

# Internet Financial and Environmental Disclosures by Malaysian Companies

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## Abstract

This paper investigates whether determinants of financial disclosure are similar to environmental disclosure through the Internet. In other words, this paper examines the relationship between Internet financial disclosure (IFD), Internet environmental disclosures (IED) and six variables, namely, ethnic of chief executive officer (CEO), leverage, level of technology, listing status, profitability, and firm size. Six hypotheses formulated in this study were analyzed using data collected from the websites of 189 Malaysian listed companies in 2006. The results indicate that level of technology, ethnic of CEO and firm size are significant factors in explaining both IFD and IED. It is also observed that listing status is positively related to the level of IFD but not IED. On the other hand, profitability is significant factor in explaining the level of IED but not IFD. Finally, leverage is not significantly related to both IFD and IED.

**Keywords:** *Malaysia, financial disclosure, environmental disclosure, Internet, determinants*

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## Introduction

As the financial market is facing globalization, liberalization, and economic crisis and downturn, timely information

is required to assist users in making decision. In this case, the most valuable information is the one that can reduce information asymmetry. Business firms are always looking for a new tool for

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disseminating information to external users in the most efficient and timely manner. One of the tools that is available in the market is Internet technology.

The rapid growth of Internet technology has enabled the firms to disclose their financial information instantly to worldwide users. The level of using such media has increased over the last couple of years in the financial markets (Wagenhofer, 2003; Sriram and Laksmana, 2006). This phenomenon has attracted a number of researchers in this particular field. Internet is an efficient instrument to communicate information to external users at a minimum cost. The information on the Internet can be presented in various forms such as dynamic presentations, draws, multimedia, audio, video and others (Ettredge et al., 2002; Ashbaugh et al., 1999).

The most important characteristic of the Internet is accessibility to all kinds of information at any time and from anywhere. Besides low costs of dissemination (Botosan, 1997) and wide coverage (Adham and Ahmed, 2005), the information displayed on the Internet is shareable, timeliness, and updateable (Joshi and Jawaher, 2003). The Internet allows the companies to address diverse needs of a variety of stakeholders at low information gathering cost (Lodhia, 2004). Thus, the use of the Internet enables information disclosure to take place at a very high level of speed, quantity and quality compared to other media (AICPA, 1994; Wallman, 1995).

However, the use of Internet in financial reporting and disclosure varies from one country to another. For example, Gray and Debreceny (1997) found that 96% of the Fortune 50 companies in the USA

have websites, in which 71% of them have Internet annual reporting and 37% of them disclose auditor reports on the web. Gowthorpe and Amat (1999) examine 379 companies listed on the Madrid Stock Exchange and found that only 61 companies (16%) have websites, in which 34 companies out of 61 companies (55.7%) provide some form of financial information on their websites.

Due to Internet's capability in disseminating information at a high speed, many companies are now taking advantage to disclose not only financial but also non-financial information to their stakeholders. One of the non-financial information is environmental information. This is also due to the increase of public awareness on environmental issues.

Nevertheless, several empirical studies highlight a number of limitations that may hinder the Internet from becoming a perfect medium for information disclosure and communication. Some of these limitations are related to securities, authentication, confirmation or proof and legal obstacles (Joshi and Jawaher, 2003) and information-based problems such as information overload, poor website design and advertisement, ambiguous user preference and competence (Lodhia, 2004). However, as the Internet has the capability to build a good relationship between companies and their stakeholders, and enable the stakeholders to make fast decision making, its usage is on the increasing trend (Sriram and Laksmana, 2006).

Despite the growth of Internet usage in the financial market, academic research in this area is still in its infancy stage, especially in the developing countries like Malaysia (Hassan et al., 1999; Noor

Azizi et al., 2000; Mitchell and Ho, 2000; Khadaroo, 2005). Therefore, this paper intends to investigate the determinants of Internet financial and environmental reporting amongst Malaysian listed companies. The remainder of this paper is structured as follows. Section 2 provides the theoretical background of Internet reporting, while section 3 reviews the determinants of IFD and IED. The research method used in this study is explained in section 4. Section 5 presents the results of this study. Finally, section 6 provides the conclusion and recommendations for future research.

### **Internet Disclosure Theoretical Background**

The nature and extent of disclosure depend on the targeted users' needs and the medium of disclosure (Healy and Palepu, 2000). The main concern here is that accounting information disclosure must not misleading (Moonitz, 1961).

The agency theory predicates that as conflicts arising from the separation of ownership and control of a firm, shareholders would like to have assurance that their equity is not exposed to any unethical exploitation or expropriation by the management. On the other hand, the management, in order to alleviate this requirement, undertakes several voluntary actions such as more disclosures and open investigation (Xiao et al., 2004; Marston and Polei, 2004).

