The Differences in Corporate Environmental Disclosures on Websites and in Annual Reports: A Case Study of Companies Listed in Thailand

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Received: April 2, 2012 Accepted: April 20, 2012 Online Published: July 16, 2012 doi:10.5539/ijbm.v7n14p18 URL: http://dx.doi.org/10.5539/ijbm.v7n14p18

Abstract

This study investigates the corporate environmental disclosure practices of companies on the Stock Exchange of Thailand in annual reports and websites. Content analysis by word count is used to determine the amount of disclosures on 50 sampled websites and annual reports. Statistical analysis (descriptive, paired samples T-tests, and independent samples T-tests), is employed to analyse the differences between environmental disclosures measured by word count in annual reports and on websites. Initial findings indicated that 96 percent of the sampled Thai listed companies provided environmental disclosures in their annual reports and 88 percent on websites. Companies providing the most words of environmental information were in the resources business group in both media; the smallest word counts were in the services business group on websites, but in the technology business group in annual reports. Commonly environmental disclosures were found in the corporate social responsibility section of the websites but in the corporate governance section of the annual reports. The three most common themes were environmental spending and activity, waste management, and environmental policy in both annual reports and websites. Statistically significant differences were found between high and low profile companies as well as government and private companies. However, this study could not find different amount of environmental disclosures made in annual report and on websites. The study has implications in enhancing the understanding the differences between disclosures in annual reports and on websites particularly in developing countries. The usual limitations associated with sampling, and content analysis apply. Disclosure quality was not considered.

Keywords: environmental disclosures, annual reports, website, Thailand, the stock exchange of Thailand

1. Introduction

Environmental disasters in today's world have increased corporate environmentally responsibility awareness. For example, after the oil spill in Alaska in 1989 by the sea vessel Exxon Valdez, firms in the petroleum industry and many firms in other environmentally sensitive industries both dramatically increased and improved disclosure of environmental information in annual or environmental reports (Ahmad et al., 2003, Patten, 1992, Anderson and Epstein, 1995). On the other example, the Gulf of Mexico oil spills in 2010 cost many billion US dollars to BP. Corporations are reflecting growing social expectations and concerns. As a result, environmental performance is increasingly an important issue not just to corporate shareholders or investors but also other stakeholders such as customers, labour, competitors, communities, and environmental lobbies. Therefore, corporate stakeholders need to use environmental information in their decision-making (Villiiers and Staden, 2011). There are many sources of corporate environmental disclosures such as annual reports, websites, stand-alone reports, and other media. However, the most two well-known and widely used media are annual reports and websites.

While annual reports have been much researched, companies have many other communication media to inform their stakeholders such as stand-alone reports, and websites. There are several advantages why companies use websites to communicate with their stakeholders. For example, website reporting can reach a greater number of stakeholders than print media (Williams et al., 1999). Website reporting can present real-time information and is being able to update at any time (Wheeler and Elkington, 2001, Joshi and Gao, 2009). The cost of website information is another important characteristic that companies may find advantageous over print media (Othman and Ameer, 2009). Space availability in website disclosures is almost unlimited. However, annual reports are still

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popular for companies because they are statutory reports incorporating both statutory and voluntary disclosures (Wiseman, 1982). Annual reports can also be accessed more easily than websites (Suttipun and Stanton, 2011). Wiseman (1982) stated that annual reports are widely recognised as the principle means for corporate communications of articles and intentions. Evidence about environmental disclosures on corporate websites in developing countries is scant when compared with corporate environmental disclosures on websites in developed countries (Wheeler and Elkington, 2001, Joshi and Gao, 2009, Tagesson et al., 2009). Moreover, although there is some literature about environmental reporting by Thai listed companies in annual reports (Kuasirikun and Sherer, 2004, Ratanajongkol et al., 2006, Suttipun and Stanton, 2011), no literature was available to study corporate environmental disclosures on websites in Thailand.

