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Corporate Environmental Disclosure and Earnings Quality: Evidence from Malaysian Firms

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Abstract

This research investigates the relationship between corporate environmental disclosure and earnings management. This research used the sample data of 134 companies listed on the stock exchange of Bursa Malaysia from 2013 to 2019. However, three different theoretical frameworks were used in this study, namely: signaling theory, agency theory and stakeholders' legitimacy, with the aim of identifying the relationship between environmental disclosure and earnings management. Therefore, this research did not find any statistically significant relationship between environmental disclosure and earnings management which was measured by various methods, using discretionary accruals. Lastly, this research also found that the attributes of corporate governance can influence the relationship between environmental disclosure and earnings management.

Keywords

Environmental disclosure, earnings quality, earnings management, agency theory

1. Introduction

The step taken by an organization related to the social and environmental benefits were recognized as a significant corporate responsiveness towards the society. The disclosures of these activities were considered as the legitimate social contribution by the organization for the development of society (Qiu et al., 2016). However, the asymmetry in auditing practices provided the buffer to the managers to practice the discretion upon the reported financials to maximize their own benefits. It is argued by Datta (2013) that the existence of earnings management can mislead the stakeholders regarding the economic benefits attained by the firm and that it was often driven by the managers for their personal benefits.

Therefore, this study examines the relationship between the disclosures of environmental accounting and earnings management. More specifically, this study empirically investigated on how the corporate environmental disclosure can be used to influence the earnings management in the business environment of Malaysia.

Based on previous studies, they were mostly concerned on the association of corporate social responsibility CSR and a firm's financial growth, identifying that environmental and social responsibility and disclosure have a positive relationship with the financial performance of the firm (Chariri, 2018). Other researchers tend to find the relationship between earnings management and corporate governance, arguing that if the corporate governance mechanism can properly monitor the opportunistic behavior of managers related to earnings management, then the quality and reliability of annual reports can be enhanced (Ball et al., 2016). Thus, prior studies were unable to directly find the association between environmental corporate disclosure and earnings management.

In addition, environmental reporting was considered as a difficult task among other corporate requirements and companies were obliged by the regulatory bodies to report their essential issues related to environmental accounting in their annual reports. In this regard, managers can have the opportunity to disclose environmental information to show that they were satisfying the existing shareholders or trying to attract potential investors and enhancing the marketing image of the firm. However, it was argued that their actual intention was to engage in earnings management to obtain personal benefits. Hence, agency conflicts increased as the managers tend to manipulate the earnings for their own interest. Therefore, corporate environmental disclosure seemed to be the source of securing the manager's job, but it may be employed by the managers to distract the shareholders' attention to manipulate the earnings. It appeared that management was involved in earnings management activities in a proactive manner that can manipulate the shareholders' perception in such a way that shows that the managers are trying to seek optimal performance of the firm. This was the reason that the regulatory bodies restricted any firm to demonstrate their disclosure to the stakeholders to provide awareness and make them accountable for their disclosure.

Based on previous research, environmental accounting was all about sustainable development across the world. In some contexts, it was also called green accounting (Virag et al., 2014). Environmental accounting is a method for measuring firm performance with respect to the environmental effect caused by the production and the necessary actions taken to maintain greenhouse safety. Some researchers Ezeagba (2017) opine that it is more than the accounting in which environmental benefits taken by the organization are compared with the environmental cost bear by the organization. This step of kindness provided the opportunity to the managers to practice earnings management under the guise of environmental accounting.

Therefore, this study is concerned with the level of awareness among the stakeholders regarding the disclosure of environmental accounting and the possibilities of manipulation of earnings by using those disclosures. Furthermore, this research will also discuss past events that had happened in this regard and the remedial action to be taken to curtail the earnings management activities.

2. Literature Review

Previous theories tried to convince the stakeholders that although the socially responsible activities were what caused the cost, but it provides explicit cost reduction benefits in other areas.

Previous legitimacy theories related to shareholders and powerful stakeholders explained that their relationship tended to improve with socially responsible activities. These practices built a satisfactory reputation of a firm among different groups of stakeholders and enhanced the opportunities to make strategic financial decisions. Previous research also found it differently, that social responsibilities have a positive connection with the financial and economic performance of the firm (Ullmann, 1985). Considering previous studies related to the relationship between social responsibility and financial performance, the empirical results were mixed. Either the returns are abnormally high in the short-run or the empirical results were mixed.

Moreover, the focus was also drawn by the scholars and researchers towards the relationship between corporate social performance and the long-term financial performance. Hoang et al. (2017) argued that the profitability of a firm is not affected by social practices. In addition, (Macaulay et al., 2018) showed evidence that indicated that other proxies of profitability such as ROA or ROE, were found more interlinked with social performance compared to other performance measures. On the other hand, McWilliams & Siegel (2000) argued that no relationship existed between social responsibility and financial performance based on of CSR regression analysis, conducted at the whole firm level-index. This approach was somehow consistent with previous studies that implied that the flaws in measuring CSR would create differences in empirical results (Bocquet et al., 2017).

It is common practice that the managers used the medium of financial reporting to provide relevant information related to the firm performance to interested groups like the stakeholders and auditors. The objective of stakeholders is to analyze the composition of the underlying performance of the firm for decision-making purposes. On the other hand, the main responsibility of the auditors is to monitor, review, acknowledge the financial activities and make sure that the internal controls are perfect and followed (Malik, 2016). Yet, the lack of audit function in the real world created the opportunity for the managers to practice earnings management. Therefore, discretionary accruals can be used to diminish the reliability of actual accounting and reduce the tendency to depend on numbers extracted from the financials, especially for performance measures.