The management has to provide and disclose sufficient information in order to minimize the agency gap and to strengthen the share price of the company (Richardson and Welker, 2001; Rahman, 2002). In relation to the Inter-

net as a medium for disclosure, the management can reduce the agency problem and alleviate information asymmetry due to its unlimited space, wide coverage, easy-access report and real-time information (Sriram and Lakshmana, 2006).

In addition, an efficient equity market requires comprehensive and transparent disclosures of the firms' value and their performance (Levitt, 1999; Richardson and Welker, 2001). Theoretically, the level of disclosure should assist the firms to lower the cost of capital. The decrease in the cost of capital may come from two perspectives. Firstly, higher disclosure reduces transaction costs for the investors resulting in greater liquidity of the market and greater demand for the securities (Diamond and Verrecchia, 1991). Secondly, additional disclosure reduces the estimation risk or uncertainty regarding return distribution (Clarkson et al., 1996). This is parallel to the requirement of Statement of Financial Accounting Concepts No. 1 (1978), which states that the company should provide information that is useful to present investors, creditors and other users in assessing the amounts, timing and uncertainty of investment. Moreover, annual report is a medium through which a firm would like to present itself to other external and internal parties. Thus, the more the firm discloses, the more the firm will preserve its reputation.

Portes and Rey (2000) argue that although disclosure can eliminate the effect of information asymmetry and subsequently reduce the cost of capital but it has cost. Managers are now facing the problem of mitigating the costs and benefits of different disclosure methods. The alternative disclosure method in

recent years is information technology (IT), whereby the firms report their financial results via the Internet. This is because traditional paper-based disclosure has its limitations. The increase in global investments results in paper-based reporting become more expensive and limited in capacity to timely reach investors. In contrast, Internet disclosure is more cost effective, faster, flexible in format, and accessible to all types of users nationally and globally (Debreceeny et al., 2002). Thus, the Internet has more benefits than other media of disclosure such as newspapers, journals or other printing media. The Internet offers easy and equal access to all users and reduces the information advantages to some institutional investors in relative to others, which is in line with the democratization of capital markets.

From the aforementioned discussion, it is clear that the firms use the Internet technology to reach more users than any other communication means. In addition, the speed of disclosure is very important to the users because they can exploit the information that is disclosed by the firms for their own interest. In this case, the shorter the period between producing information and displaying them on the Internet enables investors to make decision faster. The speed of information disseminated through the Internet has several push techniques that can be used to alert users such as email notice and other inbuilt alert systems (Wagenhofer, 2003).

Petravick and Gillett (1996) examined the speed of one firm in releasing information on the website. The study involved 125 of the Fortune 156 companies that announced their quarter-end or year-end earnings. The results show that

99 out of 125 companies (79%) disclose their information on the website on the same day of the announcement. On the other hand, 10 out of 125 (8%) disclose the information one day after the announcement. Thus, as long as the firms update their website faster, the investors will make decisions quicker compared to those who do not have such facility. In short, the Internet is an effective means of providing timely information.

Ettredge et al. (2002) examined how fast business firms uploaded and updated their information on their websites. The results show that on average there is a lag of 30 days between the date the annual report is filed with the SEC, and the date it is posted to the websites. They also find that some of the characteristics are associated with fast or slow website update. Studies have shown that more profitable firms update their websites faster than less profitable ones. In addition, the firms that provide both PDF and HTML formats update their financial information quicker and in a regular basis than those which are not. They argue that the presentation of both types of formats illustrates a commitment to maintain a high-quality website.

In a more advanced usage of the Internet, some firms disclose other forms of disclosure such as streaming audio and video on their websites. Streaming audio allows interested individuals to listen to analysts' conference classes, annual meetings and other presentations. Besides that it can be used to broadcast conference calls in live or to provide an archive of presentations from which the Internet user can select. Some firms also provide video together with the streaming audio (Hurt et al., 2001).

The improvement of disclosure by using the Internet as a reporting media is not limited to external parties only, but also improves the availability of financial information within the firms including all processes that occur in the remote place of the firm's dispersed information system. In this case, reporting and consolidation are improved and expedited. As a result, reporting frequency is increased from annually or quarterly to monthly, weekly, daily or even almost simultaneously with the financial statements announcement (Wagenhofer, 2003).

To recapitulate, the use of IFD and IED are becoming significant in the global market and considered beneficial. Despite several regulatory attempts to increase disclosure in many Asian countries, the concern remains about weak level of financial reporting transparency in the region (Morris et al., 2004). In order to investigate this phenomenon, there is a need to understand the determinants of Internet reporting especially in the Asian region. This paper aims to fill this gap by examining the determinants of Internet reporting amongst Malaysian listed companies. The definition and descriptions of these determinants are listed in the next following section.

