EENVIRONMENTAL REPORTING IN THE UK, AUSTRALIA AND SOUTH AFRICAN MULTINATIONAL COMPANIES

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Abstract

Disclosure is an important communication channel that can enhance corporate transparency and accountability and improve engagement with numerous stakeholders. Corporate environmental disclosure has garnered attention globally in recent years across multiple stakeholders groups including businesses, investors, watch groups and legislative branches of governments etc. for its far-reaching social and economic implications. It has become a major challenge for business organizations to address and deal with environmental issues, in particular for multinational enterprises as part of their legitimacy and meeting stakeholders' expectations. The current study, therefore, focuses on environmental disclosure in multinational companies in both developed (Australia and United Kingdom) and emerging (South Africa) economies. Building on both legitimacy and stakeholders' theories and Global Reporting initiative (GRI) disclosure guidelines (G3), the study applies hierarchical regression modelling to examine the influences of stakeholder, legitimacy, financial and demographic variables on the 'preservation', 'responsibility' and 'initiatives' aspects of environmental disclose. Empirical results indicated that return on assets, firm age and industry sector were significantly predictive of the preservation component. Return on assets, assurance and industry sector were also predictive of the responsibility component. However, size was predictive of only the initiatives component and not the preservation and responsibility components. Again, product diversification and geographical diversification had no influence on any of the three environmental components. These findings have implications for companies, investors, policy makers and stakeholders at large. Environmentally sensitive companies could be encouraged to allocate more resources to the collection and processing of data in order to increase disclosure on the preservative component.

1. BACKGROUND AND MOTIVATION

Disclosure is an important communication channel that can enhance corporate transparency and accountability and improve engagement with numerous stakeholders. The current study therefore focuses on environmental disclosure in multinational companies. Multinational companies have been the focus of society since they began disclosing information on the impact of their operations on the environment as some of the impact of their operations on the environment such as chemical spill at the Union Carbide plant at Bhopal in India has been negative (Rodman 1998). Society thus expect multinational companies to implement strategies to reduce or management their operational impact on the environment. This indicates the significant role society plays in ensuring preservation or management of the natural environment for the use of present and future generations. This role indicates the existence of a strong link between society and the environment. Society thus expect corporations to management their operations in order to reduce its effect on the environment.

However, global increases in industrialization have had negative effects on the environment and resulted in resource depletion and climate change issues. This is evident from the ongoing global debate on environmental degradation caused by corporate operations (Seetharaman, Ismail and Saravan 2010). Stringent measures must therefore be implemented to manage these issues to prevent future devastating global consequences and ensure a sustainable society. This implies that corporations that use resources form the natural environment must also implement measures to manage the adverse effect of their operations on the

environment, be accountable to society and communicate their accountability through reports. Accountability in environmental matters is important because it is a way of publicly communicating corporate legitimacy of operations (Cho and Patten 2007). It is therefore not surprising that current literature indicates increase in corporate environmental reporting and substantial attention from various accounting professions (Berthelot, Cormier and Magnan 2003). Concerns from various accounting professions and other stakeholders also indicate that corporate accountability in environmental issues is material to users of annual and environmental reports. Information communicated publicly must therefore include measures implemented to manage the negative effect of operations on all aspects of the environment. It follows therefore that current legislation that mandates certain corporations to report on only the level of their emissions and efforts made to reduce the impact of such emission on the environment is not adequate to ensure that corporations whose operations pose significant risk to the environment are implementing measures to curb these negative effects. Furthermore, with the current voluntary nature of environmental reporting, corporations are able to decide which environmental management programs to pursue and how the outcomes will be reported. Traditional accounting although mandatory, is limited on corporate environmental reporting as it lacks the ability to communicate the cost and benefits of long-term economic activities with regards to environmental practices of corporations (Larrinaga, Carrasco, Correa, Llena and Moneva 2002).

Contrary to the current practice, this article reiterates the importance of corporate environmental management and reporting and indicates the need for more accountability in the performance and reporting of environmental matters. To achieve the urgent requirement for environmental management and balanced reporting this article argues for adequate collaboration and communication between corporations and stakeholders on issues relating to stakeholder expectation and corporate legitimacy. We therefore argue that stakeholder responsiveness to material information disclosed through environmental reports can increase if their expectations are met. This indicates that corporations that report on disclosures that are material to stakeholders, specifically primary stakeholders like shareholders and consumers will gain the continuous support and license to operate. Furthermore, multinational are expected to be more financial resourced to implement strategies to preserve and manage the natural environment. We also propose that the involvement of primary stakeholders in broader communication and participation of environmental issues will enhance accountability and transparency in environmental reporting. In view of this, the study will adopt the stakeholder and legitimacy theories as complementary in suggesting material issues that corporation should address in their environmental reports to enhance stakeholder responsiveness to environmental reports. With these complementary theories, the study will explore environmental reporting aspects of a number of multinational companies in Australia, South Africa and United Kingdom; combining both developed and emerging economies. These Anglo-Saxon countries were selected because they have similar legal environment but different institutional settings. As these countries are constantly pursuing the preservation of the natural environment for the benefit of present and future generations; companies operating in these economies are also expected to play positive roles in achieving these goals. Country similarities in financial reporting, stock markets and natural resource endowments render the financial and environmental reports of companies operating in Australia, United Kingdom and South Africa comparable as disclosure is likely to follow a similar pattern. The study is therefore motivated to adopt the three countries. Furthermore, the study investigates the level of environmental reporting of 67 companies operating in these three countries over a period of two years from 2008 to 2009. It extends prior literature by examining both stand-alone sustainability reports and annual reports of the 67 companies. In that sense, most corporate issues concerning their environmental activities are captured.