This study aims to fill the gap by investigating the narrative disclosures of environmental information on websites of companies listed on the Stock Exchange of Thailand (SET), and to test whether there is the difference between corporate environmental disclosure practices on websites and in annual reports. There are three main questions of this study: do Thai listed companies provide environmental disclosures on their websites? If so, are there differences in environmental reporting on websites and in annual reports? What are the differences between disclosures of environmental information of websites and annual reports? And are the findings of this study consistent with previous studies? There are some contributions. The study will have implications in enhancing the understanding the differences between environmental disclosures in annual reports and on websites particularly in developing countries. Moreover, this study will expand information about environmental reporting in developing countries to students, teachers, and researchers. The study can improve the Thai environmental disclosure regulation to work well and get more benefit for people, planet, and profits. The study may motivate Thai companies listed to intent to provide environmental reporting in their annual reports and websites. This study will examine whether legitimacy and stakeholder theories can explain about environmental reporting in developing countries as well as developed countries.

This study begins by indicating the theoretical perspective used, followed by some background information on Thailand. The literature review is then presented. The study design and method are outlined, followed by the findings. The paper concludes with the study's limitations and implications.

2. Theoretical Perspectives

A number of different theoretical approaches have been used to explain corporate environmental disclosures. Some scholars have used political economy theory to explain the existence and content of environmental accounting (Williams, 1999) as well as social political theory (Huang and Kung, 2010). Some have used media agenda setting theory to investigate the influence of media on corporate environmental disclosures (Brown and Deegan, 1998). However, the most complete theoretical perspective in environmental accounting literature to explain corporate motivations for reporting are legitimacy and stakeholder theories. According to Gray et al. (1996) legitimacy and stakeholder theories are both derived from political economy theory. On one hand, legitimacy theory has become one of the most cited theories within the corporate environmental reporting area (Guthrie and Parker, 1990). It offers many researchers a methodology to critically unpack corporate disclosures (Campbell, 2003, Deegan and Rankin, 1996, Islam and Deegan, 2010, Mobus, 2005, Wilmshurst and Frost, 2000, Branco et al., 2008, Ahmad and Sulaiman, 2004). On the other hand, stakeholder theory is closely aligned with legitimacy theory and the two theories are often used to complement each other (Deegan, 2002). Stakeholder theory is concerned with the ways companies manage their stakeholders (Roberts, 1992, Gray et al., 1998, Llena et al., 2007). Indeed, Joshi and Gao (2009) and Huang and Kung (2010) mentioned that disclosures are complex phenomenon which cannot be explained by a single theory. Thus, some researchers have used multi-theoretical framework in order to explain the extent and content of environmental disclosures (Ratanajongkol et al., 2006, Tagesson et al., 2009, Islam and Deegan, 2007, Choi, 1999).

Two main theories influence this study: stakeholder, and legitimacy theories. These theories can be classified as system-oriented theories that view companies as being part of a broader social system (Deegan, 2001). Within a system-based perspective, Deegan (2001) argues that companies are influenced by the society in which they operate. This means that environmental disclosures are considered to constitute a strategy to influence corporate relationships with other parties with which they interact.

2.1 Legitimacy Theory

Legitimacy is a condition or status which exists when a corporate value system is congruent with the value system of the larger social system of which the company is a part (Lindblom, 1994). When a disparity, actual or potential, exists between the two value systems, there is a threat to corporate legitimacy (Lindblom, 1994). Legitimacy theory proposes a relationship between corporate social disclosure and community concerns so that

management must react to community expectations and changes (Deegan, 2001, Deegan, 2002). Organizations seek to operate within the bounds and norms of their respective societies so they attempt to ensure that their activities are perceived as legitimate by outside parties. This is because a corporation is part of a broader social system (Deegan, 2002). When there is a change in social expectations or stakeholders' concerns, corporations seek to ensure that their activities in terms of human, environmental, and other social consequences respond to those changes to meet social expectations (Deegan, 2001). If companies do not operate in a manner consisted with community expectations, they will be penalised. As a result, corporations will adapt their activities to meet community expectations, if they want to be successful.