### **The Determinants of Internet Financial and Environmental Disclosure**

A large number of studies in different countries had attempted to uncover the determinants of the extent of online financial and environmental disclosures. They proposed different determinants and factors that may affect the extent of disclosure. However, there was no consistent result and this may be due to the

nature of investigations. Six determinants are studied in this research and discussed in the following six subsections.

#### *The Ethnic of Chief Executive Officer*

Race was identified as an important demographic factor in Malaysian disclosure practices (Haniffa and Cooke, 2002). In Malaysia, there are three major races, namely, Malays, Chinese and Indians. Malaysian economy is still very much controlled by the Chinese, but the government is making greater efforts to help the Malay to actively involve in the business world by providing more training and education. By providing education and training opportunities to the Malay, the government aims to eradicate poverty among them. Thus, the authors find it worth (for academic purpose only) to investigate this factor and figure out its effect on the extent of Internet financial and environmental disclosures by the Malaysian listed companies. In addition, Malay values are different from the Chinese. Hofstede (1991) observes that Malay is low in individualism at the ethnic level, more secretive, high uncertainty avoidance and more focus on the short-term. They are Muslim and therefore influenced by the Islamic principles and ethical values (Haniffa and Cooke, 2002).

In addition, Chuah (1995) indicates that race, culture and education are factors that influence Malaysian managers' mind in addition to the type of organization they work. Windsor and Ashkanasy (1996) support Chuah's (1995) findings by saying that there is a relationship between personal perception and organizational culture values amongst Malaysian managers, which ultimately influences

their preferences in decision-making.

Haniffa and Cooke (2002) found that the chairman acting as non-executive director has a negative association with the extent of voluntary disclosure. This result is against the agency theory suggestion that highlights the need for a non-executive chairman in the company in order to create check and balance mechanism. Thus, it is interesting to examine the relationship between the race of CEO and the extent of financial and environmental disclosure using a new distribution media such as the Internet.

This study therefore intends to examine the impact of CEO race on the extent of Internet disclosure. The variable is measured by using a dummy variable that is one if the CEO is Malay and zero if otherwise. Therefore, the related partner hypotheses studied are as follows:

H1-a: The ethnic of CEO influences the extent of financial disclosure on the Internet.

H1-b: The ethnic of CEO influences the extent of environmental disclosure on the Internet.

#### *Leverage*

It is argued that when a company uses large amount of debt, a monitoring problem arises between shareholders and creditors. This is for the following reasons. On one hand, creditors would like to ensure that companies invest their fund in less risky investment so the capability of companies for paying back the debts is high. On the other hand, shareholders would like to maximize their wealth by investing the whole funds regardless how risky they are (AICPA, 1994). The involved companies may solve this problem by increas-

ing the level of voluntary disclosure which fulfils the requirement of both shareholders and creditors.

Previous studies found mixed results in relation to the association between leverage and the extent of disclosure (Chow and Boren, 1987; Garcia and Monterrey, 1992). Richardson and Welker (2001) argue that social and financial disclosures have similar determinants. Since there is an association between leverage and financial disclosure, a similar relationship is expected in the case of environmental disclosure. Roberts (1992) supports this view whereby he observes that a high degree of dependence on debt would encourage a company to increase social activities and disclose more environmental information in order to meet its creditors' expectations on environmental issues. In addition it is also found that the higher the debt to equity ratio, the higher the social and environmental disclosure would be made.

Although a positive association between financial leverage and the extent of voluntary social responsibility disclosures is revealed, Chow and Boren (1987) and Ahmed and Nicholls (1994) state that there is no significant association between financial leverage and voluntary disclosure. The difference in the association between the leverage and voluntary disclosure illustrates that leverage might be a poor proxy for firm risk (Dichev and Skinner, 2002). Ahmed et al. (2002) state that firms with lower leverage are more likely to engage in environmental reporting as a protective measure to maintain a reasonable assessment of its financial risk level.

In summary, this study will examine the

impact of using external debt by Malaysian companies on the extent of financial and environmental disclosures. Previous studies define leverage as a ratio between long-term liabilities and total equity (Roberts, 1992; Katsuhiko et al., 2001). Other studies define leverage as a ratio between long term liabilities and total assets (Haniffa and Cooke, 2002; Laswad et al., 2005; Alsaeed, 2005). This study uses the second definition to measure leverage. Therefore, the second identified partner hypotheses are as follows:

H2-a: The extent of financial disclosure on the Internet is positively related to leverage

H2-b: The extent of environmental disclosure on the Internet is positively related to leverage

#### *Level of Technology*

Jensen and Meckling (1995) argue that the relationship between knowledge about the industry and agency cost is significantly related. One of the factors that discourage firms in using the Internet is due to the need for the experts. The existence of technological services that are provided by the department of information systems is benefitting most of the firms (Lodhai, 2004). The department of information system will assist in preparing the information that is going to be displayed on the website. Besides the experiences in using the Internet as a modern technology media for disclosure, the department of information system will also reduce the cost of using the Internet such as maintaining, updating, and website monitoring. This will encourage the firms to disclosure more information. Debreceny et al. (2002) provide empirical evidence on this issue whereby they examine the association

between the level of technology and the extent of voluntary disclosure through the Internet. They found a significant positive relationship between the level of technology and the level of disclosure via the Internet.