Organizations where agency conflict exists must bear the agency cost to minimize the conflict. Bonuses and incentives were the kinds of agency costs used to minimize conflict between the principal and agent. Extra incentives and bonuses will motivate the management to work in a direction that is favorable for the firm. Some other studies also suggested that the remedy of principal for an agent problem was by linking the CEO's pay, such as bonuses, restricted stock and stock options, with the performance of the firm (Zakari, 2017). It was mentioned in previous studies that CEOs try to involve in real earnings in the last of his tenure to enhance the profit-based incentive.

Corporate shareholders have a greater concern on the earnings quality. The better the quality of the earning, the longer and more stable the firm is so that it can survive. In other words, if a firm needs to improve financial reporting to improve the earnings quality, it must establish and empower the independent audit committee (Karim et al., 2016). Therefore, it was argued that the reliability of earnings quality can somehow enhance the firms where it is monitored by an independent audit committee (Korkmaz et al., 2017). However, in previous studies, it was explored by the scholars that corporate governance and earnings management can be influenced by three key factors: managerial ownership, board structure, and audit quality.

Strong governance structures are an important tool to secure the shareholder's wealth and act as early warning systems to keep the firm out of danger. Chandren et al. (2015) noted that the economic and financial structure of western countries and Asian countries had a very waste difference as both have different social and moral values. In terms of environmental accounting, there is an influence of social values that exist, as for earnings management, there is an influence of moral values that exists. Moreover, all these issues can be controlled under the supervision of corporate governance. Prior studies indicated that the western countries practiced corporate governance very strictly whereas Asian countries were found to be very weak in corporate governance. In Asia, there were very few countries that have a strong corporate governance structure, namely, Malaysia, Indonesia, Singapore, and Thailand.

The objective of corporate governance is to motivate the managers in such a direction that it would be in the best interest of shareholders. Nandy et al., (2018) explained the association between corporate governance and the stock owned by the management was that as more the stock owned by the management, the better the governance would be. The proportion of stock owned by the management aligns the degree of interest taken by the managers, resulting in the minimization of the principal-agent conflict. Sadiq & Othman (2017) indicated that management with lower ownership tended to report more reliable earnings that would reflect the true economic picture of the firm.

Moreover, outside directors with little ownership have less power to interfere in terms of management action. Gomez-Conde & Lopez-Valeiras (2018) found that an increase of one percent in managers pay results an increase of around ten percent of the economic value of the firm. These results show that the relationship between managers pay and the firm's economic value was positive but not attractive in terms of value. These evidences also showed that the remuneration policy of the managers was not equally attractive, and it may turn them into rebellious people. Bravo (2018) argued that since managers don't have complete ownership of the firm, hence, they do not get the total benefits of income gained by the firm; therefore, they may not be interested to put their complete efforts to increase the shareholders' income. It was realized by the results of the agency problem, both parties tend to maximize their economic interest. Earnings management can be less influenced if the firm governance was driven by equity-based compensation. In addition, Mitra & Cready (2005) previously reported the negative relationship between abnormal accounting accruals and stock ownership.

Previously, Grecco et al. (2017) stepped forward to identify the relationship between corporate social responsibility and earnings management. They argued that the transparency and accountability feature of environmental reporting should be principally controlled at all levels according to the requirement of stakeholders, given that the earnings management tried to practice in terms of environmental responsibility. It was found by (Ruwanti et al., 2018) that the earnings manipulation had been attempted by the managers with the aim of compensating it by CSR activities. It was clearly observed by the past studies that information asymmetry exists between insider stakeholders and outsider stakeholders which was ruled by the discretionary accruals and decreased the reliability of firm performance based on accounting numbers.

Previously, a negative relationship was found between earnings management and CSR, given that the proxies of earnings management noted them as 'earnings smoothing' and 'earnings loss avoidance'. It was realized by such results that firms concentrated not only activities that moderate-income but also focused on managing stakeholders. However, it was realized that when earnings aggressiveness played the role of earnings management, the multiple objective hypothesis was created which provided the positive relationship between earnings management and CSR.

3. Hypothesis Development

To develop a hypothesis, this research had three perspectives that can be explicitly explained as the relationship between earnings management and environmental disclosure, namely, signaling theory, agency theory and stakeholders' legitimacy theory.

3.1. Signaling Theory

It is assumed that at a point of time, the stock prices efficiently incorporated all concerning information and that the investors were behaving rationally resulting a normal appearance of the market efficiency of a stock. However, the managers take the benefit of information of the asymmetry between management and stakeholders and used the accounting methods and estimates that would be in their own favor. Consequently, it might be used to conceal the firm's actual economic position.

Managers used to adopt discretionary actions to manipulate earnings to convey the favorable and unfavorable information to the capital market regarding the prospects of the firm (Grecco et al., 2017). Presenting future cash flows and better earnings would be the likely objective of practicing earnings management. Due to information asymmetry, managers are interested to signal the investors by using corporate financial reporting in such a way that indicated the concealing of favorable information. Although, managers have the incentive to signal the investors by voluntarily disclosing additional accounting information with the aim of attracting potential investors. It also provides the opportunity for the managers to enhance the company's corporate image, especially for the purpose of earnings management.