Legitimacy theory has been used by many researchers studying social and environmental reporting practices. Many indicate that corporations legitimise their activities because corporate management reacts to community expectations (Tilt, 1994, Patten, 1992, Guthrie and Parker, 1990, Hogner, 1982). Deegan et al. (1996) postulated that corporate social and environmental responsibility disclosure practices were responsive to environmental pressures on the basis of legitimacy theory. Campbell et al. (2003) argued that legitimacy theory explained that social and environmental disclosure can be used to narrow or close the gap between company actions and social concerns. Management must seek a relationship between outside perceptions of its social concerns and activities or actions to serve their corporate needs (Deegan et al., 2000, Hogner, 1982). Legitimacy theory stresses how corporate management reacts to community expectations (Tilt, 1994, Patten, 1992, Guthrie and Parker, 1990). Annual or environmental reports, therefore, are used to reinforce corporate responsibilities for environmental situations (Patten, 1992, Deegan and Rankin, 1996).

Legitimacy theory has been used to analyse the various strategies management may choose to remain legitimate (Deegan et al., 2000, Patten, 1992). Others link legitimacy theory to corporate social responsibility (CSR) and the increasing use of triple bottom line reporting (Elkington, 1997) and related notions of sustainability reporting. O'Donovan (1999) stated that legitimacy theory could explain why companies report environmental disclosures. Companies believe that they must act for society with socially acceptable behaviour that can enhance their business success. Many studies (Hogner, 1982, Wilmshurst and Frost, 2000, Deegan, 2002, O'Donovan, 2002) have identified types of corporate social responsibility disclosures that have appeared within annual reports and which have been explained by the respective researchers as being part of the portfolio of strategies undertaken by accountants and managers to bring legitimacy to their respective corporations.

2.2 Stakeholder Theory

According to Gray et al. (1996), stakeholders are identified by companies and by reference to the extent of corporate beliefs so that the interplay with each group needs to be managed in order to further the interest of the corporation. Corporate stakeholders are those people who can affect or are affected by the achievement of corporate actions, decisions, policies or goals. This includes groups such as shareholders, creditors, suppliers, the government, customers, competitors, employees, employees' families, media, the local community, local charities, and future generations (Deegan, 2001, Carrol and Bucholtz, 2006). Stakeholder theory is supported by social contact and legitimacy theories (Hoque 2007). In a definition of stakeholder theory, Burton and Dunn (1996) indentified that stakeholder theory was stakeholder management of the relationship between quality, care, and need. Stakeholder theory suggests that companies will manage such relationships based on different factors such as the nature of the task environment, the salience of stakeholder groups and the values of decision makers who determine the shareholder ranking process (Donaldson and Preston, 1995).

Stakeholder theory has two branches-ethical and managerial (Deegan, 2001). In the ethical branch, all stakeholders have rights from companies to assess information, and their rights should not be violated because their acknowledgement can lead to improved corporate financial performances. Management should organise the benefits of all stakeholders (Hasnas, 1998). Within the ethical branch, environmental disclosures are considered to be responsibility driven (Deegan, 2001). In the second branch of stakeholder theory, corporate management tend to satisfy the information demands of those stakeholders who are important to the corporation's ongoing survival. Provision of information will be dependent upon how powerful they are perceived to be. This is because stakeholder's expectations will impact on corporate operations and disclosure policies so corporations will respond to those concerns.

A number of previous academic studies on environmental disclosures in corporate annual reports have included the stakeholder theory approach (Roberts, 1992). Most show that companies disclose environmental information in their annual reports following stakeholders' demands (Raar, 2002, Campbell et al., 2003, Campbell, 2003). Under this theory, environmental disclosures in corporate annual reports are a major element that can be used by companies to negotiate their stakeholder relationship (Roberts, 1992). For example, Wilmshurst and Frost (2000),

using annual reports and a questionnaire of Australian listed companies during 1994 to 1995, found that companies were influenced by their stakeholders, especially customers, financial institutions, communities, and suppliers, to provide environmental disclosures in their annual reports. Nue et al. (1998) also found that stakeholders could be more effective than others in demanding social responsibility disclosures. They reviewed annual reports of publicly traded Canadian companies in environmentally sensitive industries for the period from 1982 to 1991. However, the results indicated that companies were more responsive to demands of financial stakeholders and government regulations than to the concerns of environmentalists and other stakeholder groups. Lynn (1992) found why Hong Kong listed companies had low levels of corporate environmental disclosures. It is because they were not under any pressure from consumer and other stakeholder groups. On the other hand, Llena et al. (2007) found that it was very difficult to explain why Spanish listed companies published environmental information in their annual reports using stakeholder theory.

