Dr. Abdulaziz Sulaiman Alsultan

Assistant Professor, Department of Accounting, College of Economics and Administrative Sciences, Imam Muhammad Ibn Saud Islamic University (IMSIU)

Using Managerial Ownership in Explaining the Relationship between Board Characteristics and Real Earnings Management: Evidence from Saudi Arabia

Abstract

This study examines the relationship between board characteristics and real earnings management in 91 non-financial firms listed on the Saudi Stock Exchange from 2018 to 2021. The research investigates the association of board size, board independence, the proportion of female directors, and the number of board meetings with real earnings management, as well as the moderating effect of managerial ownership on this relationship. The findings show that board size, board independence, and the proportion of female directors have a significant and negative effect on real earnings management, and that the number of board meetings has a significant positive relationship with real earnings management. The research also finds that the effect of board characteristics on real earnings management is strengthened by the presence of managerial ownership. This research contributes to the existing literature on corporate governance by providing insights into the association between board characteristics and real earnings management in the context of Saudi Arabia. The findings also have implications for improving corporate governance practices and enhancing earnings quality in emerging economies.

Keywords: Board Characteristics; Managerial Ownership; Real Earnings Management

E.mail: assultan@imamu.edu.sa

إستخدام هيكل الملكية الإدارية في تفسير العلاقة بين خصائص مجلس الإدارة وإدارة الأرباح الحقيقية: دليل من الشركات السعودية

ملخص البحث

استهدف البحث دراسة أثر خصائص مجلس الإدارة على إدارة الأرباح الحقيقية في 91 شركة غير مالية مدرجة في السوق المالية السعودية من 2018 إلى 2021. ويهدف البحث أيضاً، إلى دراسة أثر هيكل الملكية الإدارية على العلاقة بين كل من حجم مجلس الإدارة، واستقلالية مجلس الإدارة، ونسبة الإناث في مجلس الإدارة، وعدد إجتماعات مجلس الإدارة وإدارة الأرباح الحقيقية. وتوصل البحث إلى وجود علاقة معنوية سلبية بين كل من حجم مجلس الإدارة ، واستقلالية مجلس الإدارة ، ونسبة الإناث في مجلس الإدارة وبين إدارة الأرباح الحقيقية، وتوجد علاقة معنوية ايجابية بين عدد اجتماعات مجلس الإدارة وإدارة الأرباح الحقيقية، وأن هذا التأثير يختلف باختلاف هيكل الملكية الإدارية. ويساهم هذا البحث في الدراسات السابقة التي تناولت حوكمة الشركات من خلال تقديم رؤى حول العلاقة بين خصائص مجلس الإدارة وإدارة الأرباح الحقيقية في المملكة العربية السعودية، وتحسين ممارسات حوكمة الشركات وتعزيز جودة الأرباح في الاقتصادات النامية.

الكلمات المفتاحية: خصائص مجلس الإدارة، هيكل الملكية الإدارية، إدارة الأرباح الحقيقية.

1. INTRODUCTION

The accounting earnings that are reported through financial statements are one of the most important measures for evaluating the performance of companies. They are also used in concluding many contracts, whether between owners and management or between an organization and lenders (Wang et al., 2023). Given the importance of the earnings figure and its multiple uses by the various stakeholders in the organization, those in management may resort to influencing it in order to mislead those parties and bring the earnings figure to a certain level, which is known in the literature as earnings management. Many researchers have been interested in studying the accounting impact on the earnings figure to a greater degree than the real impact upon it, or what is known as real earnings management (Ertan, 2022).

Real earnings management depends on the actual decisions related to the company's activities taken by the senior management when conducting the company's affairs in order to affect earnings (Ahmed et al., 2022). Ertan (2022) explained that, in the field of earnings management, managers benefit from the options provided by generally accepted accounting principles to manipulate accruals through accounting options and estimates, but, since earnings are the sum of both accruals and cash flows from operating, earnings can be manipulated through either accruals or cash flows from operating, or both. An attempt to affect he earnings reported in the financial statements can be made by influencing the operational decisions that are taken and that affect the real activities that are expressed in the financial statements, which, in turn, has an impact on the operating cash flows.

Corporate governance includes those mechanisms that ensure efficient management of a company's resources and assets to achieve the interests of all stakeholders in the organization, including owners and lenders, and to ensure that managers do not abuse their powers to achieve their own interests at the expense of the rest of the parties. Hence, the primary objective of corporate governance mechanisms is to reduce opportunistic behaviour by the man-

agement, which includes profit management behaviour (Tulcanaza-Prieto & Lee, 2022).

Numerous research studies (e.g., Kang & Kim, 2012; Zgarni et al., 2014; Malik, 2015; Al-Haddad & Whittington, 2019; Le & Nguyen, 2023) have investigated the relationship between board characteristics and real earnings management. In agency theory, corporate governance mechanisms are presented as monitoring tools to align the objectives of agents and principals, hence limiting management opportunity with regard to earnings. Consequently, there is a possibility that board characteristics can have an impact on real earnings management. The previous literature indicates that larger board sizes, higher levels of board independence, and the presence of women on the board may mitigate the possibility of real earnings management. Therefore, it is important to consider the composition and structure of a company's board of directors when examining real earnings management practices.

Ownership structure is the primary factor influencing the performance of a company, since it expresses the identities of the shareholders and the scope of their interests. It is possible to distinguish between two different types of ownership structure in corporations: concentrated ownership structures, which refer to the concentration of a company's ownership in a small number of shareholders; and dispersed ownership structures, which refer to the presence of many shareholders in the corporation such that each shareholder owns a modest number of shares in order that his/her ownership does not exceed 5% of the corporation's shares (Choi, 2018).

Several studies (e.g., Teshima & Shuto, 2008; Yang et al., 2008; O'Callaghan et al., 2018) have investigated the relationship between managerial ownership and earnings management. According to Teshima and Shuto (2008) as well as O'Callaghan et al. (2018), there is a significant negative association between managerial ownership and the manipulation of earnings. In contrast, Yang et al. (2008) showed a significant positive relationship between managerial ownership and earnings management.

This paper is motivated by two considerations. Firstly, there is a lack of research that investigates the effect of board characteristics on real earnings management in Saudi Arabia. Secondly, there is mixed empirical evidence in the results of previous studies (e.g., Kang & Kim, 2012; Zgarni et al., 2014; Malik, 2015; Al–Haddad & Whittington, 2019; Le & Nguyen, 2023) that ad–dressed the influence of board characteristics on real earnings management. Thus, there is a need to address this issue in Saudi Arabia as a developing country in which the business settings are different from those in developed countries.

Considering the above, the research problem can be formulated as two questions: 1) Do board characteristics influence real earnings management? and 2) Does managerial ownership moderate the relationship between board characteristics and real earnings management? The primary aim of this re–search is to investigate the potential impact of board characteristics on the practice of real earnings management. Furthermore, the research aims to in–vestigate whether the degree of managerial ownership has an impact on the intensity and/or orientation of the correlation between board attributes and actual earnings management in firms that are publicly traded on the Saudi Stock Exchange.

