Environmental Disclosure and Cost of Equity Capital of Public Listed Firms in Malaysia

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Abstract
Disclosure of environmental information in Malaysia is still at a minimal level due to no clear rules and regulations for sustainability reporting which lead to information asymmetry for investors. The purpose of this study is to examine the relationship between environmental disclosure and cost equity capital (COC) firms listed on Bursa Malaysia. The sample data were collected from the annual report and Eikon database. The regression result in this study showed environmental disclosure negative relationship with COC based on 171 firm observations in 2016. This study proved environmental disclosure reduces cost equity capital by reducing information asymmetry and firm risk. For control variables, firm size is a negative relationship with COC while leverage positive relationship with cost equity capital.
Keywords: Sustainability Reporting, Environmental Activities, Cost OF Financing, and Listed Companies.

Introduction
In recent years, it has been a new trend and rapid growth in the awareness and practices of environmental protection and activities to gain a higher reputation for the firm. As Malaysia is an emerging capital market, disclosing environmental information is a significant concern be taking part in these competitive markets of public listed firms. Many public firms in Malaysia slowly included environmental activities as one of the criteria to attract investors and strategy to boost their market and financial performance. For example, in June 2021, Maybank, one of the largest banks in Malaysia, was awarded the top prize for sustainability reporting at the National Annual Corporate Report Awards (NACRA) 2020. The bank discloses comprehensive reporting on environmental including climate change, biodiversity, and sustainable finance.

Previous studies prove that environmental disclosure affects financial performance (Alsaifi et al., 2020, Wang et al., 2020). Misopoulos et al (2020) stated that environmental

disclosure helps firms maintain a friendly relationship with the stakeholders such as customers and investors. This will increase the level of revenues of the firms whereby the business activity will not harm the stakeholders' benefits. Other than that, Ong et al (2015) stated that firms enjoy cost saving by adopting environmentally friendly activities. Good firm performance will signal the investors to invest in firms with environmentally friendly activities which promised returns.

Regarding external financing from investors, firms that engage in environmentally friendly activities should enjoy lower cost equity capital (Plumlee et al., 2015). Disclosing environmental information will reduce information asymmetry and increase future returns to the stakeholders. By evaluating the disclosure's ability, reduced information asymmetry can minimize adverse selection and moral hazard risk. Eventually, environmental disclosure can increase confidence the investors in making investment decisions.

Although bursa Malaysia requires the listed firm to report environmental disclosure in the sustainability statement, the environmental disclosure remains voluntary due to no specific standard or regulatory requirement or environmental information publicly. As mentioned by Ball et al (2003) and Mohd Ghazali and Weetman (2006), disclosure of environmental information in Malaysia is still at a minimal level compared to other countries. The Environmental Quality Act of 1974 only emphasizes the punishments towards environmental pollution.

Prior researchers prove that environmental disclosure has a negative relationship with the cost of equity capital Plumlee et al (2015), but the direction of actual research can be the opposite way. First, environmental activities and technology could be costly to firms. It caused fewer firms willing to invest in environmental activities when the cost is outweighing the benefits (Dangelico & Pujari, 2010). Besides that, environmental activities expose the firms to litigation risk because firms exposed the information publicly (Cho et al., 2012). Lastly, environmental disclosure may let competitors take advantage whereby competitors may imitate firms' business strategy (Cho et al., 2010).

Research on environmental disclosure and the cost of equity capital offers critical insights into the financial implications of firm sustainability practices. Firms are increasingly being scrutinized for their environmental impact and governance, and transparent environmental disclosure can play a significant role in influencing investor perception and behaviour. Investors often see strong environmental practices as a proxy for effective management, which can lower perceived risk and thus reduce a firm's cost of equity capital. Understanding this relationship can not only incentivize businesses to be more environmentally responsible but also provide investors and policymakers with a quantitative measure to assess the economic value of sustainable practices. This research bridges the gap between environmental stewardship and corporate finance, offering a comprehensive view that is invaluable for decision-making in these sectors.

Literature Review

The cost of equity capital refers to the rate of return required by investors to invest in a company's equity. This rate of return represents the compensation for the risk that investors take when they invest in a firm. The cost of equity capital plays a crucial role in determining the overall cost of capital for a firm, which in turn affects its investment decisions and growth prospects.