This study attempts to examine the relationship between the extent of Internet financial and environmental disclosure and the level of technology in the listed firms. This variable is measured as a dummy variable; one if the company has a technology department and zero if otherwise. Thus, the third partner hypotheses are as follows:

H3-a: The extent of financial disclosure on the Internet is influenced by the level of technology.

H3-b: The extent of environmental disclosure on the Internet is influenced by the level of technology.

#### *Listing Status*

Wallace et al. (1994) examine the impact of listing status on the level of voluntary disclosure amongst Spain listed companies. Multivariate regression analysis is used to analyze the data. The result shows a significant positive relationship between listing status and the extent of voluntary disclosure.

Bursa Malaysia consists of two boards – the main board and second board. The main board companies must have a minimum paid-up capital of Ringgit Malaysia (RM) 60 millions while the second board companies are those that have a minimum paid-up capital of RM40 millions in order to be listed (Yatim et al., 2006). The companies that do not meet the criteria of main board can apply to be listed on the second board. Due to the factors of size and capital, the

companies on the main board are inclined to disclose more information on the Internet than those that are listed on the second board. This is due to the following reasons:

- The requirements that the company should fulfill if it wants to be listed on the main board. Those requirements are not similar to that of second board such as the level of transparency (Wong, 1996).
- The competition amongst main board companies is stiffer than those on the second board as investors are keen on them (Abdul Samad, 2002).

This particular variable has not been tested in the previous studies and thus it is interesting to examine as to whether listing status on Bursa Malaysia has any influence on the level of Internet disclosure. In other words, this study intends to examine the impact of an organization's listing status in Bursa Malaysia on the extent of IFD and IED. Dummy variable is used to measure this variable; 1 if the company is listed on the main board and 0 if the company listed on the second board. Therefore, the following hypotheses are proposed:

H4-a: The extent of financial disclosure on the internet is influenced by company's listing status.

H4-b: The extent of environmental disclosure on the internet is influenced by company's listing status.

#### *Profitability*

The profitability is an important determinant that was examined in most of the previous disclosure studies (see for example, Ho and Wong, 2001; Camffer-

man and Cooke, 2002; Suda and Kokubu, 1994; Chen and Jaggi, 2000; Gul and Leung, 2004). It is measured by using number of ratios such as return on assets and return on investment (Camfferman and Cooke, 2002; Gul and Leung, 2004). However, in this study; profitability is defined from different angle which is as earning per share (EPS). The authors would like to figure out whether the differences in EPS amongst Malaysian companies play any significant role on the extent of internet financial and environmental disclosure.

Earning per share is a carefully scrutinized metric that is often used as an indicator to measure a company's profitability per unit of shareholder ownership. As such, EPS is a key driver of share prices. Though EPS is widely considered to be the most popular method of quantifying a firm's profitability, it is important to bear in mind that earnings themselves can often be susceptible to manipulation, accounting changes, and restatements. For that reason, free cash flow is seen by some to be a much more reliable indicator than EPS. Nevertheless, EPS remains the industry standard in determining corporate profitability for shareholders.

It is obvious from the previous studies that the influence of profitability on voluntary disclosure is significant. Singhvi and Desai (1971) argue that when the rate of return is high and the company achieves a high margin of profit, the management is motivated to disclose more information in order to prove its good reputation to the consumers, shareholders, investors and other stakeholders. On the other hand, if the rate of return is low or the company suffers losses, the management discloses less information in order to cover the reasons

for such losses or declining profits. This strategy also applied on the case of EPS.

In the literature, the results regarding the association between profitability and financial disclosure are mixed. For example, Williams (1992) and Garcia and Monterrey (1992) indicate that profitability is significantly and positively associated with disclosure. However, Cowen et al. (1987) observe that highly profitable companies do not disclose more financial information than less profitable companies. Raffournier (1995) states that no significant relationship between profitability and the extent of financial disclosure.

Ahmed et al. (2002) note that profitability and its impact on the extent of voluntary disclosure can be analyzed from two perspectives. On one hand, more profitable firms tend to disclose more information than less profitable firms because the management would like to show off their achievement to others. This is to sustain their position or gain reward. In short, profitable firms are less secretive than less profitable firms. Profitable firms are more enthusiastic to disclose information in order to differentiate themselves from less profitable firms. This differentiation gives profitable firms indirect benefits in terms of raising capital from the best available terms. On the other hand, it is argued that less profitable firms may disclose more information in order to explain the reasons for their low performance and therefore maintain its integrity. They also practice early disclosure to disclose bad news in order to alleviate the risk of legal liability as well as the risk of depreciation of share capital and loss of reputation (ACCA, 2005).