Furthermore, investors and stakeholders can be signaled by environmental disclosures as it provides the positive image of the firm with respect to the CSR activities. It also indicates to the investors that the firms' stock value is in a good position. The firm's reputation can also be driven by the CSR performance and it helps to improve the reliability in the capital and debt market. Managers have certain risks if they caught engaged in earnings management as investors and stakeholders may take disciplinary action against them and may cause serious punishment. Moreover, management considers environmental disclosure as an opportunity to deflect the shareholder's attention from issues that may cause them to receive punishment.

3.2. Agency Theory

It has been realized that agency theory and signaling theory are similar as they overlap each other in a way in which signaling perspectives are usually driven by agency theory. Agency theory exist where two parties, namely, the agent and the principal, have different opinions related to a specific procedure or problems. In the case of companies, managers play the role of agent and shareholders play the role of principal. However, agency conflict arises when managers opportunistically undertake an action that is in favor of their own interests instead of the shareholders'. Therefore, managerial action can cause the potential investors or stakeholders to take unfavorable economic decision by misleading them thorough false market value and financial position. Thus, agency conflict may occur; some costing in the form of earnings management, which is bear by the firm (Sun et al., 2010).

Besides that, the market value of the stock is dependent on the reputation of the firm, as rumors can spread in the market related to the suspect of earnings management, which can cause the stock value to fall immediately. Therefore, shared prices can be affected by earnings management practices as it damages more when transparent reporting discloses the earnings management in a more crystal way. Previous studies suggested that a compensation plan or voluntary disclosure could be used to neutralize the conflict between shareholders and managers. It is required by CSR that the firm should report sustainability for business development and be held accountable for every action taken by the managers that can affect the stakeholders. However, environmental disclosure can be used as a signal to divert the shareholders' attention from negative practices such as earnings management, and ultimately result in the rise of share prices.

Managers with low ownership or no ownership are interested in short term business performances as their incentives are based on periodic bases. Thus, they are willing to achieve a rise in share price. Moreover, the relationship with stakeholders depends on the firm's reputation and it can also improve access to the capital market. However, the aim of building a firm's reputation is to gain the shareholder's confidence and attract potential investors by showing them the optimization of wealth (Uyagu & Dabor, 2017).

3.3. Stakeholders' Legitimacy Theory

The information received by the stakeholders and the legitimate power that they have can be explained by the stakeholders' legitimacy theory. Managers played the role of agent not only for the shareholders but also for the stakeholders (Trejo-Pech et al., 2016). Managers are also involved in earnings management through certain ways at the expense of different stakeholders to gain their own benefits. However, earnings management practice is also responsible by the stakeholders only when their own interests get damaged. Therefore, managers have the incentive to make financial reports more informatively and substantially by using their control to minimize the threats of being suspended.

Legitimacy theory was initially presented by Zrelli & Belloumi (2015) in which they explained the relationship of powerful stakeholders. CSR has two different perspectives with respect to the legitimacy theory: firstly, the stakeholder which indicates that positive image in the eyes of stakeholders is built by CSR activities and it also becomes the reason to gain trust and assistance from the diverse group of stakeholders. Secondly, the corporate reputation is also driven by CSR activities which leads towards the economic benefits at a strategic level. The relationship of the firm with shareholders, stakeholders and creditors are expected to be improved by CSR activities. Otherwise speaking, CSR has a positive relationship with the financial performance of the firm (Sun et al., 2010).

It was assumed that managers engage in earnings management with a positive intention of seeking the attention of a diverse group of stakeholders and shareholders, that they are doing their best to achieve optimal performance. Similarly, it was observed that firms do not promote the initiative of corporate environmental disclosure if it is engaged in earnings management even at a very low level. Therefore, we developed our first hypothesis as:

H1: earnings management and corporate environmental disclosure have a positive relationship.

Previous studies found evidence that indicated that the quality and reliability of accounting earnings were dependent on corporate governance mechanisms as it can be enhanced if the opportunistic behavior of managers were controlled by corporate governance (Abbadi et al., 2016). Moreover, agency conflict is also controlled by the effective governance mechanism. It was observed by (Paniagua et al., 2018) that the ability of a board to make the decision was inversely proportional to the bard size, especially for the strategic goals that were based on long term planning. However, the experienced and independent director may be achieved by an increased board size which would help the firm to diminish the opportunistic approach of managers that enable them to practice earnings management (Hassan, 2018). Moreover, CSR disclosure was also used to divert the attention of shareholders to practice earnings management.

H2: CSR activities is positively related to board size.
H3: Board size will moderate the practices of CSR and minimize the opportunistic approach of managers with respect to earnings management.

Previously, researchers have examined the relation of earnings management with board size and audit committee by using the data of manufacturing companies. The results were obtained by measuring earnings management through the modified Jones model, they were negatively associated with board size and audit committee. The documented facts indicate that this relationship can be positive if the audit committee played its role more effectively in monitoring current discretionary accruals (Paniagua et al., 2018). Moreover, the frequency of audit committee used as a proxy to analyze the activity level performed by audit committee and as an indication of the association between earnings management and the performance of audit committee were negative. In other words, the more the number of audit meetings were conducted, the lesser the chance the managers will be involved in the earnings management. Therefore, this study formulated the following hypothesis:

H4: CSR activities are positively associated with the frequency of audit committee meetings.
H5: The more the number of audit committee meetings, the lesser chance of earnings management with respect to CSR activities.

