



Does corporate sustainability disclosure mitigate earnings management: empirical evidence from Jordan

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Abstract

This paper aims to investigate the relationship between sustainability disclosure practices and earnings management in the Jordanian context. Based on an analysis of 66 non-financial firms listed on ASE, spanning the period of 2017–2020. The findings revealed that companies' compliance with the disclosure of sustainability improves their ethical behavior, which limits earnings management practices and increases the reliability of their financial statements. The findings have implications for regulators, corporate executives, practitioners, policymakers, top management, and business partners. More corporate sustainability practices present more trustworthy information and more sustainable performance of the economic. To the best of the authors' knowledge, this is the first study to examine the relationship between the extent of sustainability disclosure and earnings management in Jordanian firms. Moreover, two models were used for earnings management, which adds value to the existing literature.

Keywords Sustainability disclosure · Earnings management · Jordan firms

Introduction

With the growth of global markets and the growth of businesses, problems and ethical issues relating to companies are likely to increase. Singhapakdi et al. (2001) suggested that these issues have a very important impact on the reputation of companies in society, as the interaction of companies with the agenda of moral and social responsibility is reflected in the attitudes of stakeholders toward companies (Gulko and Hyde 2022; Al Amosh and Mansor 2021; Cacioppe et al. 2008). Therefore, companies must take into account the interests of various stakeholders in their practices.

Stakeholders refer to any individuals or groups that have an interest or are affected by a company's activities, decisions, and performance, such as shareholders, investors, suppliers, customers, employees, and communities. These groups can pressure companies differently if they do not follow appropriate ethical practices. Companies' commitment to moral responsibility is within the standards and rules expectations that reflect the stakeholders' demands, enhancing companies' acceptance and positively influencing their activities (Al Amosh and Khatib 2022a; Alodat et al. 2023b).

Corporate ethical responsibility is of paramount importance to the company and its stakeholders alike, as the promotion of these practices by companies reflects positively

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on the company and the various stakeholders, maximizes the company's profitability, and makes the company highly acceptable in the societies in which it operates (Hamad et al. 2023). Moral responsibility, its promotion, and delivery of its contributions in this field to the largest possible number of stakeholders, through several means, such as social communication, television advertisements, Internet sites or sales centers. This will contribute to improving the image of the company among all stakeholders and will be a great opportunity to achieve a competitive advantage toward competitors. It is noticeable that this information does not arrive except by searching for it through the Internet. The company can also cooperate with other companies to exchange its expertise in the field of moral responsibility and gain new experiences, which will strengthen the ethical system of companies together and benefit the various stakeholders (Jenkins 2006).

The decision to focus on Jordan as the context for our study was based on several factors that make it relevant to the broader topic of corporate sustainability disclosure and earnings management. Firstly, Jordan is a developing country, and its corporate sector is expanding, making it an important context to examine the relationship between sustainability disclosure and earnings management. Additionally, Jordan has a unique institutional environment, which includes regulations and reporting requirements that are different from those of developed countries, providing an opportunity to test the generalizability of existing findings to a distinct context. Finally, there is a gap in the literature on this topic regarding Jordan, and our study aims to contribute to filling this gap by providing empirical evidence that can inform policy and practice in the Jordanian context and beyond. Therefore, we believe that our study provides a relevant justification for examining the relationship between corporate sustainability disclosure and earnings management in the Jordanian context.

In the business environment, many unethical phenomena are spread, such as corporate practices and their impact on society and the environment, causing great harm to various stakeholders and internal practices, such as managing profits, which are unethical behaviors that mislead shareholders and investors. Also, these practices mislead analysts in the capital markets by increasing profits and showing financial statements contrary to what they are. The main goal behind which companies seek to manage profits is to maximize the company's accruals and, thus, its value to meet the expectations of external users of financial data (Chen and Hung 2021). Many stakeholders base their decisions on the accounting information disclosed by the company (Lisboa 2016).

The biggest challenge that developing countries face is measuring sustainable development and disclosure its contributions in this field to deliver that information to users, interested parties and stakeholders (Khalid et al. 2021).

Thus, companies may try to satisfy stakeholders through disclosure to reduce information asymmetries and mitigate agency problems; since the lack of information asymmetry will mislead investors, they will refrain from the idea of investing in these countries, which is in dire need of the influx of foreign capital to support economic growth. On the other hand, companies must prepare a transparency financial statement without attempting to mislead investors through an earnings management approach (Zhang et al. 2021).