It is, therefore, interesting to study the impact of profitability on the extent of Internet disclosure by the Malaysian public listed companies. This is also to examine whether profitable companies are more concerned with the environment than less profitable companies. In this study, profitability is measured by the percentage of EPS. Thus, the partner hypotheses are as follows:

- H5- a: The extent of financial disclosure on the Internet is influenced by the profitability of the company.
- H5-b: The extent of environmental disclosure on the Internet is influenced by the profitability of the company.

#### *Firm size*

The size of a company can be measured in a number of ways such as capital employed, turnover, number of employees, market value and others. There is no particular method that is superior to that of others. For example, Firth (1979) uses sales turnover and capital employed to measure company size whereas Cooke (1991) uses number of shareholders, total assets and turnover to measure size of the company. On the other hand, Craven and Marston (1999) uses turnover, number of employees, total assets employed and the company's average market value.

Large companies are often argued to use Internet reporting for several reasons. Firstly, large companies are under pressure to disclose their financial information to avoid speculative trading of their shares. As a result, they are more on the eyes of the public (Ku Nor Izah, 2003). Marston and Warney (2003) studied Japanese companies and uncovered that size of a company is positively associ-

ated with the existence of a website, but not with the extent of financial disclosure. This means that large Japanese companies have websites but the level of their financial disclosure is not different from the small enterprises. Secondly, according to Craven and Marston (1999), the agency theory and cost-benefit analysis indicate that there is a positive relationship between size and disclosure. Large firms are always desperate for the external funds. This in turn increases the agency cost because of the conflicting interests between shareholders, managers and debt holders (Eng and Mak, 2003). However, increased disclosures can reduce agency cost and information asymmetry (Jensen and Meckling, 1976; ACCA, 2005).

Thirdly, business processes of large firms are more complex; therefore, the users are always asking for more disclosure. The needs of the users of large firms' reports are more divergent than their counterparts in the small firms (Craven and Marston 1999). Chow and Boren (1987) examined 52 annual reports of 52 companies listed on the Mexican Stock Exchange in 1982 and discovered that large firms voluntarily disclose more information than small firms (twenty four un-weighted and weighted items were examined). Joshi and Jawaher (2003) examined the association between several company characteristics and internet disclosure amongst 75 companies in Bahrain and Kuwait. They observed that the main influencing factors on the Internet financial reporting are size and industry types.

Fourthly, large firms are more motivated to disclose their operational quality because they are more visible in the soci-

ety. Their political costs can be reduced by increasing information disclosures (ACCA, 2005). Cooke (1989) examined the annual reports of 90 Swedish firms (38 unlisted, 33 listed on the Swedish Stock Exchange, and 19 listed on both the Swedish and at least one foreign stock exchange during the year of 1985) and found out that listing status and size are major determinants of voluntary disclosure.

According to Teoh et al. (2003), large firms are more likely to disclose more environmental information in order to show their concern about the environment to the public. Besides that, they tend to be the subject of public analysis. Thus, firm size has been found to have a significant positive relationship with the social disclosure (Blacconiere and Patten, 1994). In addition, size is a proxy for political sensitivity and this prediction is consistent with the positive accounting theory that suggests that political costs are higher in the large firms (Watts and Zimmerman, 1986). In this study, company size is measured by using total asset in the company. Thus, the sixth partner hypotheses are as follows:

H6-a: The extent of financial disclosure on the Internet is influenced by the size of the company.

H6-b: The extent of environmental disclosure on the Internet is influenced by the size of the company.

## **Research Methodology**

This study examined the determinants of IFD and IED by Malaysian public listed companies. This was undertaken by surveying the information disclosed by the companies on their websites. The data

were obtained from the annual reports of the 2005 financial year.

The population of this study was Malaysian listed companies that have websites. After examining the websites of Bursa Malaysia, it was found that 505 out of 849 Malaysian listed companies (59%) have websites. Since listed companies are categorized differently according to industry type and the number of companies for each industry is not similar, the disproportionate stratified random sampling was utilized in this research (Sekaran 2003). According to Sekaran (2003), under the jurisdiction of disproportionate stratified random sampling, the researchers have to include 20% of respondents from each stratum in the sample. The sample size for this study is 201 companies, which represent more than 39% for each stratum. This high percentage alleviates the effect of any inappropriate information from the selected sample. However, only 189 companies were finally selected after excluding the outliers.

The data for this research was secondary in nature and collected from the selected firms' websites. Regression model was utilized to analyze the results of this study and this is in tandem with the previous studies (e.g. Chen and Jaggi ,2000; Camfferman and Cooke, 2002; Archambault and Archambault, 2003; Marston and Polei, 2004; Gul and Leung, 2004; Laswad et al., 2005).

