporate governance and accounting issues in both the public and private sectors.