4. Research Method

4.1. Sample

Since Malaysia is an emerging business market, it must build the environmental accounting a mechanism that underlies the CSR activates with strong monitoring of the audit committee with respect to earnings management. CSR has already been proven to be significant in the development of business and is liked by the shareholders. Stock exchange analysis indicated that investors are deeply interested in environmental accounting and its related disclosures. Industry experts in Malaysia acknowledged that CSR disclosures would be paramount for the long-term development and stability of the capital market.

The research sample data was collected from the web sites of Malaysian companies. The data collected belonged to companies listed on the Malaysian stock exchange Bursa Malaysia and represented the non-financial companies listed on the Malaysian Stock Exchange over the period 2013 to 2019. These firms represented different business sectors except the financial sector (because they are subject to different regulatory bodies and compliance requirements) and were suitable for the research of environmental disclosure. The data of those firms whose core information is missing, for example, total sales or total expenses, or were reluctant to provide transparent information were not included. This data includes all the key financial items derived from the statement of comprehensive income, statement of financial position and statement of cash flows. There are more than 900 companies listed on the Malaysian stock exchange, 134 listed companies that were selected were mostly non-family owned (since family-owned companies were not willing to disclose the environmental and social information in their reports or else try to hide the actual information) that belonged to different business sectors with a total of 938 observations. All the components of control variables were manually collected from the annual reports of each firm.

4.2. Dependent Variable

This research's dependent variable is related to environmental accounting and disclosure or must be the proxy of this. Previous studies mostly used CSR concerning topics such as a proxy of environmental and social issues. Social and environmental disclosure were often measured by content analysis method which normally codifies the written content into different categories based on explicit principles. Disclosures were deeply classified into different categories which were mainly derived from environment, community, employee, and customer.

Environmental disclosures will be used as a proxy of environmental accounting in this research. The importance of environmental reporting has been emphasized in Malaysia since the last decade and it has now become the essential element of corporate reporting. Companies are required to report recommended KPIs related to quantitative environmental information such as energy, solid waste and water that can affect the climate.

4.3. Independent Variable

Earnings management will play the role of the independent variable in this research. It was initially introduced by Healy (1985) in which earnings management was measured by discretionary accruals. He argued that managers were willing to adjust the selected discretionary accruals to the cash flows, whereas non-discretionary accruals were mandated by the accounting standard to adjust in cash flows. Most researches related to earnings management discussed the adjustment of discretionary accruals.

Discretionary accruals were usually measured by Jones (1991) model and modified Jones model in most of the previous literature (Dechow et al., 1995). Since (Kothari et al., 2005) claimed that firm performance must be considered while measuring discretionary accruals, it produced misspecification in the regression models of earnings management. Thus, they proposed a new model in which firm performance was used to intercept and controlled by using Return on Asset (ROA) to minimize the miss-specified issues exist in other accruals models. Hence, this research used the readjusted performance model of discretionary accruals namely by Kothari et al., (2005), in which estimated discretionary accruals obtained by two-digit SIC code.

The difference between cash flows from operating activities and net income is the amount that indicates the total accruals. Total accruals were denoted by (TACit), net income was denoted by (NICit) and net cash flows from operating activities were denoted by (NCFit), which is (TACit) = (NICit) - (NCFit). The proxy to detect earnings management in the current study was discretionary accruals which was denoted by (DACit), and would be the residual of the below model:

$$\boldsymbol{TAC_{iy}/AS_{iy-1} = \alpha_i[\,1/AS_{iy-1}] + \beta_{1i}\,[(\Delta RV_{iy} - \Delta RC_{iy})/AS_{iy-1}] + \beta_{2i}\,[(\Delta PPE_{iy}/\Delta AS_{iy-1})] + \beta_{3i}\,[\Delta ROA_{iy} - \Delta AS_{iy-1}] + \varepsilon_{iy}}$$

Where:
TAC_{iy} = total accruals of the firm i in year y
ΔRV_{iy} = difference between the revenues of firm i during the year y and y-1
PPE_{iy} = value of tangible fixed assets of firm i in year y

ΔRC_{iy} = difference between the account receivable of firm i during the year y and y-1
ROA_{iy} = net income produced by total assets of the firm i in year y
AS_{iy-1} = sum of total asset of firm i at the end of year y-1

All in all, earnings management was used by the managers to increase or decrease income in the reports. Moreover, this research applies the Kothari et al., (2005) for estimating discretionary accruals but only using current accruals instead of whole accruals because Fields et al., (2018) argued that current discretionary accruals were more intensely monitored by management as compared to long term discretionary accruals. Therefore, the current study used (unsigned) absolute value of abnormal accruals to find the upward or downward effect of income as a proxy of earnings management.

4.4. Control Variables

There are, however, other factors that signal the variation in firm performance through earnings management. This research is different from other researches related to earnings management as it is mainly focused on the earnings management from the perception of environmental accounting practices. This research also took into consideration based on past studies that to identify earnings management the intrafirm indicators should be controlled prevalently. Hence, the same variables were used to control the pressure generated from informal or formal forces and above and beyond the intrafirm influences, namely, size, leverage, profitability, corporate governance, audit, and industry. However, previous studies claimed that control on the variables may influence discretionary accruals, therefore, the firm size was measured on the basis of sum of total asset, as was the leverage on the basis of debt-to-equity ratio as well as the profitability on the basis of return on asset.