## Results and Discussion

The results from the descriptive analysis (see table 1) show that 64% of the sample size disclosed more than two financial items out of 24 items (unweighted items) that have been used to measure the extent of financial disclosures (see appendix 1 for financial index). In addition to this, 26.4 % disclosed only 1 or 2 financial items, and almost 9.5% did not disclose any financial information on their websites (see appendix 2 for more details about number of companies that disclose each item in the IFD index).

**Table 1 Descriptive results for financial information**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no financial disclosure	18	09.5	09.5	09.5
	disclose 1-2 financial items	50	26.4	26.4	35.9
	disclose more than 2 financial item	121	64.1	64.1	100.0
	Total	189	100.0	100.0	

For the environmental disclosure, only 57.2% of the sample disclosed at least 1 environmental item out of 34 items (unweighted items) that have been used to measure the extent of environmental disclosure (see appendix 3 for environmental index). However, 42.8% did not disclose any environmental information

on their websites (see appendix 4 for more details about number of companies that disclose each item in the IED index).

In tandem with the previous voluntary disclosure studies (e.g. Cooke, 1989; Hossain et al.,1994; Raffournier, 1995),

**Table 2 Descriptive results for environmental information**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no environmental disclosure	81	42.8	42.8	42.8
	environmental disclosure	108	57.2	57.2	100.0
Total		189	100.0	100.0	

a multiple regression analysis on each dependent variable (IFD and IED) and six independent variables were used to test the hypotheses. Several assumptions in regression analysis were firstly tested. The residuals, plots of the studentised residuals as well as the Q-Q plot analyses were conducted to test the homoscedasticity, linearity and normality as-

sumptions. Multicollinearity was tested based on the variance inflation factor (VIF). The VIF figures show no significant multicollinearity exist between the independent variables.

Table 3 also provides the results of multiple regression analysis. The results show that there are several variables that

**Table 3 Regression Analysis of Determinants of Internet voluntary Disclosure**

Independent variables	Dependent Variable	Coefficients	t- statistics	VIF
Ethnic of CEO leverage	Financial (1)	.145	2.473 *	1.215
	Financial environmental	-.033	-.572	1.153
Level technology board	Financial	.033	.561	1.202
	Financial environmental	.246	4.230 **	1.202
L firm size	Financial	.216	3.553 **	1.294
	Financial environmental	.151	2.512 *	1.294
Profitability (EPS)	Financial	.096	.516	1.832
	Financial environmental	.398	5.552 **	1.832
	Financial	.349	4.640 **	1.204
	Financial environmental	.070	1.201	1.204
	Financial environmental	.121	1.987 *	

(1) R Squared = .489 (Adjusted R Squared = .472)  
(2) R Squared = .439 (Adjusted R Squared = .421)

\*\* significant at 0.001, \* significant at 0.05

indicate statistically significant relationships with both financial and environmental disclosures through the internet. These variables include level of technology ( $p < 0.01$ ), ethnic of CEO ( $p < 0.01$ ), and firm size ( $p < 0.01$ ). However, listing status variable shows a significant rela-

tionship with the IFD and not IED. On the other hand, profitability variable shows a positive relationship with IED but not IFD.

In addition, four variables (status listing, level of technology, ethnic of CEO, and

firm size) show a positive relationship with IFD. The variables of profitability, level of technology, ethnic of CEO, and firm size show a positive relationship with IED. However, for both dependent variables, there is no significant relationship with the elements of leverage. The explanatory power of both analyses is quite similar:  $R^2 = 0.489$  and Adjusted R Squared = 0.472 for IFD, and  $R^2 = 0.439$  and Adjusted R Squared = 0.421 for IED.

The above findings are not surprising for several reasons. Firstly, since this paper investigates Internet disclosure (the most advanced communication technology), it is expected that the firms that have information system department are more likely to disclose more information through their websites (financial and environmental information).

Secondly, if the CEO is Malay, the extent of financial and environmental disclosure is higher. This is because Malay is Muslim; and, therefore they have to obey Islamic religious rules such as honesty and transparency. The religious values in one person create a sense of responsibility to disclose information regarding their companies' performance, and not forgetting to protect people, life, natural resources, and environment.

Thirdly, firm size shows a significant association with the extent of both IFD and IED. When firm size is excluded from the regression analysis, the explanatory power of the model diminishes. The result indicates that if the companies grow bigger, they are more eligible to have their own website and disclose more information. Therefore, it is possible to conclude that size gives a significant impact on the IFD and IED.

This result is similar to other studies of voluntary disclosure where a positive association between voluntary disclosure and size is obtained (Inchausti, 1997; Raffournier, 1995).