The significance of this research from an academic perspective lies in its endeavour to determine how board characteristics might have an impact on real earnings management, in addition to evaluating the effect of managerial ownership as a moderating variable on this association. Moreover, this field of study suffers from a lack of research within the context of the Kingdom of Saudi Arabia. Assessing the impact of board characteristics on actual earnings management holds significant practical value for investors, the capital market, and other stakeholders in Saudi Arabia, as well as in nations that share a com–parable business climate. This research has the potential to benefit these groups by providing valuable insights into the impact of board characteristics on real earnings management. The significance of this research also extends

beyond its practical applications, as it can inform decision making by shedding light on the influence of board characteristics.

This paper makes significant contributions to the literature in three ways. Firstly, it extends the previous research by investigating the moderating impact of managerial ownership on the relationship between board characteristics and real earnings management. Secondly, to the best of the researcher's knowledge, this is the first study to examine this relationship in a developing country. Finally, this paper addresses a research gap by being the first to explore this relationship in Saudi Arabia.

This research employs panel data regression to reveal that (a) the effect of board size, board independence, and the proportion of female directors on real earnings management is significant and negative; (b) the effect of the number of board meetings on real earnings management is significant and positive; and (c) managerial ownership moderates the relationship between board size, number of board meetings, and board independence and real earnings management.

The structure of this paper is as follows. Section two provides the background to the research, section three presents a literature review of the theoretical framework, and section four outlines the development of the research hypotheses based on related prior research. Section five describes the research design and section six discusses the findings. Finally, section seven provides the conclusion of the paper.

2. BACKGROUND

Saudi Arabia accounts for one fourth of the gross domestic product (GDP) of the Arab world and its formal laws are substantially influenced by Islamic principles (Hussainey & Al-Nodel, 2008; Al-Matari et al., 2012). Saudi Arabia is also a member of the G20. According to one World Bank study, the economy of the Kingdom of Saudi Arabia was one of the largest in the Middle East and North Africa area in 2021 based on the GDP for that year.

Oil exports, one of the main sources of national income, are necessary for the Kingdom of Saudi Arabia's economy to remain stable (Alsultan, 2017). It has been noted that the export of petroleum products accounted for more than 60% of Saudi Arabia's total national income (Ministry of Economy and Planning, 2016). Around 22% of the world's total oil reserves are in Saudi Arabia, according to the Organization of the Petroleum Exporting Countries (OPEC) Annual Statistical Bulletin for 2016, and it was anticipated that the Kingdom of Saudi Arabia would continue to produce the largest amount of crude oilworldwide, thus maintaining its position (OPEC, 2017). Further-more, a significant portion of the oil produced by OPEC members is antici-pated to come from the Kingdom of Saudi Arabia. The Kingdom of Saudi Arabia accounts for 34.54% of OPEC's total oil production, which suggests that it has a substantial role in determining global oil prices (OPEC, 2021). The Kingdom of Saudi Arabia will be able to produce and sell oil for the next century, according to the Ministry of Petroleum and Mineral Resources, be-cause of its vast deposits of crude oil. Around 266,578 billion barrels of crude oil are thought to be in those reserves (Annual Statistical Bulletin, 2015).

Saudi Arabia joined the World Trade Organization as a full member in 2005 (Ministry of Commerce and Industry, 2006). As a result, it can be ar-gued that various reforms have occurred in the domains of business, politics, and legal work procedures in the Kingdom of Saudi Arabia. The Saudi Arabi-an General Investment Authority was established as a result of these modifica-tions. It should be emphasized that the main goal of this body is to improve the investment climate in the Kingdom of Saudi Arabia by removing obstacles and remedying deficiencies.

The Saudi Capital Market Authority has improved the rules governing foreign investment in the Saudi capital market, aiming to simplify the eligibil-ity requirements for foreign investors, their affiliates, foreign portfolio manag-ers, and their managed funds. This was achieved in 2018. Tadawul (the Saudi Stock Exchange) offers straightforward access to global investors and is valued at more than $564 billion on the Arab stock market (Alsultan, 2017).

Saudi Arabia has a family- or state-dominated concentration of corporate ownership. More than 70% of the listed companies are family-owned and the Saudi government owns about 30% (Baydoun et al., 2013; Albassam, 2014). According to Alfordy (2016), 68 of the 168 Saudi companies listed at the time had boards dominated by Saudi families who held more than 41% of the executive board positions, and 17 more families controlled the boards of the other Saudi listed companies. Therefore, it is important to study these environmental variables in order to inform foreign investors about the Saudi capital market and how these factors may lead to a variation in outcomes across different countries.

3. THEORETICAL LITERATURE REVIEW

Yaghobnezhad and Tajiknia (2023) explain the motives for managers to engage in earnings management as follows: (1) as opportunistic self-interest for those in management; (2) as a desire to adhere to debt covenants; (3) to achieve earnings targets; (4) to issue the company's shares to the market; (5) to reduce political costs; and (6) to corroborate previously published earnings forecasts.

Company managers can affect the earnings figure that is reported by influencing the method of accounting treatment of the economic activities carried out by the company, or how these are presented in the financial statements, or by influencing those activities themselves. Therefore, the attempt to influence earnings can be made through two approaches: (1) the accounting approach, which relies on accounting decisions to influence the earnings figure through various accounting means, the most important of which are discretionary accruals and judgemental estimates, discretionary accounting changes, and accounting disclosure management; and (2) the real approach, which is based on the real decisions taken by the management in the course of conducting the company's affairs with the aim of influencing the earnings figure (Degiannakis et al., 2023).

Degiannakis et al. (2023) explain the implications of the real approach to earnings management in terms of reliance on this method having a negative

impact on the company itself, on the characteristics of the earnings that are reported, on the cost of funds obtained by the company to finance its operations, or on the value of its shares in the future. The main reason for these negative effects is that the activities that the management rely on to influence the earnings under this approach represent a departure by the management from the best decisions that should have been taken under the normal course of the activity; it is then expected that they will affect the profit for the current period or over subsequent or future periods. According to Le and Nguyen (2023), the expected association between board characteristics and real earnings management can be understood through several theories, the most important of with are agency theory, stewardship theory, and upper echelon theory.

According to agency theory, managers may act in opportunistic ways to further their goals if the chair's interests diverge from those of the shareholders due to holding the dual positions of CEO and chair of the board. According to Abbott et al. (2004), a chair of the board who is not also the CEO is anticipated to strengthen the board's oversight of earnings management and increase the calibre of accounting information (Rajeevan & Ajward, 2020).

Choo and Tan (2007) proposed, based on stewardship theory, that the absence of non-executive board members may provide opportunities for managers to commit fraud. Other research has demonstrated that the presence of non-executive members on the board of directors can promote better management compliance, have a greater influence on management decisions with regard to providing necessary financial information, which improves the quality of financial disclosure, and limit earnings management (Klein, 2002).

According to upper echelons theory, the educational background of the members of the senior management might affect those managers' strategic decision making and, consequently, the performance of their companies. Directors with a background in finance and accounting can, for example, create business plans and have a wealth of knowledge in establishing stricter standards for audit quality and enforcing earnings management (Carcello et al.,

2008). According to Alzoubi (2019), board expertise restricts the management of earnings. However, other research has found the reverse, demonstrating that conflicts on the board of directors are more frequent when there are members with experience in financial accounting. Depending on their financial and accounting experience, this can result in a rise in earnings management (Metawee, 2013).

4. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

This section provides a review of previous studies that have investigated the relationship between board characteristics and real earnings management. It also explores research that has examined the role of managerial ownership as a determinant of real earnings management and its potential moderating effect on this association, drawing upon relevant theories. This review aids in developing a deeper understanding of the theoretical framework that underpins the research hypotheses.

Several studies (e.g., Kang & Kim, 2012; Zgarni et al., 2014; Malik, 2015; Al-Haddad & Whittington, 2019; Le & Nguyen, 2023) have investigated the association between board size and real earnings management. The results of previous studies have varied. For example, some (e.g., Kang & Kim, 2012; Malik, 2015; Le & Nguyen, 2023) indicate a negative relationship between board size and real earnings management. In contrast, Zgarni et al. (2014) find a positive relationship between the two factors, and Al-Haddad and Whittington (2019) report an insignificant relationship between them.

According to stewardship theory, the smaller the board size, the fewer managers there are to manage earnings and they have a greater influence on management decisions with regard to providing the necessary financial information, which improves the quality of financial disclosure and limits earnings management (Klein, 2002).

Stewardship theory and contemporary studies propose that board size could have an effect on actual earnings management. This notion is supported

by prior research, which indicates that specific board attributes are inversely related to the practice of manipulating earnings. Therefore, the researcher aims to align with the trend observed in previous studies and develop an alternative hypothesis. The alternative hypothesis is as follows:

H_1: **Board size negatively affects real earnings management**.

Several studies (e.g., Xie et al., 2003; Kang & Kim, 2012; Zgarni et al., 2014; Ngamchom, 2015; Obigbemi et al., 2016) have investigated the association between board meetings and earnings management. The results of previous studies have varied. Some (e.g., Kang & Kim, 2012; Ngamchom, 2015; Obigbemi et al., 2016) indicate a significant positive relationship between board meetings and earnings management. In contrast, Xie et al. (2003) and Zgarni et al. (2014) find a negative relationship between them.

According to upper echelons theory conflicts between managers are more likely to arise at board meetings than at other times, which can result in an increase in earnings management. Consequently, the more frequent the board meetings, the greater the likelihood of managers managing earnings and having a greater influence on management decisions (Metawee, 2013).

Upper echelons theory and the current research suggest that board meetings may have an impact on real earnings management, with the literature (e.g., Kang & Kim, 2012; Ngamchom, 2015; Obigbemi et al., 2016) indicating a positive relationship between board characteristics and real earnings management. Thus, the researcher's intention to adopt the trend for the relationship between board characteristics and real earnings management is justified by previous studies. This motivation led to the formulation of the second alternative hypothesis:

H_2: **Board meetings positively affect real earnings management**.

According to Kang & Kim, 2012; Zgarni et al., 2014; Malik, 2015; Al-Haddad & Whittington, 2019, have investigated the association between board independence and real earnings management. The results of previous studies have varied. Some (e.g., Kang & Kim, 2012; Zgarni et al., 2014; Ma-

lik, 2015) indicate a negative relationship between board independence and real earnings management. In contrast, Al–Haddad and Whittington (2019) report an insignificant relationship between the two factors.

Board independence may have an impact on real earnings management, as previous studies (e.g., Kang & Kim, 2012; Zgarni et al., 2014; Malik, 2015) suggest that board independence may serve as a mitigating factor for engagement in real earnings management. This justification led the researcher to adopt a trend for the relationship between board independence and real earnings management that is consistent with previous studies in this regard. As a result, a third alternative hypothesis was developed:

H$_3$: **Board independence negatively affects real earnings management**.

Researchers have also investigated the association between board gender diversity and real earnings management, Obigbemi et al. (2016) and Le and Nguyen (2023), for example, indicating a negative relationship. Arioglu (2020) reports an insignificant relationship between the presence of female directors and earnings management.

Based on the current research, the proportion of female directors may have an impact on real earnings management, as previous studies (e.g., Obigbemi et al., 2016; Le & Nguyen, 2023) suggest a negative relationship between the two variables. This rationale substantiates the researcher's aim to align with the trend observed in prior research regarding the association between board characteristics and actual earnings management. As a result, the fourth alternative hypothesis was developed:

H$_4$: **The proportion of female directors negatively affects real earnings management**.

With regard to analysing the influence of managerial ownership on the association between board characteristics and real earnings management, several studies (e.g., Khafid & Arief, 2017; Hapsoro & Shufia, 2018; Hatane et al., 2019) indicate that earnings management differed among companies with dif–

ferent forms of managerial ownership. The results of other studies (e.g., Lasfer, 2006; Bohdanowicz, 2014) indicate that board characteristics differ according to managerial ownership.

As managerial ownership has an impact on both earnings management and board characteristics, the researcher anticipates that the interaction between board characteristics and managerial ownership will produce a new interaction variable that will influence the relationship under study. To account for this possibility, the researcher takes a moderating approach and treats managerial ownership as a moderating variable in the relationship, rather than a control variable that affects the dependent variable. The researcher posits that the interplay between managerial ownership and board characteristics can create an interactive (moderating) variable that is anticipated to influence the intensity and/or orientation of the current relationship. In other words, the researcher believes that the level of managerial ownership may interact with specific board attributes to either strengthen or weaken the association with actual earnings management. This hypothesis highlights the importance of examining these two factors together in order to gain a more comprehensive understanding of their combined effect on organizational outcomes. Consequently, the researcher developed a fifth undirected research hypothesis in the following alternative form:

H_5: **Managerial ownership moderates the relationship between board characteristics and real earnings management**.

The following sub-hypotheses can be derived from the fifth alternative hypothesis as follows:

H_{5a}: **Managerial ownership moderates the relationship between board size and real earnings management**.

H_{5b}: **Managerial ownership moderates the relationship between board meetings and real earnings management**.

H_{5c}: **Managerial ownership moderates the relationship between board independence and real earnings management**.

H$_{5d}$: Managerial ownership moderates the relationship between the proportion of female directors and real earnings management.

5. RESEARCH DESIGN

This section tests the research hypotheses empirically to ascertain whether board characteristics affect real earnings management and whether managerial ownership interacts with those board characteristics in having an effect on real earnings management. The following sections elaborate the measurement of the variables and the estimation of the research models employed to examine the research hypotheses.