Even though legitimacy and stakeholder theories overlap, they are different in terms of the power of stakeholders, expectations and corporate reactions. Proponents of legitimacy theory relate to society and compliance of corporate performance with social expectations. Stakeholder theory accepts that different stakeholder groups have different views and power on how corporations should act and serve in their operations. These groups have different abilities to affect organizations (Deegan, 2002).

3. Background

In the early twentieth century, Thailand changed from an agricultural, self sufficient economy into an industrialising nation. Its government has promoted Thailand as one of the rapidly industrialising nations of Asia (Kuasirikun, 2005) despite having faced a financial crisis known as "Tom-Yum-Goong Crisis" in mid-1997. During that time, many domestic companies had to quit their businesses, lots of labourers were not employed and the Thai government did not have enough money to manage the country. Since then and until the Global Financial Crisis (GFC), the Thai economy's growth was about seven percent per year (NESDB, 2003) making it one of fastest growing economies in South and South East Asia. Post GFC, its growth rate has fallen to about three percent annually. Thailand's economic growth, led by the growth in the manufacturing sector (Mukhopadbhay (2006), created environmental problems, particularly air, noise, traffic and water pollution, deforestation and land erosion (Warr 2007).

As a result, in 1999, Thai listed companies were asked by SET to promote and build corporate governance practices into their annual reports (Ratanajongkol et al., 2006). The concept of corporate governance included social and environmental disclosures in corporate annual reports, but disclosure was voluntary so few listed companies revealed social and environmental information in their annual reports. A revised version of the principle of good corporate governance was published in 2006 (Lint, 2009) which suggested that boards of directors should set clear policy on social and environmental issues. Companies should disclose social and environmental policies as well as the implementation conditions of such policies. In addition, voluntary reporting was changed to a "comply or explain" approach. The new principle has been used by Thai listed companies since 2007. The new principle does not apply to environmental disclosures on Thai corporate websites so web based disclosures are still voluntary.

4. Literature Review

Many companies use their websites for a variety of purposes including the provision of financial and non-financial information to stakeholders (Oyelere et al., 2003). In terms of environmental disclosures, companies are increasingly using their websites to reveal environmental information about their actions and activities as part of their corporate governance strategy (Adams and Frost, 2004)

Previous studies showed that there are differences in corporate environmental disclosures on websites and in annual reports (Williams et al., 1999, Villiers and Staden, 2011). This may be because companies utilize and present information differently depending on the medium being used. However, there are few papers comparing the disclosures of environmental information on websites and in annual reports. For example, Williams et al (1999) used content analysis to investigate corporate social disclosures from four countries: Australia, Singapore, Malaysia, and Hong Kong into two media: annual reports and websites. It was found that Australian and Singaporean companies provided more social disclosures on their websites than in annual reports but there were no significant differences in Malaysia and Hong Kong. Firms in all countries appeared to provide more narrative information on websites than annual reports. Villiers and Staden (2011) also used content analysis to compare corporate environmental disclosures on websites and in annual reports with a long-term (bad) and short-term (crisis) environmental performance measure of 120 North American firms. They found that there were different levels of environmental disclosures made in annual reports and on websites. Companies disclosed more

environmental information on their websites when faced with an environmental crisis and more in their annual reports when they had a bad environmental reputation. Evidence about environmental reporting on corporate websites in developing countries, such as Thailand, is scant.