5. Methodology

The main hypothesis of this research is based on the argument that CSR initiatives have a positive relationship with earnings management, as it supports the idea of disclosing environmental responsibilities in corporate reports. Therefore, the ordinary least square (OLS) was used to investigate and explain the likelihood of a positive relationship by using cross-sectional analysis to check robust standard error.

$$\boldsymbol{COED_{iy} = \lambda_1 + \lambda_2(DAC)_{iy} + \lambda_3(TASIZE)_{iy} + \lambda_4(LEVR)_{iy} + \lambda_5(ROA)_{iy} + \lambda_6(CRG)_{iy} + \lambda_7(AQ)_{iy} + \lambda_8(IND)_{iy} + \varepsilon_{iy}}$$

Where:
COED = Corporate environmental disclosure

DAC = Adjusted discretionary accruals
TASIZE = log of Total assets of the firm
LEVR = Debt to equity ratio
ROA = Profitability measure return on asset
CRG = Measure of corporate governance, count of board members
AQ = Audit quality, count of audit committee members
IND = Indicator business sector either regulated or unregulated

In addition, it was assumed that the industry sector was playing the role of dummy variable in an effort of finding the impact of earnings management on environmental disclosure. Trucost (2014) second review of environmental reporting, published in which industry were classified in different sectors including the financial sector, technology sector, consumer goods sector, etc. Similarly, this research approach was consistent with previous studies, therefore, classified the industry sector into two sectors, namely, regulated sector and the unregulated sector. The robust regression for the regulated sector was also conducted.

6. Results

6.1. Descriptive Analysis

Table 1 below represents the descriptive statistic of data gathered for the current study. These statistics indicate the count of firms that followed the KPIs under which the corporate environmental disclosure practicing in Malaysian listed firms. The minimum value of COED is 0 from a total of 4 with the mean value of 0.286. Earnings management is driven by the proxy of discretionary accruals (DAC) which has a mean value of around 0.07 that is consistent with the reported results of Akrout & Ben Othman (2016) for Canadian companies. The mean value of total assets is 3.613 which is consistent with Sadiq & Othman (2017). Corporate governance is measured based on the number of board members which is indicated by the mean value of 11.25 out of 20. Next, the audit committee provides the mean value 4 from the total of 17 in which the minimum value is 3. Moreover, TASIZE and LEVR have the highest standard deviation amongst all other independent variables which indicates that these variables have the highest dispersion.

Table 1: Descriptive analysis

Variable	Min	Max	Mean
COED	0.000	4.000	0.286
DAC	0.011	0.612	0.067
TASIZE	5.36	8.54	6.13
LEVR	0.102	2.26	0.96
ROA	-78.483	39.574	9.121
AQ	3.000	6.000	4.011

6.2. Correlation Analysis

Table 2 below showcases the correlation results of environmental accounting with earnings management. This Table indicates that the correlation between COED and DAC is positive with the value of 0.0451. The correlation between TASIZE and COED is positive with the value of 0.1509 and is also consistent with previous studies of this type. It was argued that large firms were expected to disclose more information as a result of accountability and visibility required by regulators. CRG and AQ also have a positive correlation with COED. As CRG represent the number of members at the board and AQ represent the number of members at the audit committee, they were derived from phenomena that large firms have large board and large audit committee. Moreover, DAC and ROA show the highest correlation value with the negative sign (-), which suggests that the firm performance should be considered when measuring discretionary accruals.

Table 2: Correlation analysis

Variable	COED	DAC	TASIZE	LEVR	ROA	CRG	AQ	IND
COED	1							
DAC	0.0451	1						
TASIZE	0.1509	0.0267	1					
LEVR	-0.0653	0.0528	-0.0227	1				
ROA	-0.0415	-0.4085	0.0049	0.0404	1			
CRG	0.1123	-0.011	0.4867	0.1153	0.0321	1		
AQ	0.1381	-0.0087	0.401	0.0201	0.0639	0.3033	1	
IND	-0.082	0.4048	0.1957	0.0994	-0.1644	0.1434	0.1235	1

6.3. Ordinary Least Square Regression along with Robust Errors

Table 3 A carries the regression results, driven by ordinary least square (OLS) along with the robust standards error. However, the role of the dependent variable in this study is played by corporate environmental disclosure (COED) whereas DAC identifies the earnings management and other control variables playing the role of the independent variable.

In Table 3 A, the relationship between COED and DAC is negative with the p-value of 0.661. Moreover, the robust standard error varying from 0.66 to 0.70. All other variables are unrelated to COED except TASIZE, which shows a positive relationship with the significance of around 0.01 level.

6.4. Regression Analysis of COED and DAC with Robust Standard Error

Moreover, managers have incentives to manage earnings either upward or downward as argued in previous studies, therefore, a proxy of absolute value was used for long term and current discretionary accruals to investigate the upward and downward income settlement. Table 3 A indicates that the relationship between COED and discretionary accruals are insignificant, neither in the direction of positive nor in negative absolute value, hence, the negative DAC achieved shows the positive relationship between COED and earnings management.

Table 3 A: Regression analysis of COED and DAC with robust standard error

	Absolute Measure		
COED	Coeff.	t	p>t
DAC	-0.297	-0.442	0.661
TASIZE	0.007	2.482	0.016
LEVR	0.000	-1.001	0.319
ROA	-0.007	-1.262	0.209
CRG	0.017	0.911	0.366
AQ	0.057	1.152	0.254
IND	-0.212	-2.042	0.045
y Intercept	0.031	0.162	0.877

In a signed discretionary accruals sample, the COED is related to the count of audit committee meetings, in which COED positively influenced by audit committee meetings when managers engaged in upward earnings management practice. Similarly, the audit committee influenced negatively in COED when managers are engaged in practicing downward earnings management. It was also argued by previous researchers that the direction of earnings management defines the relationship of COED and audit committee meetings.