SPECIFICATION OF THE RESEARCH MODELS

The independent variable, board characteristics, is expected to have an effect on the dependent variable of real earnings management. It is also anticipated that managerial ownership will moderate this effect, as shown in the research model in Figure 1.
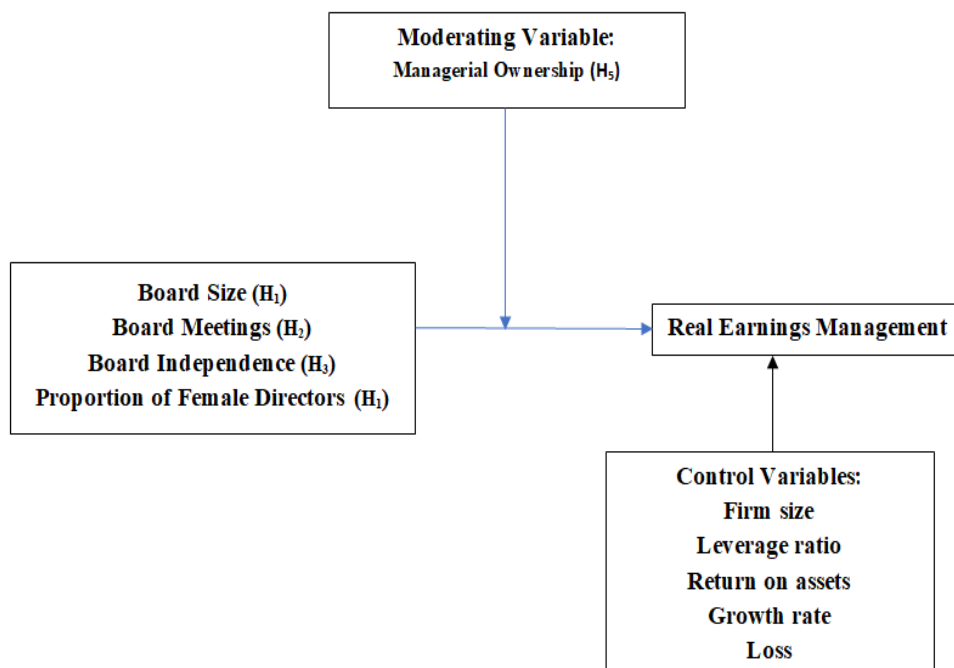

Figure 1: Research model

Methodology

To test H_1 empirically, the following equation represents a panel data regression model that has been estimated:

$REM_{(it)} = \beta_0 + \beta_1 B\_Size_{(it)} + \beta_2 FS_{(it)} + \beta_3 LEV_{(it)} + \beta_4 ROA_{(it)} + \beta_5$ **(Model 1)**
$GROWT_{(it)} + \beta_6 LOSS_{(it)} + \beta_7 \sum year_{(it)} + \beta_8 \sum Sector_{(it)} + \varepsilon_{(it)}$

Where:

$REM_{(it)}$:   Real earnings management of firm $(_i)$ in financial year $(_t)$;

$B\_Size_{(it)}$:   Board size of firm $(_i)$ in financial year $(_t)$;

$FS_{(it)}$:   Firm size of firm $(_i)$ in financial year $(_t)$;

$LEV_{(it)}$:   Leverage ratio of firm $(_i)$ in financial year $(_t)$;

$ROA_{(it)}$:   Return on assets of firm $(_i)$ in financial year $(_t)$.

$GROWT_{(it)}$:   Sales growth of firm $(_i)$ in financial year $(_t)$;

$LOSS_{(it)}$:   A dummy variable that equals 1 if the firm reports a loss, and zero otherwise;

$year(it)$:   A vector of year indicator variables 2018, 2019, 2020 and 2021; and

$Sector(it)$:   A vector of sector indicator variables based on the Saudi Stock Exchange classification.

To test H_2 empirically, the following equation represents a panel data regression model that has been estimated:

$REM_{(it)} = \beta_0 + \beta_1 B\_Meetings_{(it)} + \beta_2 FS_{(it)} + \beta_3 LEV_{(it)} + \beta_4 ROA_{(it)} + \beta_5$ **(Model 2)**
$GROWT_{(it)} + \beta_6 LOSS_{(it)} + \beta_7 \sum year_{(it)} + \beta_8 \sum Sector_{(it)} + \varepsilon_{(it)}$

Where:

$B\_Meetings_{(it)}$:   Number of board meetings of firm $(_i)$ in financial year $(_t)$.

To test H_3 empirically, the following equation represents a panel data regression model that has been estimated:

$$REM_{(it)} = \beta_0 + \beta_1 B\_Independence_{(it)} + \beta_2 FS_{(it)} + \beta_3 LEV_{(it)} + \beta_4 ROA_{(it)} \quad \textbf{(Model 3)}$$
$$+ \beta_5 GROWT_{(it)} + \beta_6 LOSS_{(it)} + \beta_7 \sum year_{(it)} + \beta_8 \sum Sector_{(it)} + \varepsilon_{(it)}$$

Where:

B_Independence $_{(it)}$:   Board independence of firm ($_i$) in financial year ($_t$).

To test H_4 empirically, the following equation represents a panel data re-gression model that has been estimated:

$$REM_{(it)} = \beta_0 + \beta_1 F\_Directors_{(it)} + \beta_2 FS_{(it)} + \beta_3 LEV_{(it)} + \beta_4 ROA_{(it)} + \beta_5 \quad \textbf{(Model 4)}$$
$$GROWT_{(it)} + \beta_6 LOSS_{(it)} + \beta_7 \sum year_{(it)} + \beta_8 \sum Sector_{(it)} + \varepsilon_{(it)}$$

Where:

F_Directors$_{(it)}$:   Presence of women on the board of firm ($_i$) in financial year ($_t$).

MANAGERIAL OWNERSHIP MODERATING MODEL

To test H_5, which aims to investigate the moderating effect of managerial ownership on the association between board characteristics and real earnings management, a panel data regression model is estimated.

To test H_{5a}, the following equation represents a panel data regression model that has been estimated:

$$REM_{(it)} = \beta_0 + \beta_1 B\_Size_{(it)} + \beta_2 Manag.Own_{(it)} + \beta_3 \quad \textbf{(Model 5)}$$
$$B\_Size * Manag.Own_{(it)} + \beta_4 FS_{(it)} + \beta_5 Lev_{(it)} + \beta_6 ROA_{(it)} +$$
$$\beta_7 GROWT_{(it)} + \beta_8 LOSS_{(it)} + \beta_9 \sum year_{(it)} + \beta_{10} \sum Sector_{(it)} + \varepsilon_{(it)}$$

Where, *Manag.Own$_{(it)}$* is the managerial ownership of firm ($_i$) in financial year ($_t$); and B_Size*Manag.Own is the interaction variable between board size and managerial ownership.

To test H_{5b}, the following equation represents a panel data regression model that has been estimated:

$$REM_{(it)} = \beta_0 + \beta_1 B\_Meetings_{(it)} + \beta_2 Manag.Own_{(it)} + \beta_3 \quad \textbf{(Model 6)}$$
$$B\_Meetings * Manag.Own_{(it)} + \beta_4 FS_{(it)} + \beta_5 Lev_{(it)} + \beta_6 ROA_{(it)} +$$
$$\beta_7 GROWT_{(it)} + \beta_8 LOSS_{(it)} + \beta_9 \sum year_{(it)} + \beta_{10} \sum Sector_{(it)} + \varepsilon_{(it)}$$

Where, B_Meetings*Manag.Own is the interaction variable between board meetings and managerial ownership.

To test H_{5c}, the following equation represents a panel data regression model that has been estimated:

$REM_{(it)} = \beta_0 + \beta_1 B\_Independence_{(it)} + \beta_2 Manag.Own_{(it)} + \beta_3 B\_Independence * Manag.Own_{(it)} + \beta_4 FS_{(it)} + \beta_5 Lev_{(it)} + \beta_6 ROA_{(it)} + \beta_7 GROWT_{(it)} + \beta_8 LOSS_{(it)} + \beta_9 \sum year_{(it)} + \beta_{10} \sum Sector_{(it)} + \varepsilon_{(it)}$ **(Model 7)**

Where, B_Independence *Manag.Own* is the interaction variable between board independence and managerial ownership.