The argument that sustainability disclosing firms would have less earning management due to the scrutiny they face is supported by previous studies. For example, studies by Botosan and Plumlee (2002) and De George et al. (2004) found that firms that face greater external monitoring and scrutiny, such as those with more analyst coverage or higher institutional ownership, exhibit lower levels of earnings management. Similarly, studies by Belkaoui and Karpik (1989) and Cormier and Magnan (1999) found that firms with greater transparency and accountability, such as those with higher levels of voluntary disclosure, exhibit lower levels of earnings management.

Therefore, we seek through this study to investigate the extent of the influence of sustainability performance disclosure on earnings management in Jordan. Our study has important contributions to the literature. First, we test this relationship in the context of developing countries, particularly Jordan, where information asymmetries are common. Thus, we provide important evidence about that relationship. Second, ethical issues and information inconsistencies influence the decisions of investors, especially those who care less about emerging markets. Therefore, this study may provide important insights and implications for regulators, policy makers and investors about the performance of markets and the impact of their contribution to sustainability on earnings management. Third, we expand the current literature on the determinants of earnings management in emerging economies. Finally, the study presents the impact of sustainability disclosure on earnings management through two models. Thus, this is one of the most important contributions to our current study.

The remaining sections are as follows: the second describes theoretical background, literature review, and hypothesis development. The third section is dedicated to research methodology. In the fourth section, we present the study's results and discussion. The study is concluded in section five.

Theoretical background, literature review, and hypothesis development

In business ethics, stakeholders are constantly called upon for companies to adopt an ethical approach to their activities (Al Amosh and Khatib 2022b; Alodat et al. 2023a, b).



Moreover, many stakeholders monitor the performance of companies to take positions toward them, as some of the companies' activities may provoke the ire of stakeholders, such as activities harmful to sustainable development such as encroachment on the environment and carbon emissions and others. This raises the level of stakeholder pressure on companies to limit these activities and engage more in environmentally friendly and sustainable activities (Lu 2021). On the other hand, many companies respond to these demands, which positively affects stakeholders' attitudes toward companies (Al Amosh and Khatib 2023). Accordingly, many key stakeholders, such as shareholders, investors, and analysts, monitor corporate reports and their content, to evaluate the company's current performance and make decisions accordingly. Shareholders may see the efficiency of management with the emergence of high profitability ratios for companies, and high profits may draw the attention of potential investors, which makes the company a suitable option for investment.

On the other hand, such reports may be misleading because they may contain earnings management practices (Goel and Kapoor 2021). At the same time, companies may become more involved in and engage in sustainability activities in order to cover up other acts of manipulation. Recently, many scholars discussed the relationship between the performance of non-financial companies, such as social responsibility, sustainability, and environmental, social and governance (ESG) performance, with earnings management (Velte 2019; Chouaibi and Zouari 2022; Khatib et al. 2021). The literature has argued that companies more committed to their ethical responsibility are less likely to engage in aggressive earnings management practices. Ehsan et al. (2020) claimed that the literature that examined the association between profit management practices and corporate social responsibility had produced mixed evidence due to a lack of sufficient theoretical support and varying methods for measuring earnings management and social responsibility.

Earnings management is one of the practices that weaken the confidence of the stakeholders in corporate reports. The social responsibility approach may ease the practices of earnings management and discretionary accrual-based (Ben Amar and Chakroun 2018). Social responsibility may be an ethical strategy used by businesses to limit the phenomenon of earning management. At the same time, businesses may use social responsibility to conceal and deflect attention from their earning management activities (García-Sánchez et al. 2020).

A rosy picture of financial reports and reported earnings may conceal deceptive or misleading unethical practices of various information users such as analysts, investors, and shareholders. This may influence their decision based on the company's current performance, especially when demonstrating high ethical practices, such as disclosing

companies' sustainability initiatives, which attract the attention and satisfaction of stakeholders. This trend may explain that ethical standards are a matter of principle for companies and are unlikely to engage in unethical practices that harm the company's reputation and the interests of stakeholders. Nevertheless, companies may make voluntary investments to support sustainable development and social and environmental responsibility in order to dispel suspicions of other suspicious practices (Bazhair et al. 2022).

