

WOMEN IN TOP MANAGEMENT AND EARNINGS MANAGEMENT: EXPLORING THE IMPACT OF CORPORATE ENVIRONMENTAL SUSTAINABILITY

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Abstract

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The current study aims to explore the relationship between women's participation in top management (TM) positions and earnings management (EM) practices. Besides, this study aims to examine the impact of corporate environmental sustainability (CES) as a moderating variable in this relationship. The study sample comprised 917 observations related to companies listed on the Saudi Stock Exchange over a seven-year period. Moreover, this study recognised a statistically significant positive correlation between the participation of women in TM and EM practices. Furthermore, the findings indicated a negative correlation between CES practices and EM; however, this correlation was not statistically significant, suggesting that the influence of CES is constrained or indirect in this context. Furthermore, the research suggests that CES does not serve as a moderating factor in the relationship between women's representation and EM. The study's novelty and scientific significance stem from its amalgamation of female governance, CES, and accounting methods within a mostly conservative regulatory framework, therefore addressing a critical need in the regional financial and management literature.

Keywords: Diversity in the Top Management, Earnings Management, Corporate Environmental Sustainability, Saudi Market

Authors' individual contribution: Conceptualization — E.M.A.-M., N.H.A.A., and H.T.; Formal Analysis — N.H.A.A.; Resources — Z.T.A.A. and O.A.A.M.; Visualization — M.H.M.; Writing — Original Draft — E.M.A.-M.; Writing — Review & Editing — E.M.A.-M., N.H.A.A., H.T., M.H.M., Z.T.A.A., and O.A.A.M.

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1. INTRODUCTION

In light of the growing movement toward more open and responsible leadership, researchers and businesspeople around the world are paying more attention to how the ages and genders of board members and top management (TM) affect how companies handle their money and plans (Haque et al., 2024; Hossain et al., 2025). It has been observed that gender representation, particularly the number of women in senior management, can influence the quality of decisions and the level of social commitment (Alkebsee et al., 2025; Baroudi & Hojeij, 2025; Nurhadiansjah & Mansur, 2025; Sbai et al., 2025; Singh et al., 2021; Tenuta & Cambrea, 2023). According to previous research related to governance, having a mix of men and women on the board of directors can help managers keep an eye on things and reduce behavioral biases that can lead to dishonest financial practices such as earnings management (EM) (Ahmad et al., 2024; Lien & Thuy, 2024; Muhammad et al., 2025; Sargsyan & Seissian, 2024). In addition to the above, there is considerable research on the factors influencing EM, but most of it has been conducted in Western countries. Little is known about how female leadership affects this type of financial behavior in contexts with new or stricter rules and cultures, such as the Middle East (Al-Naim & Al-Omar, 2025; Baroudi & Hajjaj, 2025). It remains unclear whether there is a correlation between the number of women in senior leadership positions and the extent to which companies are committed to environmental responsibility. It is also unclear whether this commitment, in turn, leads to lower EM. This is particularly relevant to the Saudi market. Due to this lack of information, more study needs to be done on how female leadership affects financial behavior indirectly, through a regulatory middle-ground like corporate environmental sustainability (CES).

According to Saudi Arabia, this study is especially important because the business world has changed a lot since the Kingdom's Vision 2030 was announced. Vision 2030's main goals are to empower women, improve governance, and adopt sustainable practices. Legislative changes and regulatory actions by the Saudi Capital Market Authority (CMA, 2022) and other relevant bodies have made it easier for more women to hold top positions. Saudi businesses have started including sustainability indicators in their yearly reports in parallel with international investor expectations and government pressure. Still unknown, though, is how these developments affect the calibre of financial reporting.

This study thus aims to contribute scientifically by building a model connecting three important variables: the presence of women in TM, the degree of CES of a company, and the degree of EM. The study suggests that by influencing the acceptance of more committed CES practices, female leadership may either directly or indirectly lower EM practices either directly or indirectly (Hossain et al., 2025; Muhammad et al., 2025). The results of the study should offer fresh empirical data in the framework of an evolving environment marked by cultural and organizational specificity, thus augmenting the global literature, which is still lacking studies from the Gulf countries. Therefore,

the main goal of this study is to investigate whether CES serves as a mediator in the link between women's representation in TM and EM policies in listed Saudi companies and to investigate this link. This goal is important since it offers a more accurate justification of corporate behaviour in settings where conservative cultural considerations coexist with demands of economic modernisation.