There are only seven papers examining environmental disclosures by companies in Thailand, with all investigating disclosures made in annual reports. William (1999) analysing 28 corporate annual reports, found that culture and the political and civil system were determinants of the quantity of disclosures. Kuasirikun et al. (2004) investigated corporate environmental disclosures in annual reports of 63 Thai firms in 1993 and 84 firms in 1999, finding a slight increase in narrative disclosures from 44% to 45%. Using a sample of 120 Thai listed companies' annual reports to test relationships between environmental reporting and market valuation and corporate accounting performance, Connelly and Limpaphayon (2004) found that there was a significant positive correlation between market valuation and disclosures. There was no significant relationship between environmental reporting and Thai corporate accounting performance. Ratanajongkol et al. (2006) examined trends in corporate environmental disclosures by utilising content analysis of the disclosures of the 40 largest Thai firms in 1997, 1999, and 2001. Environmental disclosures decreased over the study period. Rahman et al. (2010) studied a sample of 37 Thai listed companies in 2006 to examine the relationship between environmental disclosures and financial performance finding that financial performance had no relationship with environmental disclosures. Suttipun and Stanton (2011) studied a sample of 75 Thai listed companies in 2007 to investigate environmental disclosures and to find relationships between disclosures and factors influencing disclosures. They found that there was a relationship between the amount of disclosures and the size of the company.

In summary, the above studies of Thai companies did not explore whether environmental information was provided in Thai corporate websites. This absence of information about corporate environmental disclosures on Thai companies' websites raises three main questions: do Thai listed companies provide environmental disclosures on their websites? If so, are there differences in environmental reporting on websites and in annual reports? What are the different disclosures of environmental information between websites and annual reports? And are this study's findings consistent with previous studies? The following hypotheses are therefore derived:

Hypothesis 1. Corporate environmental disclosures, with respect to the number of companies, amount, nature and type of disclosures on annual reports and websites will be significantly different amongst listed companies in the Stock Exchange of Thailand (SET).

In many previous studies, companies are classified according to various criteria. Commonly they are separated into high or low profile companies (Choi, 1999, Hackston and Milne, 1996, Patten, 1992). High profile companies are those operating in highly environmentally sensitive industries (Perry and Sheng 1999; Stray and Ballantain 2000; Ho and Taylor 2007), and thus are more exposed politically than low profile companies (Newson and Deegan, 2002). Using the relationship between levels of corporate environmental disclosure and type of industry, many studies such as those by (Choi, 1999, Ho and Taylor, 2007, Stray and Ballantine, 2000, Ahmad and Sulaiman, 2004, Newson and Deegan, 2002) find that high profile companies disclose more environmental information than low profile companies. This study hypothesises that:

Hypothesis 2. Corporate environmental disclosures, with respect to the number of companies, amount, nature and type of disclosures on annual reports and websites will be significantly different amongst types of industry.

This study categorises companies into two types of ownership status by using the percentage of corporate common stock held by either government or private companies. For example, if government organizations own more than 51 percent of the common stock, then these firms are designated government companies. On another hand, if private organizations or individuals hold more than 51 percent of the common stock, these are classified as private companies. Ownership status is not often considered in research into environmental reporting, probably because such research is mostly conducted in an Anglo-American context where government companies are not common (Tagesson et al., 2009). In relation to environmental information, government and private companies may differ in both the quantity and quality of their disclosures. In Canada, Cormier and Gordon (2001) found that government companies provide more environmental information than private companies. In Sweden, Tagesson et al. (2009) found that government companies disclosed more environmental information than private companies because state-owned companies are more scrutinized, so that there is pressure from the state as owner, and from the mass media to comply with society's expectations. Contrary results have been obtained. Balal (2000) argued that Bangladeshi private companies disclose more environmental information than government companies. In Italy, Secci (2005) found that companies controlled by the Italian government disclosed less environmental information than other corporations. Despite the different findings, the hypothesis is that:

Hypothesis 3. Corporate environmental disclosures, with respect to the number of companies, amount, nature and type of disclosures on annual reports and websites will be significantly different with regard to ownership status.

The country of origin of the company making disclosures has been found to influence the quantity of environmental disclosures (Kolk et al., 2001, Adams et al., 1998). Positive associations between the country of origin of the company making the disclosures and amounts of corporate environmental disclosures have been found (Jahamani, 2003, Niskala and Pretes, 1995, Stanwick and Stanwick, 2006, Hackston and Milne, 1996). Accordingly, sampled Thai listed companies are separated into two kinds: international and domestic companies, leading to the hypothesis that:

Hypothesis 4. Corporate environmental disclosures, with respect to the number of companies, amount, nature and type of disclosures on annual reports and websites will be significantly different with regard to the country of origin.