Velte (2019) indicated that the practices of ESG are negatively reflected on accrual-based earnings management (AEM) while not affecting real earnings management (REM). In addition, Gaio and Gonçalves (2022) supported this trend and confirmed the existence of a negative relationship between social performance and earnings management, as the most socially responsible companies are associated with higher ethical behavior. On the other hand, Moratis and van Egmond (2018) argued that there is no relationship between practicing CSR and earnings management. Gonçalves et al. (2021) asserted that managers who exhibit high levels of CSR compliance refrain from engaging in activities that affect earnings because they have stronger moral convictions.

Companies with high levels of social responsibility may tend to have more transparency and strengthen the relationship with stakeholders in the long term rather than thinking about earnings management and achieving short-term gains (Palacios-Manzano et al. 2021). Moreover, real activities earnings management practices may harm the interests of key stakeholders such as shareholders, customers, employees and the surrounding community, which makes companies cautious in taking strategies to tamper with financial reports through earnings management (Cho and Chun 2016). Managers may resort to manipulating corporate earnings to show high financial performance in the current period, which may bring interim benefits to the company, but earnings management practices may create future problems that may reduce the level of confidence in companies with the emergence of the reality of performance over time (Tabassum et al. 2015).

Previously, most of the previous literature focused on the relationship between corporate social responsibility and earnings management practices. We expand the current literature by exploring the relationship between sustainability disclosure and earnings management through two models. We concur with the ethical perspective espoused by the theoretical lens of stakeholder theory that companies that are more compliant with stakeholder expectations, such as sustainability issues, have significant incentives to maintain privileged connections with diverse stakeholders. Based on this theory, we argue that sustainability disclosing firms would have less earning management because they are more likely to be scrutinized by stakeholders and regulatory



bodies. Therefore, they are incentivized to maintain higher levels of ethical behavior and financial reporting quality. Additionally, the disclosure of sustainability information provides greater transparency and accountability, which may serve as a deterrent to earnings management.

Sustainability disclosure can lead to increased pressure from stakeholders, such as investors, customers, and regulators, to behave ethically and responsibly. This pressure can discourage firms from engaging in earnings management practices (Brammer et al. 2012; Lee 2008). It also increases external monitoring and scrutiny, which can deter firms from engaging in earnings management practices (Amran et al. 2014; Islam and Deegan 2010), enhance a firm's reputation for ethical behavior, which may reduce the likelihood of engaging in earnings management practices that could damage that reputation (Choi et al. 2013).

As a result, the firms will be less involved in unethical practices such as earnings management. In other words, altering the information available to stakeholders, EM can deceive and mislead investors, which is considered unethical and irresponsible (Kaplan, 2001). Therefore, based on ethical, political and integrative perspectives as well as with previous findings (Hong and Andersen, 2011; Choi and Pae, 2011; Kim et al. 2012; Gras-Gil et al., 2016), it is possible to argue that ethical concerns drive managers to produce high-quality financial reports and, consequently, constrain the use of EM. Therefore, in order to protect corporate reputation, a negative relationship between CSR and EM is expected. Thus, we propose the following hypotheses:

H1 There is a negative relationship between sustainability disclosure and earnings management.

Research methodology

Data and sample selection

The sample population composed of non-financial firms in the Amman Stock Exchange (ASE). The exclusion of financial firms from the sample is due to the fact that those firms have different governance codes and regulatory requirements (Alodat et al. 2022a, 2022b, 2022c; Al Amosh and Khatib 2022b). The study period consisted of four years, from 2017 to 2020. In the Jordanian context, this is a special period when companies are more concerned than in the past about the quality of their financial statements due to their opening to global markets and foreign investments (Al-Othman & Al-Zoubi, 2019). Also, the sustainability disclosure in the Jordanian context has witnessed a notable improvement over the last few years, particularly when contrasted with other developing contexts. This positive trend can be attributed to various factors, including the government's initiatives,

heightened stakeholder interest, and a regulatory framework that facilitates sustainability reporting (Azzam et al. 2020). Moreover, this study is limited to four years to make the task viable and where the discretionary accruals (DA) are considered a measurement of earnings quality.