The rest of the study is structured as follows. Section 2 describes the literature and research idea and introduces the research hypotheses. Section 3 explains the study's research methods. Section 4 presents the actual data and analyzes the main results. Section 5 provides the study's limits, the study's conclusion, and suggestions for more research.

2. LITERATURE REVIEW AND RESEARCH HYPOTHESES

In this study, the link between the number of women in TM and EM methods is looked into, along with the possible role that CES may play in this context. Using three main theories of government and business behavior — legitimacy theory, shareholder theory, and agency theory — it makes by using these theory models, we can start to understand why companies handle their earnings the way they do and what stops them from doing that in different work settings.

Agency theory by Jensen and Meckling (1976) holds that owners (shareholders) and agents (managers) have a natural conflict of interest that could cause management to follow policies meant to maximise their personal benefits, such as controlling earnings to boost bonuses or satisfy market expectations. In this regard, one of the main systems for controlling this behaviour is good board supervision. Several studies have shown that by improving openness and ethical behaviour, gender diversity in leadership — especially the presence of women in top positions — may help to reduce agency issues (Srinidhi et al., 2011). Studies reveal that women leaders show a stronger inclination towards compliance and limit opportunistic behaviour, which can result in fewer possibilities for EM. Their accounting behaviour is also more cautious (Ademola, 2025; Alhossini et al., 2024).

Stakeholder theory by Freeman (2015) holds that an organization is viewed from the standpoint of a network of interactions involving many stakeholders, not only shareholders. Businesses that adopt this viewpoint are supposed to respond to the expectations of several stakeholders, including workers, society, the environment, and government. Thus, diversity in leadership could help to promote more inclusive policies, considering these stakeholders, including financial transparency and sustainability reporting. Studies show that women in decision-making roles are typically more sensitive to sustainability and social responsibility issues (Bear et al., 2010; García-Sánchez et al., 2019). Female leaders could be a potential contributor in improving ethical and institutional performance and avoiding unethical practices, including EM.

From the standpoint of legitimacy theory by Suchman (1995), companies try to keep their image and legitimacy in view of society, particularly in regulatory settings under great control or under rising social pressure. One of the strategies businesses employ to improve their credibility is

the disclosure of sustainability practices; hence, avoiding EM could be seen as a sign of a real dedication to transparency and governance. Within this framework, female leadership helps to improve institutional legitimacy since gender diversity is seen as a reflection of institutional development and conformity with international governance criteria (Nadeem et al., 2020). Some studies point to a correlation between companies with women on their boards or executive management and more thorough and honest environmental and social disclosures, which would be related to reduced degrees of EM.

Notwithstanding these theoretical signals, empirical data on the link between women's leadership and EM control are still conflicting. While Peni and Vähämaa (2010) found similar results in the framework of US companies, Al-Shaer and Zaman (2016) showed that the presence of women on accounting committees is linked with lower EM in UK companies. On the other hand, some research conducted in developing countries has not found any convincing proof of this effect, implying that the organizational and cultural setting could be rather important in determining this relationship. In the Gulf setting, Al Farooque et al. (2019) research of a sample of Gulf companies revealed that, except in cases when women's representation is coupled with advanced and effective governance policies, the presence of women on boards does not directly affect EM.

Regarding CES, many studies have shown that lower degrees of accounting manipulation and better quality of financial reporting are favourably correlated with corporate commitment to sustainability practices (García-Meca et al., 2015; Martínez-Ferrero & García-Meca, 2020; Shin et al., 2012). Companies that actively participate in environmental activities are presumably less likely to control earnings, not only for ethical reasons but also to lower reputational risk and boost investor confidence. Particularly in markets with active corporate control, Wang and Zhao (2023) found in this context that companies with high environmental disclosures showed reduced levels of EM.

The link between the two main variables of the research — CES and women in leadership — may expose an indirect process by which female leadership shapes financial behaviour. According to some studies, female leadership is associated with greater acceptance of social responsibility practices and environmental disclosure, which is reflected in financial reports (Hafsi & Turgut, 2013). According to this viewpoint, the link between women's leadership and profit management may be explained by the moderating variable of CES. Studies on this kind of confirmatory association are few, nevertheless, especially in Arab cultures. For instance, Alazzani et al. (2021) and Al-Janadi et al. (2016) discovered that environmental disclosure is linked to female leadership in Malaysian enterprises; however, they did not look into the relationship between this disclosure and financial conduct. Although there is currently a dearth of data in the Saudi market, recent research indicates that environmental and governmental policies are gradually evolving. The Saudi CMA (2022) said that several listed firms had women in executive roles and that some corporations were releasing sustainability reports as a consequence of the improvements brought about by Vision 2030.