Fourthly, listing status is a new variable and has never been tested before in the previous studies. The results indicate that if companies are listed on the main board of Bursa Malaysia they are more likely to disclose more financial information on the Internet compared to companies listed on the second board. It is not surprising to observe this phenomenon because of different requirements of Bursa Malaysia in relation to main and second boards. The difference is due to the companies listed on the main board are large companies (capitalization more than RM60 million) (Yatim et al., 2006); and, therefore capture more public and government concern in relation to the level of transparency and technology development. However, in terms of IED, the listing status does not show a significant relationship because the level of IED is low in all companies regardless of their listing status.

From the above findings, it can be seen that this research accepts each of these hypotheses: (1) H1 (a,b) which shows that the ethnic of CEO influences both the extent of internet financial and disclosure; (2) H3 (a,b) which indicates that the extent of financial and environmental disclosure on the Internet are influenced by the level of technology; (3) H4 (a) which indicates that the extent of financial disclosure on the internet is influenced by company's listing status; (4) H5 (b) which shows that the extent of environmental disclosure on the Internet is influenced by the profitability (earning per share) in the company; and

(5) H6 (a,b), which indicates that the extent of internet financial and environmental disclosure on the Internet are influenced by the size of the company.

However, the study rejects the following hypotheses: (1) H2 (a,b) which specifies that the extent of internet financial and environmental disclosure are not affected with the level of leverage that the company incurred; (2) H4(b) which indicates that the extent of internet environmental disclosure is not influenced by company's listing status; and (3) H5 (a) which shows that the extent of financial disclosure on the internet is not influenced by the profitability of the company.

Nevertheless, information disclosure process involves human judgment and therefore this process cannot be solely explained by the company's characteristics. Within this context and limitations, this paper provides some evidence to support the agency theory in relation to information disclosure.

### Conclusion and Recommendations

This paper examines the relationship between six variables, namely, ethnic of CEO, leverage, level of technology, listing status, profitability, and firm size and the extent of Internet financial and environmental disclosures by the Malaysian listed companies. The results provide evidence that there is a significant positive relationship between the elements of level of technology, ethnic of CEO and firm size and the extent of both financial and environmental disclosure. The listing status is positively related to the level of financial disclosure but not environmental disclosure whereas profit-

ability shows a positive relationship with IED but not with IFD. The results highlight a gap between the companies that are listed on the main board and the companies that are listed on the second board. This gap in turn influences the level of transparency and the usage of advanced technology such as the Internet. These findings support the argument that social and financial disclosures have similar determinants. The findings also provide some evidence that religion has an important impact on IFD. Future variables that can be considered may include ethical values of the management and incentives that are provided by the government.

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### Appendix 1 Internet Financial Disclosure Index

N	Financial Item	N	Financial Item
1	FHS	13	SHS
2	CPR	14	ARPT
3	CSP	15	HYR
4	SAR	16	QR
5	DMR	17	BSQR
6	BS	18	ICQR
7	IS	19	CFQR
8	CFS	20	ANQR
9	SSE	21	FC
10	AN	22	FR
11	AUR	23	SPC
12	SRR	24	OPR

- FHS : Financial Highlights
- CPR : Current press release or news
- CSP : Current share price
- SAR : Summary of Annual report
- DMR: Directors' and Management Report
- BS : Balance Sheet
- IS : Income Statement
- CFS : Cash Flow Statement
- AN : Accounting Notes
- SSE : Statement of Shareholders' equity
- AUR : Auditor's report
- SRR : Segmental report by region
- SHS : Shareholder structure
- ARPT: Annual report for the past years
- HYR : Half year report
- QR : Quarterly report
- BSQR: Balance sheet in Quarterly report
- ICQR : Statement of Income in Quarterly report
- CFQR : Cash Flow Statement in Quarterly report
- ANQR: Accounting notes in Quarterly report
- FC : Financial Calendar
- FR : Financial review
- SPC : Share Performance chart
- OPR : Operation review

**Appendix 2**  
**Internet Financial Disclosure index**

<b>N</b>	<b>Financial characteristics</b>	<b>Fre- quency</b>	<b>Percent</b>	<b>N</b>	<b>Financial characteristics</b>	<b>Fre- quency</b>	<b>Percent</b>
1	Current Release or news	126	64.9	9	Cash Flow Statement in Quarterly report	80	41.2
2	Operation review	122	62.9	10	Accounting notes in Quarterly report	66	34
3	Summary of Annual report	118	60.8	11	Current share price	47	24.2
4	Financial highlights	114	58.8	12	Financial review	31	16
5	Annual reports for the past years	99	51	13	Financial calendar	28	14.4
6	Quarterly report	91	46.9	14	Half year report	24	12.4
7	Statement of Income in quarterly report	82	42.3	15	Share Performance chart	15	7.7
8	Balance sheet in quarterly report	81	41.8				