5. Study Design and Method

This study aims to fill the gap by investigating the narrative disclosures of environmental information on websites of companies listed on the Stock Exchange of Thailand (SET), and to test whether there is a difference between corporate environmental disclosure practices on websites and in annual reports. The top 50 listed companies which have websites and annual reports at 31st December 2010 are sampled. Content analysis is used to quantify environmental disclosures on websites of the sampled listed companies during June-July, 2011. These companies are classified according to the criteria outlined earlier (see Table 1). Therefore, there are 17 high profile companies and 33 low profile companies to be used as samples in this study.

Table 1. Industry profile	Table	: 1. Industry ¡	profiles
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Group of	Sample		Industry profile				
industry	size (n)	This	Suttipun &	Newson &	Choi	Hackston &	Robert
		study	Stanton (2011)	Deegan (2002)	(1999)	Milne (1996)	(1992)
Agriculture and food	4	High	High	High	High	Low/High	Low
Financial	10	Low	Low	Low	-	-	-
Industrial	3	High	High	High	High	High	High
Property and construction	8	Low	Low	Low	-	Low	-
Resources	10	High	High	High	High	High	-
Service	11	Low	Low	Low		Low	Low
Technology	4	Low	Low	Low	Low	Low	-

The content analysis used word count in Thai language versions as the measurement tool. The dependent variable, environmental disclosures on Thai corporate websites, is measured by word count using a checklist divided into 22 different themes adapted from previous studies by Burritt (1982), Deegan and Gordon (1996), and Hackston and Milne (1996):

- 1) Environmental policy
- 2) Environmental management system including ISO14000
- 3) Risk management including environmental impact assessment
- 4) Environmental audit
- 5) Goals and targets including performance against targets, and actions taken
- 6) Compliance with standards including benchmarks
- 7) Awards
- 8) Input including R&D, energy management, and non-renewable resources used
- 9) Processes including technology employed, and capital equipment

- 10) Product stewardship including life cycle analysis, and eco-labelling
- 11) Wastes consisting recycling, reduction, and reuse
- 12) Land rehabilitation and remediation
- 13) Air emissions
- 14) Water effluent
- 15) Spills
- 16) Noise and odours
- 17) Environmental spending and activity
- 18) Rehabilitation costs, operating costs, provisions, and contingent liabilities
- 19) Environmental cost accounting
- 20) Sustainable development reporting
- 21) Education and training
- 22) Litigation about environmental issues

All data is hand-collected. Finished data are analysed using a Statistic Software Programme, namely SPSS version 17. To explain what the different corporate environmental disclosures on websites and in annual reports are, this study uses descriptive statistics, paired-sample T-tests, and the independent-sample T-test.

6. Findings

Of the top 50 Thai listed companies during June-July 2011, 44 companies (88%) provided environmental disclosures on their websites. On the other hand, there were 48 companies (96%) disclosing environmental information in their annual report at 31st December 2010. Table 2 provides the incidence rate of the number and percentage of companies making corporate environmental disclosures in three categories: annual reports, websites, and combined (companies that disclose environmental information in both their annual reports and websites). It was found that a greater number of companies provided more environmental information in their annual reports than on websites. All high profile companies revealed environmental disclosures in both media, but 30 firms out of 32 low profile companies showed environmental disclosures in the annual report but only 26 firms included it on websites. In terms of types of industry, not all property and construction, and service industries provided disclosures in their annual reports. The companies that did not disclose environmental information on their website were in financial, property and construction, and service industries.

Table 2. Environmental disclosures by Thai listed companies

	Top 50 Thai listed companies in SET					
Group of industry	Annual reports		Websites		Combined	
	No.	%	No.	%	No.	%
Agriculture and food	4	100.0	4	100.0	4	100.0
Financial	10	100.0	9	90.00	9	90.00
Industrial	3	100.0	3	100.0	3	100.0
Property and construction	6	85.71	5	71.43	5	71.43
Resources	12	100.0	12	100.0	12	100.0
Services	9	90.00	7	70.00	6	60.00
Technology	4	100.0	4	100.0	4	100.0
Total	48	96.00	44	88.00	43	86.00
High profile companies	18	100.0	18	100.0	18	100.0
Low profile companies	30	93.75	26	81.25	25	78.13
Total	48	96.00	44	88.00	43	86.00

Table 3 indicates the location of environmental disclosures by Thai listed companies in annual reports and on websites. Commonly environmental disclosures were found in sections labelled "corporate social responsibility-CSR" following by other sections in order: "corporate governance", "awards", "CEO report", "environmental

policy", "sustainability" on Thai corporate websites. However, "risk management" was included for environmental disclosures in annual reports. Moreover, "corporate governance" was the most common location in annual reports rather than "CSR" followed by "CEO reports", "risk management", "awards", "environmental policy", and "sustainability development reports".