To test H_{5d}, the following equation represents a panel data regression model that has been estimated:

$REM_{(it)} = \beta_0 + \beta_1 F\_Directors_{(it)} + \beta_2 Manag.Own_{(it)} + \beta_3 F\_Directors * Manag.Own_{(it)} + \beta_4 FS_{(it)} + \beta_5 Lev_{(it)} + \beta_6 ROA_{(it)} + \beta_7 GROWT_{(it)} + \beta_8 LOSS_{(it)} + \beta_9 \sum year_{(it)} + \beta_{10} \sum Sector_{(it)} + \varepsilon_{(it)}$ **(Model 8)**

Where, F_Directors *Manag.Own* is the interaction variable between the proportion of female directors and managerial ownership.

SAMPLE SELECTION

Excluding financial institutions, such as banks and insurance companies, the initial sample for the study was composed of all non-financial firms that were listed on the Saudi Stock Exchange between 2018 and 2021. The financial sector was excluded from the sample as it is regulated and governed by the Saudi Central Bank and arguably follows different financial reporting practices. In addition, Sharif and Ming Lai (2015) claim that the financial sector has "different structures and policies". Hashed and Almaqtari (2021) further found that the adoption of International Financial Reporting Standards had a significant negative influence on earnings management behaviour. Consequently, the period of this study starts from 2018 to eliminate the confounding effect of the use of Saudi national accounting standards on earnings management.

The study sample selection criteria required that firms meet the following conditions: (1) they must be listed on the Saudi Stock Exchange; (2) their annual financial statements must be available during the study period; and (3) at least six observations were needed for each sector (Huang et al., 2020).

After eliminating companies in the financial sector and those in other sectors that did not satisfy the aforementioned criteria, the sample selection is presented in Table 1. Consequently, the study collected data from a total of 91 firms across nine sectors, with a total of 340 firm–year observations during the period 2018–2021.

Table 1: Sample selection

Sector	Sample firms	%
Materials	28	30.7
Food and Staples Retailing	6	6.6
Capital Goods	12	13.2
Retailing	8	8.8
Health Care	7	7.7
Consumer Services	8	8.8
Food and Beverages	8	8.8
Real Estate Management and Development	8	8.8
Consumer Durables and Apparel	6	6.6
Total	91	100

MEASUREMENT OF THE VARIABLES

Dependent variable

The dependent variable is real earnings management, which is measured using the following proxies (Alhadab et al., 2020; Yunus & Sutrisno, 2022). The first proxy is abnormal operating cash flows ($ABNOCF$); the second proxy is abnormal discretionary expenses ($ABNDEXP$); and the third proxy is abnormal production cost ($ABNPROD$).

$$\frac{OCF_{i,t}}{ASSETS_{i,t-1}} = \alpha_0 + \beta_1 \frac{1}{ASSETS_{i,t-1}} + \beta_2 \frac{SALES_{i,t}}{ASSETS_{i,t-1}} + \beta_3 \frac{\Delta SALES_{i,t}}{ASSETS_{i,t-1}} + \varepsilon$$

$$\frac{DISX_{i,t}}{ASSETS_{i,t-1}} = \alpha_0 + \beta_1 \frac{1}{ASSETS_{i,t-1}} + \beta_2 \frac{SALES_{i,t}}{ASSETS_{i,t-1}} + \varepsilon$$

$$\frac{PRODCST_{i,t}}{ASSETS_{i,t-1}} = \alpha_0 + \beta_1 \frac{1}{ASSETS_{i,t-1}} + \beta_2 \frac{SALES_{i,t}}{ASSETS_{i,t-1}} + \beta_3 \frac{\Delta SALES_{i,t}}{ASSETS_{i,t-1}} +$$

$$\beta_4 \frac{\Delta SALES_{i,t-1}}{ASSETS_{i,t-1}} + \varepsilon$$

Where

$OCF_{i,t}$:   cash flows from operating;

$SALES_{i,t}$:   sales in financial year $_{(t)}$;

$SALES_{i,t-1}$:   sales in financial year $_{(t-1)}$;

$DISX_{it}$:   sum of research and development expenses and advertising expenses for firm ($_i$) in financial year ($_t$); and

$PRODCST_{i,t}$:   cost of goods sold and change in inventories.

Independent variable

Board size is measured by the natural logarithm of the number of directors (Malik, 2015); board meetings are measured by the natural logarithm of the number of board meetings (Kang & Kim, 2012); board independence is measured as the percentage of independent directors on the board (Malik, 2015); female directors is measured as the percentage of women directors on the board (Le & Nguyen, 2023).

Moderating variable

Managerial ownership is calculated as the proportion of shares held by the senior management to the total company shareholding (Barnhart & Rosen–stein, 1998; Mwangi & Nasieku, 2022).

Control variables

- Firm size is calculated as the natural log of total assets (Yang et al., 2022).
- Leverage ratio is measured as the debt–to–assets ratio (Yang et al., 2022).
- Return on assets is measured as net income over total assets (Yang et al., 2022).
- Growth rate is calculated as (Revenue$_t$ – Revenue$_{t-1}$) / Revenue$_{t-1}$ (Tran & Dang, 2021).
- Loss is a dummy variable that equals 1 if the firm reports a loss, and zero otherwise (Alhadab et al., 2020).

Table 2 presents a summary of the main variables employed in the study, along with the measurement methods utilized for each one.

Table 2: Measurement of variables

Variable	Type (predicted sign)	Measurement
Real earnings management (*EQ*)	Dependent	Measured by using the proxies (Alhadab et al., 2020).
Board Size (*B_Size*)	Independent (-)	Measured as the natural logarithm of the number of directors (Malik, 2015).
Board Meetings (*B_Meetings*)	Independent (+)	Measured as the natural logarithm of the number of board meetings (Kang & Kim, 2012).
Board Independence (*B_Independence*)	Independent (-)	Measured as the percentage of independent directors on the board (Malik, 2015).
Female Directors (*F_Directors*)	Independent (-)	Measured as the percentage of women directors on the board (Le & Nguyen, 2023).
Managerial Ownership (*Manag.Own*)	Moderating (+/-)	Measured as the percentage of shares held by senior management to the total company shareholding (Barnhart & Rosenstein, 1998; Mwangi & Nasieku, 2022).
Firm Size (*FS*)	Control +/-	Measured as the natural logarithm of total assets (Yang et al., 2022).
Leverage (*Lev*)	Control +/-	Measured as the debt-to-assets ratio (Yang et al., 2022).
Return on Assets (*ROA*)	Control +/-	Measured as net income divided by total assets (Yang et al., 2022).
Growth Rate (*GROWT*)	Control +/-	Calculated as ($Revenue_t$ – $Revenue_{t-1}$) / $Revenue_{t-1}$ (Tran & Dang, 2021).
Loss (*LOSS*)	Control +/-	A dummy variable that equals 1 if the firm reports a loss, and zero otherwise (Alhadab et al., 2022).

6. EMPIRICAL RESULTS AND DISCUSSION

In this section, an overview of the descriptive statistics for the research variables employed in the regression models is presented, along with a discussion of the hypothesis testing results. The descriptive statistics provide a summary of the key characteristics of the data, such as measures of central tendency and variability. The hypothesis testing results examine the association between the variables and assess whether the findings support or reject the proposed hypotheses. Overall, this section offers insights into the relationships between the variables and their significance for the research questions at hand.