Variables definition

Dependent variable earnings management

Earnings management has often been measured using accrual metrics, which generally aim to segregate into non-discretionary accruals, which are those arising from the business and discretionary accruals, which result from the discretionary choices of managers. Thus, to provide more comprehensive results, we used the Modified Kothari et al. (2005) model as a proxy of Earnings management. Furthermore, the current study model was created with the assumption that corporate participation in sustainability activities is a positive feature that limits unethical practices. As a result, companies that have a high level of compliance with sustainability activities, which is one of the basic demands of stakeholders, are expected to be less involved in earnings management and to produce high-quality and credible reports. This is the rationale for our research.

Jones' model assumes that non-discretionary accruals are constant over time, which led the author to control changes in the economic environment over non-discretionary accruals by incorporating control variables, such as variation in revenue and fixed assets. From this, the model segregates accruals into non-discretionary and discretionary, and discretionary accruals are identified by the regression residual. Likewise, Dechow, Sloan, and Sweeney (1995) proposed a model modification by questioning Jones' (1991) assumption that revenues are not managed. For the authors, revenues can be managed, making it easier for managers to manipulate revenues through installment sales (accounts receivable) instead of cash sales. This gave rise to the so-called Modified Jones model, which incorporates the equation of subtracting the variation in accounts receivable from the variation in revenue, as shown in Eq. (1):

$$TA_t = \alpha_1 \left(\frac{1}{A_{t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_t}{A_{t-1}} - \frac{\Delta RES_t}{A_{t-1}} \right) + \alpha_3 \left(\frac{PPET}{A_{t-1}} \right) + \varepsilon_t \quad (1)$$

where TA_t = total accruals = net income less operating cash flow. A_{t-1} = Total assets in year $t-1$, ΔREV_t = Change in sales revenues in year t less revenues in year $t-1$. ΔRES_t = net receivable in year t less net receivables in year $t-1$. PPE_t = Property, plant and equipment in year t . ε_t = Residuals in year t (earning management score).

A possible trend to improve models is the Kothari model with ROA proposed by Kothari et al. (2005). In this model,



the authors suggest the inclusion of ROA as a variable that controls the performance of entities as a factor that can explain the company's accruals. For the authors, the inclusion of ROA in management estimation is coherent, as empirical evidence shows that companies with extreme performance tend to influence poorly specified models. Thus, the proposed model of Kothari et al. (2005) is evidenced in Eq. (2):

$$TA_t = \alpha_1 \left(\frac{1}{A_{t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_t}{A_{t-1}} - \frac{\Delta RES_t}{A_{t-1}} \right) + \alpha_3 \left(\frac{PPE_t}{A_{t-1}} \right) + ROA + \Delta it \quad (2)$$

where TA_t = total accruals = net income less operating cash flow, A_{t-1} = Total assets in year $t-1$.

ΔREV_t = Change in sales revenues in year t less revenues in year $t-1$, ΔRES_t = net receivable in year t less net receivables in year $t-1$, PPE_t = Property, plant and equipment in year t , $\mathcal{E}_t$ = Residuals in year t (earning management score).

Multiple linear regression was used for each year of observation with all aggregated companies to estimate the models. The choice to estimate the parameters per year and with aggregated data was due to the characteristics of the Jordanian market and, consequently, the study sample in which the number of companies per sector/year is low and could bias the results. With this, concerns about changes in the general levels of accruals resulting from events that occurred in each year are mitigated since the intercepts of each model in each year already capture this effect in each estimation (Ramos et al. 2022).

The absolute values of the residuals of the Modified Jones model and the Kothari et al. (2005) model were assumed as the variable that captures the earnings management of companies. The use of the absolute value is consistent with previous research quality (Rezaee et al. 2020; Sadaa et al. 2020) and disregards the existence of a positive or negative sign of the measured values.

Independent variables sustainability disclosure

The sustainability disclosure index was derived from the Global Reporting Initiative (GRI) G4 version for coding and

content analysis to investigate the extent of sustainability disclosure for Jordan ASE-listed firms. Furthermore, the following sustainability disclosure items are measured in this study: nine indicators for economic performance, 48 indicators for social performance, and 34 indicators for environmental performance. The GRI G4 sustainability report guideline includes 91 indicators in total. On the other hand, an unweighted approach was used in calculating the values of disclosure of sustainability indicators (Alodat et al. 2022a; Al Amosh 2022; Alodat et al. 2023a, b). Thus, each of the sustainability items took a score of 1 if the element was detected and a score of 0 if it was not. The overall score of sustainability disclosure was then calculated by totaling the SD index components divided by 91 for each firm. The current study's sustainability disclosure index was calculated as follows:

$$\text{sustainability disclosure} = \frac{\sum_{i=1}^n dij}{nj}$$

where $dij = 1$ if the item is disclosed, otherwise 0 if the item is not disclosed, nj = total index items. So that $0 \leq ij \leq 1$.