In signalling theory, disclosing information such as environmental disclosure could signal the external investors in an investment decision, the concern that such disclosures

could be detrimental to their competitive position in product markets (Verrecchia, 1983; Newman & Sansing, 1993). However, some firms were reluctant to disclose information that could harm their competitive position as it would increase the cost of equity capital due to the leakage of information to the competitors. the firms would aggregate in reporting when they wanted to reduce uncertainties and attract potential investments with better performances disclosed.

Cormier and Magnan (2015) say that environmental disclosure was the firm management's strategy in responding to the information needs from the financial markets to maintain its legitimacy within the community, it enhanced the quality of the information analysed to allow them to make better forecasts and influencing the stakeholders view on its legitimacy. El Ghoul *et al* (2011) suggested US firms that made efforts in improving the welfare of the employee and environmental protection could benefit from getting a lower cost of equity capital and exhibited lower risks by measurement using several approaches to estimate the firms' ex-ante cost of equity. Similar study made by Plumlee, Brown, Hayes, and Marshall (2015) who investigate the relationship between the quality of voluntary environmental disclosures and firm value. They find that higher-quality environmental disclosures are associated with a lower cost of equity capital, supporting the argument that transparent and credible environmental information is valued by investors.

Other than that, higher information disclosure on environmental protection could improve the relationship between the investors and firms as the firms perform good social responsibilities voluntarily (Waddock & Graves, 1997). According to the Agency Theory, the relationship between the investors and firms could be improved by lowering information asymmetry, reducing transaction costs needed during trading and encouraging more investors to invest in firms that do environmental activities.

There are existing benefits to creating and distributing environmental disclosure. Based on the research done by Dhaliwal *et al*. (2011), firms with the initiation of corporate social responsibility (CSR) including environmental activities enjoyed a subsequent reduction in the cost of equity capital, where CSR included environmental and human rights protection, community support and other advanced social causes. If firms disclosed more information to the investors and stakeholders, information asymmetry could be reduced. As a result, investors prefer not to invest in low environmental disclosure practices firms as previous studies showed that firms with higher environmental disclosure could enjoy a lower cost of equity capital.

However, Eriandani, Narsa, and Irwanto, (2019) found that the relationship between environmental disclosure and the cost of equity capital is positive. Too much environmental disclosure can increase the cost of equity capital. Investors may view excessive disclosure as a signal of higher risk or uncertainty.

Methodology
Sample Description and Data Collection
The initial sample of this study stated in Table 1 was 500 firms. The final is 170 firms due to some unavailable data. the sample represented the real population because more than 30 firms' observations were studied (Keller & Warrack, 2005). In this study, data was collected for the year 2016 only because previous studies prove rarely changes every year (Tang, 2012; Billings *et al*., 2014). Financial data were collected from the Eikon database while environmental disclosure was collected from the annual report.

Table 1
Summary of Sample

	Number of Firms
Initial Sample	500
Minus: Firms that have insufficient data	<u>330</u>
Total number of Firms analysed	170

Regression Model
The regression model used in this study to measure the relationship between environmental disclosure and firm characteristics such as size, liquidity, leverage and growth of the firms in affecting the cost of capital was multiple regression analysis. The regression model is as follow below: -

$$COC_{i,t} = \alpha + \beta 1ED_{i,t} + \beta 2SIZE_{i,t} + \beta 3LIQUIDITY_{i,t} + \beta 4LEVERAGE_{i,t} + \beta 5GROWTH_{i,t} + \varepsilon_{i,t}$$

Where,
COC	= Cost of capital
α	= Constant
β	= Coefficient
ED	= Environmental disclosure
SIZE	= Size of the firms
LIQUIDITY	= Liquidity
LEVERAGE	= Leverage
GROWTH	= Growth
ε	= Standard normal, randomly assigned error term
i	= Firms
t	= Time

Measurement of Dependent Variable
Cost of Capital
In this study, the price per earnings to growth (PEG) ratio method was used to calculate the cost of capital of the firms. PEG ratio provided the estimation of the cost of equity capital that was consistent and predictable to the business risk while other proxies would not (Easton, 2004). The formula is as follows: -

$$coc = \sqrt{\frac{eps_{i,t\,+2} - eps_{i,t\,+1}}{p_{0,\,i}}}$$

whereas,
$eps_{i,t\,+2}$	= Earnings per share for firm i for two-year ahead
$eps_{i,t\,+1}$	= Earnings per share for firm i for one-year ahead
$p_{0,\,i}$	= Stock market price of firm i's shares