DESCRIPTIVE STATISTICS

Table 3 displays the descriptive statistics for all variables utilized in the analysis of the research models. The table indicates that the means of the variables are proximate to the minimum and maximum values, implying that there is diversity in the data and no outliers. This suggests that the sample is representative of the population and the data is suitable for analysis.

Table 3: Descriptive statistics

Variable	Min.	Max.	Mean	Std. deviation
ABNOCF	-.29617798	.2673045	.0004335	.06692598420
ABNDEXP	-.25691867	.4865030	.0015854	.07091369325
ABNPROD	-.19485787	.2284432	.0002305	.05875955389
B_Size	.69897000433	1.176091	.9125957	.0898222277698
B_Meetings	.30102999566	1.041392	.6861310	.1311701442871
B_Independence	0	1	.49	.157
F_Directors	.000000	.4000000	.0159787	.0455138708136
FS	1.869800625	5.014258	3.250615	.616857599667
LEV	.008175100	.9250932	.3888892	.244605903240
ROA	-.367729175	.2508269	.0139335	.092052923894
GROWT	-.999955830	35.11753	.1460207	1.942097398406
LOSS	0	1	.34	.473
Manag.Own	0.0000000	6.0465408	0.1186041	0.4797154728

N=340

Table 4 illustrates the correlations among the variables employed in the analysis using the Pearson correlation coefficient to gauge the extent of correlation between the independent variables. A correlation coefficient of less than 0.7 suggests a weak correlation and no issue of multicollinearity. In the current sample, the correlation coefficients for the independent variables are all below 0.5, indicating no indication of multicollinearity among the variables. This suggests that the independent variables are not strongly correlated with each other, and each variable has a unique contribution to the outcome variable in the regression model.

Table 4: Pearson correlation coefficients

Correlation	ABNOCF	ABNPROD	ABNDEXP	B_Size	B_Meetings	B_Independence	F_Directors	FS	LEV	ROA	GROWT	LOSS	Manag_Own
ABNOCF	1												
ABNPROD	.434**	1											
ABNDEXP	.265**	.271**	1										
B_Size	-.333**	-.284**	-.327**	1									
B_Meetings	.226**	.338**	.312**	-.426**	1								
B_Independence	-.346**	-.353**	-.324**	.339**	-.339**	1							
F_Directors	-.063	-.213**	-.078	.204**	-.222**	.202**	1						
FS	.048	.008	-.310**	.204**	-.088	-.127*	-.062	1					
LEV	-.293**	-.117*	-.171**	.014	-.054	.016	-.031	.188**	1				
ROA	.287**	-.046	-.112*	.098	-.136*	-.091	.115*	.366**	-.224**	1			
GROWT	.009	.017	-.024	-.038	-.008	-.021	-.019	.045	-.029	.191**	1		
LOSS	-.173**	.045	.070	-.001	.061	.082	-.071	-.235**	.229**	-.68**	-.090	1	
Manag_Own	-.318**	-.370**	-.266**	.251**	-.328**	.309**	.331**	-.026	.132*	.014	-.020	.061	1

N=340
** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

EMPIRICAL RESULTS

The subsequent sections present the outcomes of the regression models employed to examine the research hypotheses. The results of the regression analysis provide insights into the relationship between the independent and dependent variables and evaluate the significance of the associations. These findings enable an understanding of the impact of board characteristics and managerial ownership on actual earnings management and contribute to the existing literature on corporate governance and financial reporting.

Results of the board characteristics and real earnings management model

Table 5 shows the outcomes of the panel data regression analysis examining the impact of board size on real earnings management. Panels A, B and C of Table 5 report the results on the relationship between board size and real earnings management and show that board size has a significant and negative effect on *ABNOCF*, *ABNPROD* and *ABNDEXP*, respectively. Thus, H_1 is supported. These findings are consistent with earlier studies that have also shown a significant and negative association between board size and engagement in real earnings management (e.g., Kang & Kim, 2012; Malik, 2015; Le & Nguyen, 2023). Table 5 presents evidence that real earnings management is negatively associated with board size, suggesting that firms listed on the Saudi Stock Exchange which have smaller board sizes are more likely to manipulate reported earnings via the use of real earnings management. According to stewardship theory, fewer managers manage earnings and thus have a higher impact on management decisions about the provision of critical financial information when the board is smaller, which enhances the quality of financial disclosure and restricts earnings management (Klein, 2002).

Table 5: Results of testing H_1

Panel A: Dependent Variable is ABNOCF	β	p-value
B_Size	-.459	.000
FS	-.059	.000
LEV	-.240	.023
ROA	.282	.000
GROWT	-.048	.000
LOSS	.088	.169
Year	Included	
Sector	Included	
R^2	.302	
Adjusted R^2	.270	
F-statistic	9.344	
Sig.	0.000	
N	340	

Panel B: Dependent Variable is ABNPROD	β	p-value
B_Size	-.321	.000
FS	.201	.002
LEV	-.236	.000
ROA	-.085	.282
GROWT	.022	.676
LOSS	.082	.264
Year	Included	
Sector	Included	
R^2	.155	
Adjusted R^2	.116	
F-statistic	3.970	
Sig.	0.000	
N	340	

Panel C: Dependent Variable is ABNDEXP	β	p-value
B_Size	-.235	.000
FS	-.072	.124
LEV	-.279	.000
ROA	-.025	.666
GROWT	-.002	.965
LOSS	.015	.783
Year	Included	
Sector	Included	
R^2	.539	
Adjusted R^2	.518	
F-statistic	25.290	
Sig.	0.000	
N	340	

Table 6 shows the outcomes of the panel data regression analysis examin‐ing the impact of board meetings on real earnings management. Panels A, B and C of Table 6 report the results on the relationship between board meet‐ings and real earnings management and show that board meetings have a sig‐nificant and positive effect on *ABNOCF, ABNPROD* and *ABNDEXP*, re‐spectively. Thus, H_2 is supported. These findings are consistent with earlier studies that have also shown a significant and positive relationship between board meetings and real earnings management (e.g., Kang & Kim, 2012; Ngamchom, 2015; Obigbemi et al., 2016). According to upper echelons the‐ory, disagreements arise more frequently at board meetings than at other times, which may lead to an increase in earnings management. As a result,

managers control earnings and have more influence over management deci–sions at larger board meetings (Metawee, 2013).