Table 3. Location of environmental disclosures

Locations —	Number of companies providing disclosures			
Locations —	Annual reports	Websites		
Corporate social responsibility	37 (74%)	37 (74%)		
Corporate governance	41 (82%)	12 (24%)		
Awards	10 (20%)	11 (22%)		
CEO reports	23 (46%)	8 (16%)		
Environmental policy	8 (16%)	7 (14%)		
Sustainability reports	5 (10%)	6 (12%)		
Risk management	20 (40%)	0		

Table 4 shows the word counts of corporate environmental disclosures in their annual reports and websites. The results indicate that the average word count of environmental disclosures in corporate annual reports was greater than the average word count on corporate websites. In terms of type of industry, low profile companies provided more disclosures in annual reports than on websites, but high profile companies preferred to include more environmental information on their websites than in annual reports. In terms of group of industry, companies in agriculture and food, financial, and resource industries provided more environmental information on their website than in annual reports. Companies providing the most words of environmental information were in the resources business group in both media. In addition, companies in service industry provided the smallest disclosures on their website but technology industry's companies used the smallest number of words in annual reports.

Table 4. The average word count in environmental disclosures

Group of industry	The average number of words		
_	Annual reports	Websites	
Agriculture and food	1214.75	1451.00	
Financial	558.90	579.80	
Industrial	1774.00	1082.67	
Property and construction	1110.86	892.71	
Resources	1889.33	1993.25	
Services	524.80	276.50	
Technology	446.25	348.54	
Total	1065.02	983.54	
High profile companies	1795.67	1810.78	
Low profile companies	654.03	518.22	
Total (All)	1065.02	983.54	

Paired Sample T-tests (see Table 5) are used to statistically analyse the difference in the average amount of environmental disclosures in annual reports compared to websites and they are shown by themes of environmental disclosures. As a result, the three most common themes were environmental spending and activity, waste management, and environmental policy in both annual reports and websites. Four environmental themes listed earlier were also not disclosed in both media; they were environmental audit, land rehabilitation and remediation, rehabilitation costs, and environmental cost accounting. There are statistically significant differences of themes of disclosures between annual reports and websites (significant at the 0.05 level) that are environmental policy, risk management, compliance with standards, air emissions, and environmental spending

and activity. However, there are no statistically significant differences in overall environmental disclosures between both of them (P = 0.437). Therefore, significant differences in terms of overall disclosures were not supported.

Table 5. Paired sample T-test by themes of disclosures

Themes of disclosures	Mean- AR's	Mean- Web	P-value
1. Environmental policy	149.26	91.56	**0.012
2. Environmental management system	55.08	39.18	0.377
3. Risk management	71.64	6.30	**0.004
4. Environmental audit	0	0	-
5. Goal and targets	17.28	24.39	0.691
6. Compliance with standards	65.90	18.44	**0.027
7. Awards	27.88	34.26	0.675
8. Input	69.00	58.94	0.702
9. Process	11.80	16.68	0.675
10. Output	21.86	6.28	0.192
11. Waste management	103.64	97.80	0.907
12. Land rehabilitation	0	0	-
13. Air emissions	88.54	24.72	**0.036
14. Water effluent	39.54	42.76	0.886
15. Spills	12.58	19.08	0.634
16. Noise and Odours	24.04	10.14	0.548
17. Environmental spending	265.74	417.70	**0.020
18. Rehabilitation cost	0	0	-
19. Environmental cost accounting	0	0	-
20. Sustainability development reports	13.66	34.30	0.334
21. Education and training	25.76	25.30	0.974
22. Litigations	1.82	15.78	0.385
Environmental disclosures (Total)	1065.02	983.54	0.437

^{**} Significant at the 0.05 level, *** Significant at the 0.01 level

Williams et al. (1999), also found differences in environmental disclosures between annual reports and websites in Australia (P = 0.000***), but there were no differences in Singapore, Malaysia, and Hong Kong (see in Table 6).