Control variables

Along with the independent factors of this study, the current study evaluated four control variables: Profitability (ROA), Firm size (FSIZE), Financial leverage (LEV) (Kaur and Singh, 2021; Mansour et al. 2022; Alodat et al. 2023a, b).

Study model

Further, our study used earnings management as a dependent variable; this study used ABSDAj JONES and ABS-DAk Kothari to measure earnings management. We collected the independent variables sustainability disclosure SD and control variables, namely ROA, LEV, FSIZE and Big4 (Table 1):

Table 1 Measurement of variables

Variable	Acronym	Measurements
Earnings management	EM	Earnings management was measured through two models Modified Jones Model and Kothari Model
Sustainability disclosure	SD	Sustainability disclosure evaluated by using content analysis
Profitability	ROA	Net income divided by total assets
Firm size	FSIZE	Natural logarithm of total assets
Leverage	LEV	As the total liabilities divided by total assets
Audit quality	Big4	1 if the firm's external auditor one of the big 4 audit firms and 0 otherwise



$$\text{ABSDAj JONES} = \beta_0 + \beta_1 \text{SD it} + \beta_2 \text{ROA it} + \beta_3 \text{FSIZE it} + \beta_4 \text{LEV it} + \beta_5 \text{Big4 it} + \varepsilon \text{ it} \quad (3)$$

$$\text{ABSDAk Kothari} = \beta_0 + \beta_1 \text{SD it} + \beta_2 \text{ROA it} + \beta_3 \text{FSIZE it} + \beta_4 \text{LEV it} + \beta_5 \text{Big4 it} + \varepsilon \text{ it} \quad (4)$$

Result and discussion

Descriptive statistics

We conducted descriptive statistics for the study variables. Table 2 presents the descriptive statistics indicating the all-study variables' median, mean, standard deviation, and maximum and minimum. According to Field (2009), the standard deviation shows the extent to which the means represent the data, while the means represent the summary of the data. The mean scores for earnings management, absdajjones, absdakkothari and SD are 0.064 and 0.059 and 0.301, respectively. The results indicate a low rate of

earnings management practices with a sustainability compliance rate of 30%. For the control variables, the means for ROA, FSIZE, LEV and Big4 are 1.564 and 7.565, 1.388 and 0.39, respectively.

Diagnostic tests

Table 3 shows the results of diagnostic tests, as the data distribution was thoroughly examined for multicollinearity, autocorrelation, heteroscedasticity, linearity, outliers, and normality. Regarding normality, there is no problem with the results of skewness and kurtosis outcomes for normality and the univariate method for outliers. According to Ben Amar and Chakroun (2018), the result of the correlation matrix confirmed further that no multicollinearity existed in this study, as none of the variables correlated above 0.80. Moreover, VIF was then used to detect multicollinearity; if the value is > 10 , this indicates a high level of multicollinearity (Gujarati and Porter 2010).

Reliability and validity and of SD index checklist; The researcher carefully assessed and verified the validity and reliability of content analysis approaches. According to Alodat et al. (2022b), the researcher conducted the coding process, and the recoding was conducted after a week for a sample of data to ensure consistency. The final disclosure checklist included 91 items. The disclosure checklist was assessed for reliability by running Cronbach's alpha test. The test result was greater than 0.87, indicating that the data are significantly acceptable.