Table 6: Results of testing H_2

Panel A: Dependent Variable is ABNOCF	β	p-value
B_Meetings	.269	.000
FS	.059	.325
LEV	-.261	.000
ROA	.370	.000
GROWT	-.047	.353
LOSS	.122	.080
Year	Included	
Sector	Included	
R^2	.233	
Adjusted R^2	.197	
F-statistic	6.553	
Sig.	0.000	
N	340	
Panel B: Dependent Variable is ABNPROD	β	p-value
B_Meetings	.347	.000
FS	.140	.025
LEV	-.192	.001
ROA	-.049	.539
GROWT	.036	.485
LOSS	.058	.424
Year	Included	
Sector	Included	
R^2	.172	
Adjusted R^2	.134	
F-statistic	4.499	
Sig.	0.000	
N	340	
Panel C: Dependent Variable is ABNDEXP	β	p-value
B_Meetings	.221	.000
FS	-.117	.013
LEV	-.250	.000
ROA	-.005	.931
GROWT	.009	.812
LOSS	-.005	.926
Year	Included	
Sector	Included	
R^2	.534	
Adjusted R^2	.512	
F-statistic	24.755	
Sig.	0.000	
N	340	

Table 7 presents the outcomes of the panel data regression analysis exam–ining the impact of board independence on real earnings management. Panels A, B and C of Table 7 report the results regarding the relationship between board independence and real earnings management and show that board in–dependence has a significant and negative effect on *ABNOCF, ABNPROD* and *ABNDEXP*, respectively. Thus, H_3 is supported. These findings are con–sistent with earlier studies that have also shown a significant and negative rela–tionship between board independence and real earnings management (e.g., Kang & Kim, 2012; Zgarni et al., 2014; Malik, 2015).

Table 7: Results of testing H_3

Panel A: Dependent Variable is ABNOCF	β	p-value
B_Independence	-.331	.000
FS	-.011	.856
LEV	-.251	.000
ROA	.313	.000
GROWT	-.050	.303
LOSS	.117	.085
Year	Included	
Sector	Included	
R^2	.265	
Adjusted R^2	.231	
F-statistic	7.797	
Sig.	0.000	
N	340	
Panel B: Dependent Variable is ABNPROD	β	p-value
B_Independence	-.353	.000
FS	.065	.301
LEV	-.187	.002
ROA	-.122	.119
GROWT	.033	.526
LOSS	.049	.500
Year	Included	
Sector	Included	

R^2	.174	
Adjusted R^2	.136	
F-statistic	4.548	
Sig.	0.000	
N	340	
Panel C: Dependent Variable is ABNDEXP	**β**	**p-value**
B_Independence	-.237	.000
FS	-.167	.000
LEV	-.245	.000
ROA	-.052	.372
GROWT	.007	.859
LOSS	-.010	.848
Year	Included	
Sector	Included	
R^2	.540	
Adjusted R^2	.518	
F-statistic	25.329	
Sig.	0.000	
N	340	

Table 8 shows the outcomes of the panel data regression analysis examining the impact of board gender diversity on real earnings management. Panels A, B and C of Table 8 report the results on the relationship between the presence of female directors and real earnings management and show that female directors have a significant and negative effect on *ABNOCF*, *ABNPROD* and *ABNDEXP*, respectively. Thus, H_4 is supported. These findings are consistent with earlier studies that have also shown a significant and negative relationship between the proportion of women on boards and real earnings management (e.g., Obigbemi et al., 2016; Le & Nguyen, 2023).

Table 8: Results of testing H_4

Panel A: Dependent Variable is ABNOCF	**β**	**p-value**
F_Directors	-.105	.047
FS	.049	.436
LEV	-.289	.000
ROA	.327	.000
GROWT	-.047	.368
LOSS	.103	.152
Year	Included	
Sector	Included	
R^2	.176	

Adjusted R^2		.137
F-statistic		4.601
Sig.		0.000
N		340

Panel B: Dependent Variable is ABNPROD	β	p-value
F_Directors	-.230	.000
FS	.116	.073
LEV	-.228	.000
ROA	-.094	.252
GROWT	.032	.550
LOSS	.033	.657
Year	Included	
Sector	Included	
R^2	.109	
Adjusted R^2	.068	
F-statistic	2.649	
Sig.	0.001	
N	340	

Panel C: Dependent Variable is ABNDEXP	β	p-value
F_Directors	-.112	.007
FS	-.128	.009
LEV	-.273	.000
ROA	-.038	.536
GROWT	.008	.842
LOSS	-.021	.714
Year	Included	
Sector	Included	
R^2	.50	
Adjusted R^2	.477	
F-statistic	21.604	
Sig.	0.000	
N	340	

Results of the managerial ownership moderating model

Table 9 presents the findings of the analysis relating to H_{5a}. The factor of the interaction variable, B_Size*Manag.Own, is statistically significant (p–value < 0.05). Accordingly, H_{5a} is supported. The outcomes of testing the hypothesis are summarized in Panels A, B and C of Table 9.

Table 9: Results of testing H_{5a}

Panel A: Dependent Variable is ABNOCF	β	p-value
B_Size	-.329	.000
Manag.Own	-1.282	.001
B_Size*Manag.Own	.176	.007
FS	.090	.124
LEV	-.256	.000
ROA	.386	.000
GROWT	-.070	.137
LOSS	.174	.005
Year	Included	
Sector	Included	
R^2	.343	
Adjusted R^2	.309	
F-statistic	9.896	
Sig.	0.000	
N	340	

Panel B: Dependent Variable is ABNPROD	β	p-value
B_Size	-.279	.000
Manag.Own	-2.730	.001
B_Size*Manag.Own	2.443	.002
FS	.106	.089
LEV	-.158	.006
ROA	-.002	.982
GROWT	.007	.886
LOSS	.089	.198
Year	Included	
Sector	Included	
R^2	.254	
Adjusted R^2	.215	
F-statistic	6.451	
Sig.	0.000	
N	340	

Panel C: Dependent Variable is ABNDEXP	β	p-value
B_Size	-.175	.000
Manag.Own	.968	.109
B_Size*Manag.Own	-1.132	.062
FS	-.084	.076
LEV	-.256	.000
ROA	-.026	.652
GROWT	.001	.986

LOSS	.033	.533
Year	Included	
Sector	Included	
R^2	.566	
Adjusted R^2	.543	
F-statistic	24.740	
Sig.	0.000	
N	340	

Table 10 presents the findings of the analysis relating to H_{5b}. The factor of the interaction variable, B_Meetings*Manag.Own, is statistically significant (p–value < 0.05). Accordingly, H_{5b} is supported. The outcomes of testing the hypothesis are summarized in Panels A, B and C of Table 10.

Table 10: Results of testing H_{5b}

Panel A: Dependent Variable is ABNOCF	β	p-value
B_Meetings	1.002	.004
Manag.Own	-1.038	.000
B_Meetings*Manag.Own	.818	.000
FS	.019	.725
LEV	-.238	.000
ROA	.320	.000
GROWT	-.046	.315
LOSS	.164	.010
Year	Included	
Sector	Included	
R^2	.365	
Adjusted R^2	.332	
F-statistic	10.893	
Sig.	0.000	
N	340	
Panel B: Dependent Variable is ABNPROD	**β**	**p-value**
B_Meetings	.137	.025
Manag.Own	-.777	.000
B_Meetings*Manag.Own	.513	.000
FS	.097	.099
LEV	-.157	.006
ROA	-.069	.362
GROWT	.033	.497

	β	p-value
LOSS	.096	.162
Year	Included	
Sector	Included	
R^2	.270	
Adjusted R^2	.232	
F-statistic	7.017	
Sig.	0.000	
N	340	

Panel C: Dependent Variable is ABNDEXP	β	p-value
B_Meetings	1.064	.008
Manag.Own	-.598	.000
B_Meetings*Manag.Own	.454	.000
FS	-.142	.002
LEV	-.233	.000
ROA	-.031	.585
GROWT	.009	.808
LOSS	.020	.694
Year	Included	
Sector	Included	
R^2	.580	
Adjusted R^2	.558	
F-statistic	26.172	
Sig.	0.000	
N	340	

Table 11 presents the findings of the analysis relating to H_{5c}. The factor of the interaction variable, B_Independence*Manag.Own, is statistically signifi–cant (p–value < 0.05). Accordingly, H_{5c} is supported. The outcomes of testing the hypothesis are summarized in Panels A, B and C of Table 11.