Measurement of Independent Variable
Environmental Disclosure
The extent of environmental disclosure (ED) was measured by analysis of the contents of the annual report. A dummy variable was used in this study. The score "1" represented if the item was disclosed, however, "0" was given when the item was not disclosed. Each item will total up for each firm. The maximum item-total score is 10 which comprises the following: -
1. Renewable energy,
2. Clean water,
3. Biodiversity,
4. Emission,
5. Effluent,
6. Waste management,
7. Recycle,
8. Reuse of resources, materials, and products,
9. Spill,
10. Environmental management.

Measurement of Control Variables
Size of Firms
size of the firms was measured as the natural logarithm of the total asset of the firms.
Formula:

$$Size = Log_{10} \, (Total \; asset)$$

Liquidity
Liquidity was defined as the degree of quickness with which the firm could generate revenues from its asset or security. Amihud & Mendelson (1986) used the bid-ask model to study the spread in indicating the length of time on the stock holding period.
Formula:
$$Liquidity = Ask \; Price - Bid \; Price$$

Leverage
Leverage was defined as the ratio of total borrowed debt to the firms' assets to generate revenues. The formula is as follows; -

$$Leverage = \frac{Total \; debt}{Total \; equity}$$

Growth
Wang *et al* (2013) used the difference between the total sale in year 1 and the total sale in year 2 and then divided it by the total sales in year 1. The percentage of the difference was identified as the growth of the firms. The formulas are as follow; -

$$Growth = \frac{Total \; sale \; t - total \; sale \; t_{-1}}{total \; sale \; t_{-1}}$$

Findings and Analysis
Descriptive Statistics
Table 2 showed the descriptive statistics on the variables studied which were the mean, standard deviation, minimum, maximum and observations. In this study, the PEG ratio was

used to calculate the cost of capital of a firm. The mean cost of capital (COC) for the sample firm was 0.140881 where the values collected ranged from 0.000148 (minimum) to 4.065952 (maximum) for the year 2016. Environmental disclosure (ED) was measured using the content analysis from the annual reports of the listed firms. ED had a mean value of 4.305882 which ranged from the value captured 0 to 10 disclosure score. The first control variable which is SIZE had a mean value of 8.367291. LIQUIDITY had a mean value of 0.02965 which showed a low value of the firms' liquidity. LIQUIDITY ranged from 0 to 0.43. The mean value for LEVERAGE was 0.450952 or 45% was calculated as debt over equity. Lastly, GROWTH had a minimum value of -0.70 and a maximum value of 29.66 with a mean value of 0.540059.

Table 2
Summary of Descriptive Statistics

Variables	Minimum	Maximum	Mean	Std. Deviation
COC	0.000148	4.065952	0.140881	0.386997
ED	0	10	4.305882	2.333312
SIZE	6.23	10.33	8.367291	0.781821
LIQUIDITY	0.00	0.43	0.029650	0.057298
LEVERAGE	0.000045	3.499118	0.450952	0.501238
GROWTH	-0.70	29.66	0.540059	2.572623

Pearson's Correlation Coefficient
Table 3 summarized the Pearson Correlation between the dependent variable and all variables. These results showed that environmental disclosure (ED) and cost of capital (COC) had a negative significant correlation at a 1% level of significance. Firm size (SIZE), had negative significance at a 1% level of significance. Leverage (LEVERAGE), was a positive significant correlation with COC at a 1% level of significance. Last but not least, liquidity (LIQUIDITY) and firm growth (GROWTH) were not correlated with COC as the p-values were larger than the 10% level of significance.