However, local studies have not looked deeply enough into the connection between these changes and how businesses handle their money, so this subject needs to be thoroughly researched. Using the information above, the study aims to present a theoretical framework that combines economic theory (agency theory), institutional theory (legitimacy theory), and ethical and social theory (stakeholder theory) to find out how the number of women in TM affects how they handle earnings, with a focus on CES as a possible explanatory factor. Theoretically, combining these three variables into one model fills in a gap in the existing literature by covering more geographical areas and including more companies in emerging markets.

2.1. The association between the presence of women in top management and earnings management

The proportion of women in TM roles in connection to EM and corporate governance is a topic of increasing attention, whereas the effect of gender diversity on pay and management style has been the subject of several studies. Karina (2021), for instance, investigated the impact of women's representation on company boards on profit management. This implies that management transparency and profit quality may be significantly influenced by gender diversity. On the same path, Roy and Alvan (2022) looked at the impact of gender diversity on the connection between EM and board characteristics. They discovered that managerial decisions, including the manipulation of profits, may be influenced by more gender diversity.

Moreover, as demonstrated by researcher Bansal (2024), who explored how the quality of EM varies when regulations mandate the appointment of women to boards of directors. The research shows that earnings quality can be enhanced by the presence of more women on boards, particularly those with strong financial management experience. This suggests that having women in key management and supervisory positions can contribute to more accurate and transparent financial reporting. This aligns with the broader notion that a mix of men and women in TM can help monitor and mitigate the manipulation of EM. Besides, Black et al. (2021) say that having top managers who know about the law — this can include women with legal backgrounds — encourages good financial decisions, which in turn lowers EM issues. For this reason, professional skills and a mix of male and female TM are significant factors that affect the level of employee pay.

Overall, the research points to a consistent theme: more women in TM and oversight positions are linked to better earnings quality and fewer practices that manipulate earnings. Some of the things that affect this relationship are the quality of government, the knowledge of the lawyers, and the rules that must be followed. This shows that gender variety has many effects on financial reporting and the way managers act (Bansal, 2024; Karina, 2021; Roy & Alfan, 2022). These connections are based on theories of agency, shareholder, and authority, as well as new research that connects women's leadership, wage management, and environmental practices.

H1: There is a negative association between the presence of women in senior management and the level of earnings management.

2.2. The association between corporate environmental sustainability and earnings management

It is about how a company's efforts to be less harmful to the environment affect how much its leaders change the results of financial calculations to reach their political objectives. EM is the act of changing financial data to change stated earnings (Dechow et al., 1995). CES is the practice of reducing emissions, increasing resource use, and being open about how well an organization is doing with conservation. This connection raises an important question: Do companies that care about the environment report more honestly, or are environmental statements sometimes used as a way to hide manipulating earnings?

It is essential to understand this link for several reasons: Environmental information is visible as evidence of openness, which can make it less probable that income can be manipulated. Sustainability practices assist traders and other stakeholders in believing in an enterprise, which makes it less probable that managers will use shady enterprise practices. These forms of questions help inform the difference between real efforts to inspire people to care about the environment and so-called "environmental deception" scams. The effects can assist make incorporated reporting structures better and push regulatory frameworks to require more specific disclosure policies (Clarkson et al., 2008).

According to researchers, there is a link between worrying about the earth and dealing with your wages. Companies that care about the surroundings discover it easier to address their earnings, especially on the subject of paying out discretionary bonuses (Litt et al., 2013). This is supported the Organisation for Economic Co-operation and Development (OECD) international locations. Litt et al. (2013) and Yalcin and Gunes (2022) discovered that better management of income is related to higher achievement in sustainability. This connection can be looked at from two exceptional points of view: the ethical point of view says that socially accountable businesses give extra beneficial information; and the opportunistic point of view says that agencies use sustainability statistics to get shareholder help all through profits control (Velayutham, 2018). In any case, this could be different based on what kind of control there is over EM.