Table 6. Comparison between this study and the previous study

Category		Williams et al. (1999)			
	Australia	Singapore	Malaysia	Hong Kong	Thailand
Environmental disclosures	0.000***	0.756	0.842	0.537	0.437

^{**} Significant at the 0.05 level

^{***} Significant at the 0.01 level

Independent Sample T-tests (see Table 7) are used to statistically analyse the difference in the amount of environmental disclosures between type of industry, ownership status, and country of origin of a company in terms of both annual reports and websites. The analysis supports statistically significant differences between high and low profile companies in both annual reports and websites as well as government and private companies. In terms of country of origin of a company, even though there are statistically significant differences between international and domestic companies in annual reports, there were no differences on websites.

Table 7. Independent sample T-test

Type of industry	Mean	Std Error	N
En disclosures in annual reports			
High profile companies	1795.67	207.655	18
Low profile companies	654.03	115.581	32
T-test Significant level 0.000***			
En disclosures on websites			
High profile companies	1810.78	356.576	18
Low profile companies	518.22	100.561	32
T-test Significant level 0.002***			
Ownership status	Mean	Std Error	N
En disclosures in annual reports			
Government companies	1998.13	476.542	8
Private companies	887.29	108.981	42
T-test Significant level 0.001***			
En disclosures on websites			
Government companies	2132.13	654.926	8
Private companies	764.76	135.467	42
T-test Significant level 0.002***			
Country origin of company	Mean	Std Error	N
En disclosures in annual reports			
International companies	419.50	164.131	6
Domestic companies	1153.05	141.369	44
T-test Significant level 0.004***			
En disclosures on websites			
International companies	653.00	279.929	6
Domestic companies	1028.61	185.479	44
T-test No significant ($P = 0.289$)			

^{**} Significant at the 0.05 level, *** Significant at the 0.01 level

7. Conclusions and Implications

This study sought to investigate the corporate environmental disclosure practices of companies on the Stock Exchange of Thailand in annual reports and websites. Initial findings indicate that 96 percent of the sampled Thai listed companies provided environmental disclosures in their annual reports and 88 percent on websites. Companies providing the most words of environmental information were in the resources business group in both media; the smallest word counts were in the services business group on websites, and technology business group in annual reports. Commonly environmental disclosures were in the corporate social responsibility section of the website but in the corporate governance section of the annual reports. The three most common themes were environmental spending and activity, waste management, and environmental policy in both annual reports and websites. Statistically significant differences were found between high and low profile companies as well as government and private companies. However, this study could not find different amount of environmental disclosures in annual reports and websites in contrast to previous studies (Williams et al., 1999, Villiiers and

Staden, 2011).

This study provides some important contributions. Firstly, this study used electronic media, namely the World Wide Web to investigate environmental information disclosures rather than just traditional print media (annual reports). Secondly, this study drew on previous studies that used content analysis and statistical analysis to study environmental disclosures in both annual reports and websites including being able to make comparisons with studies of firms in developed countries. Previously, little was known about environmental disclosures by firms in Thailand. Finally, this study also contributes to environmental accounting literature, because it provided insight into the environmental disclosure practices of listed companies with respect to their operations within developing countries, where there are limited published studies.

There are limitations associated with the method adopted in the study including the sample size, the subjectivity of the data collection method, and the quality of environmental disclosures. First, the sample consisted of the Top 50 Thai companies; intuitively if disclosures are to be made; these are the most likely companies to do so. Second, the study used content analysis by word count to measure and categorise environmental disclosures. This method while quantifying disclosures does not reveal motives or underlying reasons for the observed patterns. Finally, this study did not look at the quality of environmental disclosures, focusing only on quantitative information. Further research is needed to investigate the obligatory and non-obligatory factors motivating top management to provide, or not provide, environmental disclosures in their annual reports and websites.

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