Regarding the issues of heteroscedasticity and autocorrelation, both tests were carried out and revealed their presence. Following this, the standard errors in the earnings management model were measured as per Rogers (1993) and clustered at the firm level. Thus, this clustering level produced an estimator that was resistant to cross-sectional

Table 2 Descriptive statistics

Variable	Obs	Mean	Std. Dev	Min	Max
absdajjones	264	0.064	0.076	0	0.866
absdakkothari	264	0.059	0.068	0	0.745
SD	264	0.301	0.109	0.133	0.63
ROA	264	1.564	7.315	-23.736	38.668
FSIZE	264	7.565	0.655	5.953	9.158
LEV	264	1.388	0.44	-0.548	1.982
Big4	264	0.39	0.489	0	1

Table 3 Pairwise correlations and VIF results

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	VIF
(1) absdajjones	1.000							
(2) absdakkothari	0.896*	1.000						
	(0.000)							
(3) SD	-0.089	-0.076	1.000					1.064
	(0.149)	(0.217)						
(4) ROA	-0.158*	-0.099	-0.105	1.000				1.098
	(0.010)	(0.108)	(0.090)					
(5) FSIZE	-0.072	-0.037	-0.120	0.157*	1.000			1.586
	(0.246)	(0.548)	(0.051)	(0.011)				
(6) LEV	0.079	0.055	-0.007	-0.131*	0.467*	1.000		1.361
	(0.199)	(0.375)	(0.904)	(0.033)	(0.000)			
(7) Big4	0.024	0.064	-0.233*	0.163*	0.404*	0.111	1.000	1.264
	(0.696)	(0.302)	(0.000)	(0.008)	(0.000)	(0.071)		

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$



heteroscedasticity and within-panel correlation, ensuring the generation of a valid statistical inference on the coefficient.

Regression results

Table 4 shows the Breusch–Pagan test obtained < 0.05 (i.e., significant), while the Hausman test's resulting value < 0.05 (i.e., significant) indicates the preference for the fixed-effects estimation technique for the first and second models. Moreover, the table presents the results of fixed-effect regression for sustainability disclosure on earnings management. The model was deemed fit and statistically significant at $p < 0.01$, whereby this value suggested that the model was statistically valid, and the R^2 within the models was 13.9% and 15.6%, respectively. Therefore, the regression equation statistically explained the variation in the model assessed satisfactorily. In view of the results, H1 are supported.

Our results indicate that sustainability disclosure practices negatively affect the companies' practices in managing profits due to the fact that companies with high compliance with ethical practices oppose providing false information about their profits through earnings management. Moreover, companies that meet the expectations of stakeholders and comply with their demands work to promote engagement in voluntary activities and contribute to sustainable development on the one hand, and on the other hand, they work to produce high financial reports to be more transparent toward stakeholders and enhance their legitimacy. This result agrees with Kim et al. (2012) suggestion that firms reporting higher sustainability disclosure use less discretionary loan loss provisions for income-increasing purposes, thereby confirming the ethical behavior of sustainability disclosure responsible firms toward earnings management. Therefore, ethical accounting practices prevail over companies with higher ethical responsibility to enhance the legitimacy of their activities in accordance with the general ethical direction demanded by various stakeholders.

Table 4 Panel regression analysis

Variables	Model 1		Model 2 (absdakkothari)	
	Coefficient	t-stat	Coefficient	t-stat
SD	-0.242	-2.83***	-.248	-3.00***
ROA	-0.003	-2.29**	-.002	-2.25**
FSIZE	0.021	0.13	.072	0.51
LEV	0.12	0.86	.121	1.04
Big4	-0.057	-2.72***	-.062	-3.68***
Constant	-0.16	-0.14	-.554	-0.55
R2	within 0.139		within 0.156	
N	264		264	
Hausman test	18.46***		24.44***	

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Regarding control variables, the current study includes four variables that function as control variables in studying earnings management. These variables are ROA, LEV, FSIZE and Big4. The results indicate that companies that adopt auditors within the Big 4 enhance the transparency of their financial reports and reduce the possibility of manipulation through earnings management. On the other hand, there are insignificant relationships for the rest of the control variables.

Additional sensitivity checks

The analysis of sub-samples is classified by company size, i.e., small and large firms.