Al-Shattarat (2021) states that in European markets, environmental and carbon success reduces accrual-based EM but will increase real income management. The findings show the complexity of the relationship between sustainability standards and the best of financial reporting. Furthermore, García-Meca et al. (2015) confirmed that Spanish banks found a negative correlation between voluntary environmental reporting and payroll management. This indicates that participation in sustainability motivates human beings to act more ethically while managing money. Kim et al. (2012) studied this inside the United States and found that companies with higher CES ratings, in particular within the environmental sphere, had decreased

discretionary accruals, which means they controlled their income less correctly.

On the other hand, Liu et al. (2023) argued that businesses in industries that generate a large amount of waste may additionally use sustainability reporting as a cover for terrible monetary practices. They emphasized that a few disclosures are made for strategic as opposed to ethical reasons. Al-Shaer and Zaman (2016) mentioned the importance of governance systems and found that the presence of environmental committees at the board level is associated with lower EM. Yoon et al. (2019) studied companies in South Korea and found that those that proven more issues for the surroundings were extra cautious of their monetary reporting. This suggests that the challenge for the environment may be used as a casual monitoring tool.

In developing markets, Saleh et al. (2025) found that Malaysian companies with better scores for environmental performance used accrual-based revenue management a lot less. This shows that environmental duty and good reporting are linked. These connections are based on theories of agency, shareholder, and authority, as well as new research that connects women's leadership, wage management, and environmental practices.

H2: There is a negative association between corporate environmental sustainability and earnings management.

2.3. The moderating effect of corporate environmental sustainability on the relationship between the presence of women in top management and the level of earnings management

The level of financial reporting is better when there are women in TM roles, like boards of directors or leadership jobs. Numerous studies have shown that a mix of male and female leaders enhances ethical monitoring, openness, and the likelihood of more conservative decision-making (Arun et al., 2015; Gavius et al., 2012). In contrast, revenue management involves using accounting techniques to manipulate reported financial results, typically for legal, marketing, or political reasons. In this context, CES represents an organizational and ethical variable reflecting a company's commitment to its responsibilities toward society and the environment. CES is understood as a component of environmental, social, and governance (ESG) principles and is used as an indicator of the quality of corporate disclosure and control. It is thought that CES may help to balance the link between the number of women in TM and the level of EM. Some researchers think that this three-way interaction works like this: companies with a lot of women in TM should have lower levels of EM. This is because women leaders tend to act more ethically and value honesty over immediate benefits (Krishnan et al., 2011; Krishnan & Parsons, 2008). Nevertheless, the severity of this effect may vary depending on the level of a company's commitment to CES. When CES is weak or merely formal, individual ethical values may be unable to overcome institutional pressure to manipulate.

However, when CES is embedded in the organizational culture (through clear policies, dedicated committees, and transparent disclosures), it enhances the effectiveness of female leaders in curbing EM practices by providing a supportive

environment that encourages collective, rather than individual, ethical behavior. Thus, the presence of women in TM may be more effective in reducing EM under conditions of high levels of environmental commitment, suggesting a positive interactive role for corporate sustainability in achieving financial reporting quality.

This triangular relationship has not yet received direct study, according to a review of the current literature. This gives it original value and a rich field for research, especially in developing economic environments and conservative societies such as the Arabian Gulf. The presence of women in TM does not come in a vacuum; rather, it is influenced by the organizational context. Therefore, CES may be a crucial factor in transforming the presence of female leaders from a mere symbolic representation to an effective tool in improving financial governance practices. This hypothesis also contributes to the integration of multiple theories, such as stakeholder theory, legitimacy theory, and contingency theory, to explain how institutional factors interact with leadership characteristics to influence corporate financial behavior. Based on agency, stakeholder, and legitimacy theories, and on recent literature linking women’s leadership, EM, and environmental practices, the following relationships are hypothesized:

H3: Corporate environmental sustainability plays a moderating role in the relationship between the presence of women in top management and the level of earnings management.

3. RESEARCH METHOD

3.1. Data collection

The research looks at all the businesses in the Saudi market that have the necessary info from 2015 to 2021. The Saudi market was our first sample because the CES data was available in the Bloomberg database. CES reports were not included for companies that did not have them (Muhammad et al., 2021). After choosing 917 firm-year data from 131 companies, the sample selection process is shown in Table 1. Annual reports had information on women in TM, the data stream had information on EM, and the Bloomberg database had information on CES. Our study uses ordinary least squares (OLS) models to look into the link between women in TM

and EM. Additionally, this research looked into how business CES affects the link between women in TM and EM, focusing on the role of a mediator.