Table 3
Correlation Coefficient between Variables

Variable		COC	ED	SIZE	LIQUIDITY	LEVERAGE	GROWTH
COC	PC	1.0000					
	Sig.	-----					
ED	PC	-0.2337	1.0000				
	Sig.	**0.0022***	-----				
SIZE	PC	-0.2019	0.4942	1.0000			
	Sig.	**0.0083***	**0.0000***	-----			
LIQUIDITY	PC	-0.0861	0.0902	0.1863	1.0000		
	Sig.	0.2643	0.2422	**0.0150****	-----		

LEVERAGE	PC	0.3394	0.0416	0.2506	-0.0217	1.0000	
	Sig.	0.0000***	0.5899	0.0010***	0.7786	-----	
GROWTH	PC	0.0557	-0.1266	-0.2615	-0.0519	-0.0876	1.0000
	Sig.	0.4710	0.1000*	0.0006***	0.5014	0.2561	-----

***. Correlation is significant at the 0.01 level, **. Correlation is significant at the 0.05 level, *. Correlation is significant at the 0.1 level

Regression Results
Table 4 indicates that the influences of environmental disclosure (ED) together with firm size (SIZE), liquidity (LIQUIDITY), leverage (LEVERAGE) and growth (GROWTH) on the cost of capital (COC) which had a value of R-Square of 21.70% of the model. The adjusted R-square was 0.1931 or 19.31%. It means that 21.70% of the dependent variable (COC) was explained by the movements in the index of independent variables (ED, SIZE, LIQUIDITY, LEVERAGE AND GROWTH) studied.

From the above table environmental disclosure (ED) had a negative relationship with the cost of capital (COC) at a significant p-value of 0.10 at a 10% significance level. Higher environmental disclosure resulted in a lower cost of equity needed. It is consistent with Plumlee, Brown, Hayes, and Marshall (2015). Higher environmental disclosure reduces information asymmetry and firm risk perceived by investors thus reducing the cost of equity capital.

Regarding the control variable, there was a negative relationship between the firm size (SIZE) and the cost of capital (COC) at a p-value of 0.01 at a 1% significance level. Hence, the data agreed with the hypothesis stated. It is consistent with Embong, Mohd-Saleh and Sabri Hassan, (2012). Normally, there are more extensive disclosure practices by larger firms that can reduce information asymmetry. This will reduce cost equity for these firms. In contrast, LEVERAGE showed a significant positive relationship with the cost of capital at a 1% significance level. It is consistent with Vitolla, Raimo, Petruzzella, and Rubino, (2020). Higher debt increased risk that can result in a higher required rate of return for equity investors to compensate for the additional risk they assume. Lastly, LIQUIDITY and GROWTH were found not significant in the study

Table 4
Coefficient of Multiple Regression Analysis

Variables	Model Coefficient	Standard Error	t- statistic	Probability
C	0.885478	0.220846	4.009481	0.0001***
ED	-0.015012	0.008981	-1.671478	0.0965*
SIZE	-0.077020	0.028765	-2.677614	0.0082***
LIQUIDITY	-0.100625	0.324528	-0.310064	0.7569
LEVERAGE	0.211016	0.037651	5.604581	0.0000***
GROWTH	0.001316	0.007303	0.180269	0.8572
R-Squared	0.216970			
Adjusted R-Squared	0.193097			
F-Statistic	9.088554			
Prob(F-Statistic)	0.000000			

***. Correlation is significant at the 0.01 level, **. Correlation is significant at the 0.05 level, *. Correlation is significant at the 0.1 level.

$$COC_{i,t} = 0.885478 - 0.015012ED_{i,t} - 0.077020SIZE_{i,t} - 0.100625LIQUIDITY_{i,t} + 0.211016LEVERAGE_{i,t} + 0.001316GROWTH_{i,t} + \varepsilon_{i,t}$$

Conclusion and Implication of The Study

The result of this study proves that environmental disclosure reduces cost equity capital by reducing information asymmetry and firm risk. High-quality and credible disclosures can enhance a firm's reputation, signalling a commitment to sustainable practices and attracting more environmentally-conscious investors. Consequently, firms may experience a reduction in their cost of equity capital due to increased investor confidence and reduced risk perception. The policy maker such as Bursa Malaysia, the security commission and the Malaysian accounting standard Board (MASB) can promote sustainable practices and decision-making by setting disclosure standards, encouraging firms to adopt established reporting frameworks such as GRI, integrated reporting, and sustainable development goals (SDGs) and facilitating the integration of sustainability (eg environmental) factors into investment decisions

Firm size is a positive relationship with the cost of capital because larger firms tend to disclose more because they have more financial funds. This will reduce cost equity capital by reducing information asymmetry from disclosure. Leverage has a significant positive relationship with the cost of capital. Higher debt increased risk that can result in a higher required rate of return for equity investors to compensate for the additional risk they assume.

Acknolegement

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