With respect to the signed DAC test, the relationship of TASIZE is not significant with signed accruals models but current discretionary accruals carry significance with TASIZE. This evidence raises an argument as to what extent the direction of earnings management affects the relationship between COED and TASIZE. Moreover, in most of the models, the relationship was found to be significantly negative between COED and IND.

Table 3 B: Regression estimates with robust standard errors of COED on DAC

	Long-term Discretionary Accruals											
	Negative Long-term Discretionary Accruals						**Positive Long-term Discretionary Accruals**					
COED	**Coeff.**	**Std. Err.**	**t**	**p>t**	**[95% Conf**	**Interval]**	**Coeff.**	**Std. Err.**	**t**	**p>t**	**[95% Conf**	**Interval]**
DAC	-0.214	0.618	-0.342	0.733	-1.431	1.004	2.178	3.154	0.692	0.495	-4.133	2.178
TASIZE	0.005	0.004	1.601	0.113	-0.001	0.011	0.035	0.032	1.113	0.275	-0.029	0.035
LEVR	0.000	0.000	-0.652	0.516	0.000	0.000	0.000	0.000	-2.112	0.041	-0.002	-0.001
ROA	-0.006	0.006	-0.922	0.359	-0.017	0.006	-0.021	0.012	-1.922	0.062	-0.041	-0.021
CRG	0.011	0.021	0.482	0.636	-0.029	0.046	0.045	0.053	0.842	0.407	-0.061	0.045
AQ	0.103	0.057	1.832	0.072	-0.009	0.213	-0.163	0.055	-3.042	0.005	-0.268	-0.163
IND	-0.199	0.122	-1.652	0.103	-0.435	0.041	-0.591	0.205	-2.902	0.006	-0.996	-591.000
y Intercept	-0.093	0.224	-0.412	0.683	-0.531	0.348	0.523	0.448	1.172	0.249	-0.373	0.523
Obs	573						**Obs**	134				
F (11, 927)	3.142						**F (11, 927)**	1.662				
prob>F	0.005						**prob>F**	0.138				
R^2	0.078						**R^2**	0.117				
RMSE	0.698						**RMSE**	0.777				

Table 3 C: Regression estimates with robust standard errors of COED on DAC

	Current-accruals											
	Negative Current-accruals						**Positive Current-accruals**					
COED	Coeff.	Std. Err.	t	p>t	[95% Conf	Interval]	Coeff.	Std. Err.	t	p>t	[95% Conf	Interval]
DAC	-0.739	0.651	-1.142	0.259	-2.018	0.543	0.866	2.668	0.322	0.749	-4.463	6.191
TASIZE	0.009	0.005	2.402	0.021	0.003	0.015	0.011	0.006	2.572	0.014	0.003	0.019
LEVR	0.000	0.000	-0.762	0.451	0.000	0.000	-0.001	0.000	-2.252	0.031	-0.001	0.000
ROA	-0.009	0.007	-1.482	0.144	-0.019	0.004	0.003	0.008	0.142	0.889	-0.014	0.016
CRG	0.015	0.021	0.702	0.488	-0.026	0.051	0.018	0.041	0.412	0.686	-0.064	0.095
AQ	0.112	0.075	1.502	0.138	-0.037	0.256	-0.032	0.048	-0.652	0.522	-0.123	0.064
IND	-0.237	0.128	-1.872	0.066	-0.485	0.015	-0.187	0.182	-1.032	0.309	-0.546	0.176
y Intercept	-0.078	0.271	-0.292	0.778	-0.607	0.454	0.167	0.284	0.582	0.564	-0.401	0.731
Obs	558						**Obs**	125				

F (11, 927)	3.342	F (11, 927)	4.372
prob>F	0.003	prob>F	0.002
R^2	0.069	R^2	0.091
RMSE	0.763	RMSE	0.615

Raw discretionary accruals were also tested as followed by previous researchers. In Table 3 D, the COED is not affected significantly by current raw discretionary accruals and long-term raw discretionary accruals. Moreover, AQ and CRG also have a non-significant relationship with COED. Since these models were following by previous studies, it also shows the significant association of COED with TASIZE and IND.

Table 3 D: Regression estimates with robust standard errors of COED on DAC

Raw Measure													
	Long-term Accruals						Current-accruals						
COED	Coeff.	Std. Err.	t	p>t	[95% Conf	Interval]	Coeff.	Std. Err.	t	p>t	[95% Conf	Interval]	
DAC	0.075	0.561	0.132	0.898	-1.031	1.176	-0.115	0.501	-0.232	0.823	-1.101	0.872	
TASIZE	0.006	0.002	2.442	0.017	0.001	0.011	0.006	0.002	2.422	0.018	0.001	0.011	
LEVR	0.000	0.000	-1.032	0.000	0.000	0.000	-0.001	0.000	-2.252	0.031	-0.001	0.000	
ROA	-0.009	0.007	-1.482	0.306	0.000	0.000	-0.005	0.005	-1.022	0.312	-0.015	0.005	
CRG	0.017	0.018	0.932	0.354	-0.019	0.051	0.017	0.018	0.932	0.357	-0.019	0.049	
AQ	0.057	0.051	1.162	0.249	-0.041	0.151	0.058	0.051	1.182	0.241	-0.039	0.152	
IND	-0.216	0.113	-1.942	0.056	-0.434	0.006	-0.226	0.103	-2.222	0.029	-0.425	-0.027	
y Intercept	0.009	0.183	0.042	0.971	-0.352	0.366	-0.005	0.186	-0.022	0.991	-0.367	0.361	
Obs	938						Obs	938					
F (11, 927)	4.622						F (11, 927)	4.692					
prob>F	0.000						prob>F	0.000					
R^2	0.054						R^2	0.054					
RMSE	0.721						RMSE	0.721					

In order to check the moderating role of corporate governance, which is required by hypothesis H3 and H5, it was examined with respect to the relationship of DAC and COED. Therefore, two variables were introduced that interact the audit committee with earnings management and the large board size with earnings management respectively.