In order to check the robustness of the main findings, this study classified the firms into two groups based on size: large and small firms. Similar to a prior study done by Alodat et al. (2022a, 2022b, 2022c), this study found

Table 5 Fixed-effects model for small firms and large firms' regression results for corporate sustainability disclosure on earnings management (Modified Jones Model 1)

Variables	Small firms		Large firms	
	Coefficient	t-stat	Coefficient	t-stat
SD	-.265	-2.34**	-.146	-2.03*
ROA	-.004	-2.29**	.0024	0.20
FSIZE	.064	0.40	-.037	-0.09
LEV	.146	0.91	.011	0.16
Big4	-.06	-2.14**	-.03	-0.98
_cons	-.492	-0.43	-.146	0.12
R2 within	0.1926		0.0361	
N	176		88	

*Significant at the 0.10 level; ***Significant at the 0.01 level

Table 6 Fixed-effects model for small firms and large firms' regression results for corporate sustainability disclosure on earnings management (Kothari Model 2)

Variables	Small firms		Large firms	
	Coefficient	t-stat	Coefficient	t-stat
SD	-0.261	-2.39**	-0.173	-2.21**
ROA	-0.003	-2.31**	0.029	0.30
FSIZE	0.127	0.89	-0.094	-0.26
LEV	0.15	1.13	0.012	0.20
Big4	-0.062	-2.85***	-0.03	-0.90
_cons	-0.971	-0.95	0.841	0.29
R2 within	0.2124		0.0636	
N	176		88	

*Significant at the 0.10 level; ***Significant at the 0.01 level



that the results in Tables 4, 5 and 6 are similar to the main results.

Conclusion

The study's objective was to assess whether sustainability disclosure practices can mitigate earnings management in the non-financial firms listed on the ASE. Also, earnings management was measured through two models Modified Jones Model and Kothari Model. The results found that the ethical dimension of sustainability disclosure practices pushes toward easing earnings management in Jordanian companies. Thus, companies that adopt and implement stakeholder demands have a high moral responsibility and do not engage in unethical practices such as managing profits. Moreover, the ethical direction of sustainability practices creates highly transparent financial reports ensuring the satisfaction of the various stakeholders. The results reached the most important practical implications. Additionally, our results agreed with the idea that sustainability practices are linked to a higher level of ethical behavior. Moreover, sustainability practices orientation seems to mitigate strongly real earnings management. We conclude that managers use less realistic earnings management in order to protect the firm's profitability in the long term.

The current study results have important implications for many stakeholders, such as regulators, analysts, investors, shareholders and policymakers. The study provides important insights for regulators and policymakers about the extent of transparency of corporate financial reporting through the amount of sustainability disclosure. Thus, the financial market can be provided with more legislation to enhance corporate practices in social responsibility and sustainability. Also, many investors and potential shareholders are looking forward to companies' role in non-financial activities. Therefore, the results provide insights for investors and shareholders by assessing the non-financial role of companies in voluntary activities such as sustainability and associated practices that support community development and raise their responsibility toward stakeholders. Through this, companies with higher compliance are more reliable in their financial reports, which are free from misleading. In addition, raising the efficiency of corporate sustainability will increase confidence in financial markets, making them more attractive to foreign capital, stimulating the economic cycle and supporting economic activity in the country.

As in most literature, there are several limitations in this study that will provide new avenues for further research. Firstly, the study explored the relationship between sustainability disclosure and earnings management in non-financial firms listed on the ASE. The financial sector

plays an important role in the gross domestic product. Future studies can look for sustainability disclosure and earnings management across the financial sector and provide new insights into emerging economies. Secondly, the study focused on the use of a sample from one country. Future research could expand the sample to be cross-country. Furthermore, due to the limited number of listed companies on the Jordanian stock market, our sample consisted of only 66 firms, excluding financial firms and firms with missing data. A small sample size may limit the ability to explore and control for potential confounding variables and to conduct subgroup analyses. Hence, future research could benefit from larger sample sizes to enhance the external validity and generalizability of the findings. Also, comparative studies can be conducted between developing and developed countries in this field. Third, we selected the G4 index as a proxy for sustainability disclosure. Future researchers can assess the impact of practices linked to sustainability performance measured by environmental, social and governance performance and their impact on earnings management. Also, qualitative studies can be done instead of the quantitative approach. Finally, future research could differentiate between real earnings management (REM) and accrual earnings management (AEM) and analyze the effects of sustainability disclosure on both variables separately. This would provide a more comprehensive understanding of the relationship between sustainability disclosure and earnings management in Jordanian firms. Additionally, examining the substitution effect between AEM and REM in the context of sustainability disclosure would provide further insights into how firms manage their earnings when faced with pressures to disclose their sustainability practices.

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