Table 1. Sample selection

Items	No.
Total companies listed on the Saudi market as of December 2021	216
Less missing data for some companies	85
Final sample	131
Total observation (131*7)	917

Source: Authors' elaboration.

There had been 216 groups at the Saudi marketplace at the end of December 2021. Some corporations have been neglected, even though, due to technological know-how and analytical reasons. Companies that did not know sufficient about the main causes of the issue have a look at had been taken action. This blanketed companies that did not have enough facts on ladies in pinnacle management, shielding the environment, or their financial statements to figure out how a whole lot to pay their executives. We omitted 85 organizations from this list because we did not have enough information about them, or they were in the wrong business, like banks that must observe strict regulations. With this step, the sample was given better.

In this case, the examination pattern was made from 131 groups inside the Saudi marketplace from exclusive financial regions, but not banks or different monetary institutions. From 2015 to 2021, we kept an eye fixed on these businesses so that we could do a long-term look at that shows how matters change over the years. By adding 917 records from 131 organizations over seven years, the group got larger. This backs up the statistical analysis and makes the assessments extra accurate. Using a sample that spans a couple of years, the researchers shall study the relationship between girls’ representation, EM practices, and CES adjustments over time, while additionally considering modifications within the organization and time that might have an effect on the results.

3.2. Measurement of all variables

This subsection provides measurements of all variables, such as independent, control, and dependent variables.

Table 2. The definitions and measurements of all variables

Variable	Abbreviation	Measurement
Earning management	EM	It is measured using the modified Jones Model for calculating discretionary accruals, which is one of the most widely used models in modern accounting studies (Dechow et al., 1995; Zang, 2012). Absolute values or positive values can be used as indicators of the level of EM.
		$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_1 \left(\frac{1}{A_{i,t-1}} \right) + \beta_2 \left(\frac{REV_{i,t}}{A_{i,t-1}} \right) + \beta_3 \left(\frac{PPE_{i,t}}{A_{i,t-1}} \right) + \varepsilon_{i,t}$
Women in top management	FemTM	As shown in the research by Srivastava et al. (2022), it is calculated by dividing the number of women in TM roles by the total number of people in these positions.
Corporate environmental sustainability	CES	The Bloomberg score is determined by the extent of a firm’s ESG disclosures, including ESG factors, as assessed by Muhammad et al. (2025).
Loss	LOSS	One dummy variable is used to measure it; if the firm is losing, it is 0, otherwise (Al-Sayani & Al-Matari, 2023).
Growth	Growth	The change in sales divided by the sales lag is used to calculate it (Akhter & Hassan, 2024).
Leverage	LEVG	It is measured by total debts to total assets (Akhter & Hassan, 2024; Faqera et al., 2025; Farooq et al., 2025).
Board size	BODSIZ	Number of members who make up the company’s board of directors (Algrady et al., 2025; Altass, 2022).
Total assets	log_TA	The market capitalization logarithm (Al-Matari, 2025; Danilov, 2024).
CES * Women in top management	CES_FemTM	It is measured by the interaction between CES * Women in top management.

Source: Authors' elaboration.

3.3. Model regression

It is viable to discover a immediately line among two variables using OLS evaluation. The independent variable is the wide variety of girls in TM positions, and the dependent variable is the earnings of these girls. This technique makes the quality model for displaying the hyperlink by means of lowering the sum of squared gaps between the determined variable's actual and expected values. Variables have a linear relationship, according to the OLS regression model. This means that changes in the independent variables can partly or fully explain changes in the dependent variables. The independent factors have a big effect on the dependent measure if the association is statistically significant. How big and in what direction the effect is shown by the regression values (²).