### Appendix 3

#### Internet Environmental Disclosure index

N	Environmental items	N	Environmental Items
1	GES	19	DEPUL
2	EP&P	20	EFRTREN
3	EPS	21	R&EN
4	EACTV	22	UTIW
5	EMAN	23	IMSTU
6	WTS	24	EAU
7	AWAD	25	ENEFF
8	ELOW	26	R&D
9	SUST	27	ENCON
10	W&R	28	IPE
11	EAEST	29	RENCON
12	POLU	30	IEPR
13	REHB	31	ELITIG
14	EMPW	32	FINPOL
15	LNDR	33	P&COC
16	EEPRG	34	P&CEX
17	EFIN	35	F&CEX
18	SPACT	36	F&COC

- GES: General environmental consideration and statements
- EPS: Environmental policy statement
- EAU: Environmental audit
- EMAN: Environmental manager/Committee
- ELOW: Environmental law
- EP&P: Environmental- product and process related
- EFIN: Environmental financially related data
- EAEST: Environmental aesthetics (facilities, art, restoration).
- ELITIG: Environmental litigation
- E EPRG: Environmental education programmes
- EMPW : Employee awareness of environmental policy
- EACTV: Environmental Activities
- POLU: pollution
- REHB: Rehabilitation
- W&R: Waste & recycling
- IMSTU: Impact studies
- WTS : Water treatment system
- SUST: Sustainability
- R&D: Research & Development
- DEPUL: Departments or offices for pollution control
- IEPR: International Environmental program
- ENCON: Energy conversion
- ENEFF: Energy efficiency
- R&EN: Recycling and associated energy saving
- UTIW: Utilization of waste materials
- EFRTREN: Efforts to reduce energy consumption
- IPE: Increasing of product efficiency
- RENCON: Research energy conservation
- AWAD: Awards
- SPACT: Support for public or private action designed to protect the environment
- LNDR: Land reclamation and forestation programmes
- FINPOL: Financing for pollution control equipment or facilities
- P&CEX: Past and current expenditure for pollution control equipment and facilities
- P&COC: Past and current operating costs of pollution control equipment & facilities
- F&CEX: Future and current expenditure for pollution control equipment & facilities
- F&COC: Future and current operating costs of pollution control equipment & facilities

### Appendix 4 Internet Environmental Disclosure index

N	Environmental items	Frequency	Per-cent	N	Environmental Items	Frequency	Percent
1	GES	100	51.5	19	DEPUL	16	8.2
2	EP&P	43	22.2	20	EFRTREN	16	8.2
3	EPS	40	20.6	21	R&EN	15	7.7
4	EACTV	36	18.6	22	UTIW	14	7.2
5	EMAN	30	15.5	23	IMSTU	14	7.2
6	WTS	29	15	24	EAU	13	6.7
7	AWAD	26	13.4	25	ENEFF	11	5.7
8	ELOW	26	13.4	26	R&D	10	5.2
9	SUST	26	13.4	27	ENCON	10	5.2
10	W&R	25	12.9	28	IPE	9	4.6
11	EAEST	23	11.9	29	RENCON	6	3.1
12	POLU	23	11.9	30	IEPR	6	3.1
13	REHB	23	11.9	31	ELITIG	5	2.6
14	EMPW	22	11.3	32	FINPOL	5	2.6
15	LNDR	22	11.3	33	P&COC	5	2.6
16	EEPRG	21	10.8	34	P&CEX	2	1.0
17	EFIN	18	9.3	35	F&CEX	2	1.0
18	SPACT	17	8.8	36	F&COC	2	1.0

- GES: General environmental consideration and statements
- EP&P: Environmental policy statement
- EAU: Environmental audit
- EMAN: Environmental manager/Committee
- ELOW: Environmental law
- EP&P: Environmental- product and process related
- EFIN: Environmental financially related data
- EAEST: Environmental aesthetics (facilities, art, restoration).
- ELITIG: Environmental litigation
- E EPRG: Environmental education programmes
- EMPW : Employee awareness of environmental policy
- EACTV: Environmental Activities
- POLU: pollution
- REHB: Rehabilitation
- W&R: Waste & recycling
- IMSTU: Impact studies
- WTS : Water treatment system
- SUST: Sustainability
- R&D: Research & Development
- DEPUL: Departments or offices for pollution control
- IEPR: International Environmental program
- ENCON: Energy conversion
- ENEFF: Energy efficiency
- R&EN: Recycling and associated energy saving
- UTIW: Utilization of waste materials
- EFRTREN: Efforts to reduce energy consumption
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- tion
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- SPACT: Support for public or private action designed to protect the environment
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- FINPOL: Financing for pollution control equipment or facilities
- P&CEX: Past and current expenditure for pollution control equipment and facilities
- P&COC: Past and current operating costs of pollution control equipment &facilities
- F&CEX: Future and current expenditure for pollution control equipment &facilities
- F&COC: Future and current operating costs of pollution control equipment& facilities

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