The following model is based on cross-sectional regression used by the current research, in which the attributes of corporate governance were defined with respect to the earnings management.

$$\boldsymbol{COED = \alpha 0 + \alpha 1 PM + \alpha 2 PM * CRG + \alpha 3 PM * AQ + \alpha j\ control\ variables\ j + \varepsilon}$$

Where:

PM = performance match the discretionary accruals, measured in absolute value of both sign positive and negative.

PM*CRG = is an interaction variable between DAC and board size.

PM*AQ = is an interaction variable between DAC and Audit committee

Results in Table 4 A indicate that the relationship of CRG, which is the indicator of board size, are significantly negative. However, the coefficient of interaction term PM*CRG is positive (coef =0.29, t= 2.4). Except, the coefficient of audit committee is significantly positive, but the interaction PM*AQ is negative (coef. = 0.2, t = 1.8).

Table 4 A: Interaction of CRG and AQ with COED and DAC

COED	Coeff.	Std. Err.	t	p>t	[95% Conf	Interval]
DAC (absolute)	-0.326	0.707	-0.462	0.648	-1.716	1.067
PMCRG	0.296	0.124	2.412	0.019	0.056	0.537
PMAQ	-0.204	0.114	-1.801	0.076	-0.426	0.021
TASIZE	0.008	0.004	2.912	0.004	0.003	0.015
LEVR	0.000	0.000	-0.901	0.369	0.000	0.000
ROA	-0.007	0.006	-1.152	0.254	-0.016	0.006
CRG	-0.027	0.024	-1.152	0.255	-0.016	0.006
AQ	0.105	0.065	1.632	0.106	-0.023	0.231
IND	-0.241	0.108	-2.242	0.028	-0.449	-0.031
y Intercept	-0.326	0.707	-0.462	0.648	-1.716	1.067
Obs	938					
F (11, 927)	2.780					
prob>F	0.005					
R^2	0.079					
RMSE	0.712					

However, the interaction effect of PM with CRG and AQ variables are extracted from the regression model, making it become statistically significant, and especially the interaction effect is also highly significant. These results are also consistent with hypothesis H2 that is concerned with the moderating effect of the earnings management which is negatively associated with audit committee with respect to the environmental disclosure.

Also, another test was conducted in which signed PM measures replaced the absolute PM measure as positive discretionary accruals and negative discretionary accruals. Below Table 4 B showcases the results of the moderating effect of audit committee and board size with positive and negative DAC, whereas the results are similar in the negative DAC sample. Although, the interaction effect of PM*CRG and PM*AQ is found to be non-significant in positive DAC samples. However, this may happen due to the weak or small sample interaction of audit committee and board size in positively influencing DAC.

Table 4 B: Interaction of CRG and AQ with signed COED and DAC

	Negative Discretionary Accruals						Positive Discretionary Accruals					
COED	Coeff.	Std. Err.	t	p>t	[95% Conf	Interval]	Coeff.	Std. Err.	t	p>t	[95% Conf	Interval]
DAC	-0.401	0.601	-0.672	0.507	-1.585	0.785	1.473	3.263	0.452	0.656	-5.051	8.001
PMCRG	0.369	0.147	2.542	0.015	0.083	0.655	-0.017	0.183	-0.082	0.936	-0.378	0.348
PMAQ	-0.249	0.136	-1.852	0.068	-0.515	0.019	-0.072	0.137	-0.522	0.607	-0.342	0.199
TASIZE	0.009	0.005	1.972	0.052	0.000	0.015	0.011	0.006	2.452	0.019	0.004	0.019
LEVR	0.000	0.000	-0.542	0.589	0.000	0.000	-0.001	0.000	-2.182	0.035	-0.001	0.000
ROA	-0.007	0.007	-0.962	0.341	-0.017	0.007	0.002	0.009	0.072	0.948	-0.016	0.017
CRG	-0.043	0.027	-1.632	0.107	-0.092	0.011	0.017	0.048	0.322	0.754	-0.079	0.108
AQ	0.162	0.079	2.072	0.042	0.009	0.315	-0.015	0.055	-0.242	0.817	-0.121	0.095
IND	-0.212	0.114	-1.882	0.064	-0.432	0.013	-0.208	0.188	-1.112	0.275	-0.579	0.168
y Intercept	-0.002	0.246	-0.012	0.997	-0.486	0.483	0.166	0.338	0.492	0.629	-0.509	0.837
Obs	512						Obs	118				
F (11, 927)	2.000						F (11, 927)	7.372				
prob>F	0.043						prob>F	0.000				
R^2	0.122						R^2	0.096				
RMSE	0.685						RMSE	0.624				