We use OLS analysis to find out if there is a link between the level of EM and the number of women in TM. We also think about how protecting the Earth might change this relationship. When environmental safety is taken into account, the link between the number of women in management positions and their earnings is likely to be greater. But the results should show that there is a strong bad link between the two. In other words, when the number of women in a job increases, so does the use of EM.

$$EM = a_0 + \beta_1 * FemTM_{i,t} + \beta_2 * CES_{i,t} + \beta_3 * LOSS_{i,t} + \beta_4 * Growth_{i,t} + \beta_5 * LEVG_{i,t} + \beta_6 * BODSIZ_{i,t} + \beta_7 * \log_TA_{i,t} + \varepsilon \quad (1)$$

$$EM = a_0 + \beta_1 * FemTM_{i,t} + \beta_2 * CES_{i,t} + \beta_3 * LOSS_{i,t} + \beta_4 * Growth_{i,t} + \beta_5 * LEVG_{i,t} + \beta_6 * BODSIZ_{i,t} + \beta_7 * \log_TA_{i,t} + \beta_8 * CES_FemTM_{i,t} + \varepsilon \quad (2)$$

4. EMPIRICAL RESULTS AND DISCUSSION

4.1. Descriptive statistics and correlation analysis

Descriptive statistics aim to provide a comprehensive summary of the basic characteristics of the data used in the study, by presenting measures of central tendency, such as the arithmetic mean, and measures of dispersion, such as the standard deviation, as well as the minimum and maximum values for each variable. This analysis represents an important initial step in understanding the nature of the data and its variability. It also helps identify any outliers or abnormal values that may affect the results of the analysis.

The summary numbers are shown in Table 3. It shows that there are approximately -2.405 girls in top control roles in Saudi Arabian groups, which can be offered on the stock market. The number of ladies in pinnacle management roles adjustments loads from enterprise to enterprise, ranging from -6.034% to 5.985%. This makes it clear that there may be a difference in the variety of girls in leadership positions who make choices. The common rating for EM, which was tried here with cash-associated gear like earnings trickery, changed into 0.4984. Some businesses may have overstated or understated matters, which indicates that all of them do things in their own particular ways. With a median score of 0.98, CES showed a sturdy fashion toward environmentally pleasant commercial enterprise practices, even though every organization did this

In the current study, a standard set of significant control variables was selected to control for their impact on the relationship between the primary variables under study. These control variables include loss, growth, leverage, board size, and total assets. Each of these variables is assumed to have a potential impact on the level of EM, and therefore, including them in the regression model helps isolate the impact of the primary variables (women's representation and CES) more accurately. Loss represents an indicator of a company's financial performance, as companies that report losses are associated with a greater likelihood of using EM practices to improve their reported results. Growth reflects expansion and development opportunities that influence management's financial behavior, while leverage reflects a company's degree of reliance on debt financing, which may increase management pressure on financial reporting. Board size, which reflects the extent of oversight and diversity in decision-making, is also taken into account, as is total assets, which reflects the size and economic importance of the company, which may in turn influence financial management policies.

This study is similar to previous studies conducted by Alqatan and Hichri (2025) and Soschinski et al. (2025). Thus, the regression model can be formulated using OLS as follows:

to a one-of-a-kind level. On the other hand, the common numbers display that the size of the board and the size of the common asset are not equal. When an enterprise has loads of debt, its debt charge is high.

The variance inflation factor (VIF) study is one of the most important statistical tests to use with regression models. It helps find out if the separate factors are very similar to each other, which could make the model's forecasts less strong. For all the separate parts of the model, the VIF was found. These included the number of women in TM, the health of the environment, financial risk, board size, growth rate, loss, and firm size (total assets). The VIF results showed in Table 3 that all values were below 5, ranging from 1.01 to 1.04, which is within the statistically acceptable limits. These results indicate that the high linearity among the independent variables in the model is not a concern and that there is no significant effect of collinearity that would weaken the reliability of the estimates or lead to biases in the regression analysis. Specifically, women's representation had a VIF value of 1.01, reflecting acceptable independence from the other variables. The CES variable also showed a VIF of 1.03, indicating the absence of significant variance inflation. The highest VIF in the model was for the loss variable (1.04), but it is still within the permissible level (< 5), and therefore does not represent a threat to the reliability of the model (Hair et al., 2010).

Table 3. Descriptive statistics and multicollinearity test

Variable	Mean	Std. dev.	Min	Max	VIF	1/VIF
EM	-2.405	4.687	-6.034	5.985	-	-
FemTM	0.498364	0.80341	0	4	1.01	0.994
CES	0.979677	0.71776	-0.04054	2.783784	1.03	0.968
LOSS	0.267176	0.442726	0	1	1.04	0.966
Growth	0.353083	13.89853	-82.1065	409.3897	1.01	0.995
LEVG	0.416961	0.237884	0	1.015606	1.03	0.968
BODSIZ	7.601963	1.643844	3	11	1.03	0.968
log_TA	6.010538	1.662024	0	9.282001	1.01	0.991
Mean VIF						1.02

Source: Authors' elaboration.