Table 11: Results of testing H_{5c}

Panel A: Dependent Variable is ABNOCF	β	p-value
B_Independence	-.262	.000
Manag.Own	-.909	.000
B_Independence*Manag.Own	.632	.002
FS	-.026	.662
LEV	-.216	.000
ROA	.347	.000
GROWT	-.056	.245
LOSS	.140	.036
Year	Included	
Sector	Included	
R^2	.309	

Adjusted R^2	.272	
F-statistic	8.458	
Sig.	0.000	
N	340	

Panel B: Dependent Variable is ABNPROD	β	p-value
B_Independence	-.287	.025
Manag.Own	-1.282	.000
B_Independence*Manag.Own	1.014	.001
FS	.012	.009
LEV	-.131	.846
ROA	-.046	.023
GROWT	.019	.544
LOSS	.058	.694
Year	Included	
Sector	Included	
R^2	.257	
Adjusted R^2	.218	
F-statistic	6.564	
Sig.	0.000	
N	340	

Panel C: Dependent Variable is ABNDEXP	β	p-value
B_Independence	-.177	.000
Manag.Own	.598	.042
B_Independence*Manag.Own	-.761	.010
FS	-.154	.001
LEV	-.229	.000
ROA	-.052	.369
GROWT	.008	.827
LOSS	.019	.721
Year	Included	
Sector	Included	
R^2	.569	
Adjusted R^2	.546	
F-statistic	25.008	
Sig.	0.000	
N	340	

Table 12 presents the findings of the analysis relating to H_{5d}. The factor of the interaction variable, F_Directors*Manag.Own, is statistically insignificant (p–value > 0.05). Accordingly, H_{5d} is supported. The outcomes of testing the hypothesis are summarized in Panels A, B and C of Table 12.

Table 12: Results of testing H$_{5d}$

Panel A: Dependent Variable is ABNOCF	β	p-value
F_Directors	-.017	.771
Manag.Own	-.417	.029
F_Directors*Manag.Own	.125	.522
FS	.013	.833
LEV	-.225	.000
ROA	.368	.000
GROWT	-.054	.277
LOSS	.133	.054
Year	Included	
Sector	Included	
R^2	.252	
Adjusted R^2	.213	
F-statistic	6.388	
Sig.	0.000	
N	340	
Panel B: Dependent Variable is ABNPROD	**β**	**p-value**
F_Directors	-.188	.001
Manag.Own	-.178	.631
F_Directors*Manag.Own	.047	.899
FS	.059	.338
LEV	-.143	.016
ROA	-.025	.744
GROWT	.017	.736
LOSS	.050	.476
Year	Included	
Sector	Included	
R^2	.218	
Adjusted R^2	.177	
F-statistic	5.295	
Sig.	0.000	
N	340	
Panel C: Dependent Variable is ABNDEXP	**β**	**p-value**
F_Directors	-.032	.474
Manag.Own	-.064	.669
F_Directors*Manag.Own	-.139	.368
FS	-.143	.003

LEV	-.239	.000
ROA	-.022	.715
GROWT	.007	.866
LOSS	.006	.919
Year	Included	
Sector	Included	
R^2	.533	
Adjusted R^2	.508	
F-statistic	21.600	
Sig.	0.000	
N	340	

Table 13 presents a synopsis of the hypothesis testing outcomes. Based on the results, it is possible to infer that there exists a substantial and adverse relationship between board characteristics and actual earnings management. Furthermore, this negative effect on actual earnings management is amplified when managerial ownership is considered as a moderating variable, indicating that the impact of board characteristics on earnings management is contingent on the level of managerial ownership. These findings contribute to the body of knowledge on corporate governance and financial reporting by providing insights into the factors that influence actual earnings management, and the importance of considering the joint effect of board characteristics and managerial ownership in designing effective governance structures.

Table 13: Summary of hypothesis testing

	Research hypothesis	Result
H1	Board size negatively affects real earnings management.	Supported
H2	Board meetings positively affect real earnings management.	Supported
H3	Board independence negatively affects real earnings management.	Supported
H4	The proportion of female directors negatively affects real earnings management.	Supported
H5a	Managerial ownership moderates the relationship between board size and real earnings management.	Supported
H5b	Managerial ownership moderates the relationship between board meetings and real earnings management.	Supported

H5c	Managerial ownership moderates the relationship between board independence and real earnings management.	Supported
H5d	Managerial ownership moderates the relationship between the proportion of female directors and real earnings management.	Not supported

7. CONCLUSION

The primary objective of this study was to investigate the correlation between board characteristics and actual earnings management, and how this relationship may be impacted by changes in managerial ownership. The research findings suggest that there is a substantial and unfavorable association between board size, board meetings, and board independence with actual earnings management, while a significant and favorable relationship exists between board meetings and actual earnings management. With respect to the moderating effect of managerial ownership on the association between board characteristics and actual earnings management, the findings suggest that managerial ownership strengthens the link between board size, board meetings, and board independence with actual earnings management. These results contribute to the body of knowledge on corporate governance and financial reporting by highlighting the importance of board characteristics and managerial ownership in designing effective governance structures that promote transparency, accountability, and sustainable performance.

Indeed, the practical significance of this study is substantial, as it enhances our comprehension of the association between board characteristics and actual earnings management, which could have implications for investors, the capital market, and other stakeholders in Saudi Arabia and other nations with comparable business environments. The study's findings offer valuable insights into the influence of board characteristics on decision-making, thereby informing the development of future corporate governance policies that promote transparency, accountability, and sustainable performance. By identifying the factors that contribute to actual earnings management, this research can help investors make informed decisions and promote the efficient allocation of resources in the market. Ultimately, this study's practical implications extend

beyond the academic sphere, as the insights gained from this research can be leveraged to improve corporate governance practices and promote a healthy business environment.

It must be acknowledged that these results have certain limitations. Firstly, the research was performed in the Saudi context and relied solely on data from non-financial firms listed on the Saudi Stock Exchange. Therefore, it may not be appropriate to generalize the findings to other institutional contexts, including non-listed firms, those that present their financial reports using a foreign currency, and the financial sector. Secondly, the research only examined the moderating effect of managerial ownership and did not account for other company characteristics that may influence real earnings management, such as the market-to-book ratio or the age of the firm. Finally, any inferences drawn from these findings must take into account the research objectives, the sampling process, the period covered, and the specific conditions of firm selection.

To gain a more comprehensive understanding of how to improve real earnings management in companies listed on the Saudi Stock Exchange, further research is recommended. This could involve examining how foreign ownership affects real earnings management and investigating the potential impact of corporate governance. It would also be beneficial to study the implications of debt covenant violations on real earnings management in companies listed on the Saudi Stock Exchange, as this could provide valuable insights.

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