6.5. Robustness Check

According to the results of the main test, there was an insignificant relationship found between COED and DAC. It was assumed that it might happen with all independent variables if included simultaneously. Therefore, a normality test was conducted in Table 5 with the aim of testing the outliers of independent variables. According to the Chi-square statistical table, the probability of observation is higher than 140.169 which is 0.5%. However, in our analysis of TASIZE, LEVR and AQ, these seem to not be normally distributed. Therefore, a test was conducted using a cross-sectional analysis based on previous regression in which three variables from the initial model were eliminated.

$$\boldsymbol{COED_{iy} = \lambda_1 + \lambda_2(PM)_{iy} + \lambda_3(ROA)_{iy} + \lambda_4(CRG)_{iy} + \lambda_5(IND)_{iy} + \varepsilon_{iy}}$$

Furthermore, the results obtained by the above regression are mentioned in Table 5 which are numerically consistent with the initial regression results that indicate that the relationship between DAC and COED was found to be non-significant. Moreover, the relationship between CRG and COED was found to be positive and significant.

Table 5: Normally (statistically) distributed variables only

COED	Coeff.	Std. Err.	T	p>t	[95% Conf	Interval]
DAC (absolute)	-0.389	0.739	-0.532	0.601	-1.841	1.067
ROA	-0.006	0.005	-1.212	0.228	-0.015	0.004
CRG	0.037	0.017	2.352	0.022	0.007	0.066
IND	-0.169	0.118	-1.442	0.152	-0.397	0.063
y Intercept	0.051	0.146	0.342	0.736	-0.237	0.336
Obs	938					
F (11, 927)	2.022					
prob>F	0.094					
R^2	0.028					
RMSE	0.726					

Finally, we run the regression for robustness checks by segregating the industry into two sectors: regulated sector and non-regulated sector. In below Table 6, it was found that the p-value of ROA and LEVR are 0.01 and 0.05 level significant respectively, since the relationship between TASIZE and COED become significantly positive in the regulated sector. Moreover, the relationship between COED and DAC is still insignificant as shown in Table 6 by both sectors: regulated and non-regulated. Therefore, it was realized that the COED and earnings management were not related regardless of the sector type, as the results in Table 6 indicate that TASIZE, LEVR, and ROA were different with respect to COED.

Table 6: Robustness regression sector wise

	Non-regulated						Regulated					
COED	Coeff.	Std. Err.	t	p>t	[95% Conf	Interval]	Coeff.	Std. Err.	t	p>t	[95% Conf	Interval]
DAC	0.099	1.419	0.072	0.947	-2.699	2.895	-0.064	0.311	-0.201	0.845	-0.686	0.561
TASIZE	0.016	0.021	0.792	0.435	-0.024	0.053	0.007	0.003	2.872	0.007	0.003	0.012

LEVR	-0.001	0.000	-2.042	0.045	-1.000	0.000		0.000	0.000	-0.042	0.974	0.000	0.000
ROA	-0.021	0..006	-3.192	0.002	-0.033	-0.008		0.005	0.005	1.092	0.285	-0.005	0.013
CRG	0.021	0.022	0.892	0.378	-0.024	0.061		0.013	0.032	0.372	0.718	-0.052	0.074
AQ	0.035	0.071	0.482	0.632	-0.103	0.168		0.063	0.067	0.942	0.354	-0.072	0.194
y Intercept	0.201	0.273	0.732	0.466	-0.338	0.735		-0.247	0.219	-1.132	0.266	-0.684	0.193
Obs	502						**Obs**		96				
F (11, 927)	2.322						**F (11, 927)**		7.312				
prob>F	0.037						**prob>F**		0.000				
R	0.065						**R**		0.255				
RMSE	0.758						**RMSE**		0.503				

7. Conclusion

The main objective of this study was to analyze the relationship between corporate environmental disclosure and earnings management. The main hypothesis was related to the argument that practicing earnings management provided the incentive to firms to initiate CSR related activities such as corporate environmental disclosure.

We used the discretionary accruals model in which the performance variable was explicitly adjusted and considered the discretionary accruals as a measure of earnings management. A regression was run with the Least Ordinary Square (LOS) along with the robust error, but the results were insignificant in the relationship of environmental disclosure and earnings management. This result is consistent with other tests, even with the removal of some of the variables from the regression that were not normally distributed.

Moreover, the influence of managers was also considered in the decision-making process, as they are motivated to involve in income increasing and decreasing activities to manage earnings for their own benefits. Therefore, the absolute value of discretionary accruals, raw accruals and signed accruals in both discipline long term and current were used. Therefore, the findings are consistent as an insignificant relationship was found between corporate environmental disclosure and earnings management.

Furthermore, the interaction effect of board size and audit committee as an element of corporate governance with respect to the relationship between earnings management and environmental disclosure was also examined. However, the results were mixed as while the audit committee can affect the relationship of earnings management, but the board size does not affect their relationship. It is suggested that any future study related to CSR and earnings management should consider the other elements of corporate governance like transparency, board composition, etc. while comparing with this relationship as it may have some influence.

In econometric models, robust regression plays as a confirmatory method. With respect to this research, the relationship between environmental disclosure and earnings management was found to be insignificant by using additional robustness checks. Moreover, the controlled variable, TASIZE, was found to be positively and significantly related to environmental disclosures. This finding is consistent with previous studies related to the disclosure in which they argued that large companies were willing to receive pressure from external stakeholders to be more involved in CSR activities with the aim of attracting potential investors.

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