Table 4. Correlation analysis

Variable	EMDAC	FemTM	CES	LOSS	Growth	LEVG	BODSIZ	log_TA
EM	1.000							
FemTM	0.051	1.000						
CES	-0.034	-0.023	1.000					
LOSS	-0.038	-0.006	-0.123***	1.000				
Growth	0.000	-0.015	0.050	-0.014	1.000			
LEVG	-0.072**	0.010	0.049**	0.126**	-0.018	1.000		
BODSIZ	0.021	-0.072**	0.100***	-0.007	0.033	0.109***	1.000	
log_TA	-0.005	-0.021	-0.034	0.046	0.037	0.024	0.074**	1.000

Note: *** > 0.01, ** > 0.05, and * > 0.1.

Source: Authors' elaboration.

There was a Pearson correlation analysis done to see how strong the link was between the study factors. The outcomes are shown in Table 4. The correlation coefficient (r) numbers in this table show the direction and strength of the link between the different variables. They also give us a first idea of whether the variables might affect each other or overlap. Hair et al. (2010) say that a correlation coefficient of 0 means there is no linear relationship, and a number of ± 1.0 means there is a perfect linear relationship, whether it is positive or negative.

Furthermore, standard meanings for these numbers were given by Cohen (1988), who said that coefficients between ± 0.10 and ± 0.29 show weak relationships, between ± 0.30 and ± 0.49 show intermediate relationships, and values above ± 0.50 show strong relationships. The results of the current study indicate that all correlation coefficients fall within acceptable limits, as none of the values exceeded ± 0.80 , indicating the absence of severe multicollinearity among the variables. This is consistent with what Gujarati and Porter (2009) indicated, who confirmed that a correlation coefficient exceeding 0.80 indicates the potential for significant overlap between the independent variables, which could compromise the validity of the regression model. Thus, the results of the correlation matrix support the validity of the variables included in the model.

4.2. Regression results

The technique compares random effects (RE) models with OLS by means of the Breusch-Pagan LM test. The main difference between these models is their approach to handling personal effects. Based on the presence or absence of UI — which indicates a random effect — one can design a statistical test. For this evaluation, the Breusch-Pagan LM test is fitting. The fundamental basis of this test is the theory that individual heterogeneity is absent if UI equals zero for all i . This suggests that when the $\text{Prob} > \chi^2$ value is more than 0.05, the pooled OLS model is appropriate. In such

situations, Breusch and Pagan (1979, 1980) advise preferring the pooled OLS method. Furthermore, exposing the probability value ($\text{Prob} > \chi^2$) below 0.05 is the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity. Indicating that the data shows heteroskedasticity, running the model with strong estimation methods, such as Eicker (1963) and White (1980), will help to solve this problem. Huber (1967) first presented the idea of strong standard errors in 1967. More exact approaches have then been developed for estimating strong standard errors in several contexts, including time-series and cross-sectional data. Robust standard errors help to reduce heteroskedasticity.

4.3. Results discussion

A regression analysis using the OLS model was conducted to test the relationship between women's presence in TM and EM practices, in addition to examining the role of CES as a moderating variable. The results are presented in Table 5. The results indicate that women's presence in TM is positively and statistically significantly associated with EM ($\beta = 9.571$, $p < 0.10$), which is an unexpected result given some previous literature that has linked gender diversity to good governance. However, this result is partially consistent with what some studies have found in developing contexts, where women's participation in senior positions may be symbolic or formal and does not necessarily translate into more committed or transparent organizational behaviour (Lückerath-Rovers, 2013; Ntim, 2015). Moreover, the study by Alfraih (2016) from the Gulf shows that having women on boards of directors might not have a big enough effect on how financial decisions are made unless it is paired with real freedom and strong authority.

On the same path, the current study found that the CES variable did not have a statistically significant relationship with EM ($\beta = -7.315$, $p > 0.10$). This means that environmental disclosure or participation in practices is not currently linked with corporate accounting behavior in this sample.

This is probably because environmental disclosure in the Saudi market is still young and depends on official compliance more than real commitment (Omair Alotaibi & Hussainey, 2016). As well, environmental rules are not followed as tightly as they are in Western markets, which makes it harder for them to change how accountants do their jobs. To see if CES could play a role in mediating the main link (women's participation and wage management), the data did not reveal any signs of a secondary effect through this path. Consequently, the link between women's participation and wage manipulation does not go through CES pathways. This backs up the earlier finding that environmental practices in Saudi Arabia don't yet play an important role in government.

Moreover, the current study revealed how the Saudi market works at this stage of economic development and corporate governance transition. New trends toward women's empowerment and sustainability may not have been put into practice

enough yet to change how companies handle their money. They also say that having women in important roles may not be enough to stop selfish behavior by itself, even though it is a very powerful symbol, unless it is paired with a lot of real power in making financial decisions.

Based on the above argument, these results slightly support some agency theory models, showing that having diverse leadership does not always lead to better government, especially when control routes are weak (Jensen & Meckling, 1976). According to Suchman (1995), the results also make legitimacy theory less strong. This theory says that adopting symbolic practices like sustainability and gender representation helps improve how society sees things and controls people's financial behavior. For the local situation, these results make it even more important to rethink how successful board participation policies are and how they should be connected to real leadership jobs and clear performance measures.

Table 5. OLS regression results

Variable	Model (1)			Model (2)		
	Coef.	T	P > t	Coef.	t	P > t
FemTM	9.571	1.92**	0.055	5.479	0.52	0.602
CES	-7.315	-0.71	0.476	-9.118	-0.7	0.485
CES_FemTM	-	-	-	4.210	0.44	0.663
LOSS	-10.592	-0.82	0.413	-10.642	-0.82	0.411
Growth	-0.005	-0.09	0.932	-0.001	-0.01	0.992
LEV	-42.887	-2.99	0.003	-43.245	-2.97	0.003
BODSIZ	3.198	0.92	0.359	3.165	0.92	0.359
log_TA	-0.408	-0.09	0.925	-0.407	-0.09	0.925
_cons	-0.848	-0.04	0.972	1.355	0.06	0.956
Number of obs.	917			917		
Prob > F	0.011			0.009		
R-squared	0.011			0.011		
Root MSE	144.5			144.58		

Source: Authors' elaboration.

5. CONCLUSION

The results of the research demonstrate a statistically significant and favorable correlation between the proportion of women in TM positions in publicly listed Saudi Arabian corporations and their approach to handling profits. This demonstrates that these devious practices do not necessarily cease when there are more women in senior leadership roles. Women's capacity to make financial choices may be impacted by the particular regulations and culture of the Saudi market. Furthermore, there was no direct or indirect correlation between CES and the proportion of women in TM and EM. This indicates that the way businesses manage their finances in Saudi Arabia at the moment may not be significantly impacted by CES regulations. These results make it clearer that CES and women's leadership need to be improved and developed to have a positive effect on how financial information is disclosed and how open businesses are. They also stress the need for stronger structural and societal support so that women can make financial decisions, which would ensure that they are honest and follow ethical standards, and get to the top of the company.

The contemporary look has a few barriers. First, the simplest businesses that had been indexed at the Saudi marketplace within a certain term have been examined in the research. Because of this,

the findings could not be extrapolated to other markets or periods. Second, CES and profitability control were measured using unique metrics that may not have included all pertinent elements, in particular, qualitative ones. Thirdly, there have been no qualitative techniques that would have provided in addition insights into the approaches wherein girls lead and the methods in which sustainability influences monetary decisions; as a substitute, it most effectively used quantitative methods. Lastly, extra organizational and cultural factors that can extensively impact income managers' conduct have not been tested within the research. These might consist of things like cultural norms, governmental regulations, or corporate subcultures.

This looks like every preceding research that supplied a few recommendations; future research uses more complete and wide-ranging techniques in light of these barriers and consequences. The study period ought to be prolonged to accommodate additional Gulf and Arab markets, and it also has to be improved to keep up with adjustments in corporate practices. It is likewise preferable to have a deeper understanding of the way organizational and cultural troubles affect women's roles and sustainability in financial decision-making, in preference to using qualitative strategies like case studies or talks. By examining each thing one at a time, you can have a more expertise of the way repayment control strategies are impacted through

environmental, social, and governmental sustainability. Additionally, it is critical to investigate the capability results of numerous board variety types, which include professional experience and talent sets, on the quality of financial reviews

and a company's financial management. This will assist us in figuring out how to decorate governance, with a view to promote lengthy-term monetary fulfillment.

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