The outcome of the study is expected to provide answers to these research questions -
What components influence environmental reporting? To what extent do both legitimacy and stakeholder variables act as complementary influences in the environmental GRI performance indicator domain? How do financial and demographic variables affect disclosure in the environmental GRI performance indicator domains?

The reminder of the paper is as follows: Section 2 provides the framework and literature review on corporate environmental reporting in multinational companies. This is followed by development of hypotheses, data and methodology of the study in Section 3. Section 4 highlights the empirical results and analytical discussion on findings of the study. Finally, Section 5 provides concluding remarks of the study.

2. FRAMEWORK ON CORPORATE ENVIRONMENTAL REPORTING AND LITERATURE REVIEW

Literature has delved into the issues of corporate environmental reporting in various forms with Deegan (2002) providing an in-depth review of environmental reporting. However, these increasing environmental disclosures have been reported in numerous studies as being unbalanced and self-laudatory (Deegan and Rankin 1996;

Manetti 2011). In other words, environmental disclosures lack the needed transparency and accountability rendering them less reliable for decision making and policy formulation. The current study suggests that the inability of companies to legitimately report on stakeholder expectations is a major factor in the lack of transparency and accountability in environmental disclosures. Thus, the current focus by corporations is more on protecting corporate legitimacy than fulfilling stakeholder expectations. For example, multinationals recognise creating the impression that their operations are in accordance to societal standards and values important to ensure their continuous survival. Much attention has therefore not been accorded to the important perspective of stakeholder participation in corporate environmental issues and reporting. It is not surprising that literature on stakeholder perspective and environmental reporting is sparse. Legitimacy theory has mostly been used in these studies to the detriment of stakeholder theory. Legitimacy theory is considered in two perspectives. The ethical perspective indicates that corporations 'do the right thing'; and the pragmatic perspective which views legitimacy as an essential resource beneficial to both corporations and primary stakeholders (Suchman 1995). The idea of pragmatic legitimacy is similar to the idea of 'theory building' suggested by (Dyllick and Hockerts 2002). Dyllick and Hockerts (2002) indicate the need for more in-depth study on how current theories could be combined in pushing the sustainability agenda instead of treating such theories as mutually exclusive. In view of this, the study adopts pragmatic legitimacy as it considers both legitimacy and stakeholder theories as complementary in promoting advanced accountability and transparency in the environmental disclosure agenda. Furthermore corporate effort to effectively connect stakeholder expectations with the achievement of corporate objectives is of importance both to corporate continuous operations and the fulfilment of societal interest. Stakeholders are normally connected through either the managerial, normative or sustainability perspectives. The managerial aspect focuses on stakeholder management whilst the sustainability aspect dwells on the role of businesses in contributing to a sustainable world (Deegan 2000). The normative aspect is about communication with stakeholders and advocates the inclusion of stakeholders and stakeholder interest in corporate decision-making. The study advocates for their inclusion of stakeholders whose contributions are significant to the survival of companies (primary stakeholders) in corporate decision making and therefore adopts the normative aspect of the stakeholder theory.

Various guidelines exist to encourage corporations to report on their environmental activities and outcomes. However, one of the most widely adopted reporting guidelines is the Global Reporting Initiative guidelines (GRI). As such this study also adopts the GRI guideline as an appropriate framework to explore the specific areas or aspects relevant to both stakeholders and corporate legitimacy; and also advance the theory building agenda. The study is therefore motivated to adopt the GRI G3, the current guideline as an appropriate reporting guideline for this study. The GRI is used to develop a disclosure index to examine the influences of various factors on environmental disclosure among sample companies.

3. DATA AND HYPOTHESES
3.1 Data

To gather data for our study, the sample of 67 companies were selected from 71 companies that have their sustainability reports registered on the GRI website in 2008 and 2009 (www.globalreporting.org/ReportServices/GRIReportsList/ accessed February 9, 2011); thehub.ethics.org.au/gri/gri_reporters_in_Australia (accessed May 2010)); and from a report on excellence in sustainability reporting by Ernst and Young (2010). To be included in the sample, companies must fulfil the criteria below:-

1. Annual report must be publicly available for both 2008 and 2009
2. Stand-alone sustainability report must be publicly available for both 2008 and 2009
3. Both 2008 and 2009 sustainability reports must contain a GRI index table
4. Must not be a financial institution

Similar to the study by Van Tendeloo and Vanstraelen (2005), financial institutions were excluded because they belong to unique industry sectors that require the use of additional sector supplement GRI guidelines due to their peculiar or additional disclosure requirements.

Again, it is found that stand-alone sustainability reports contain much more information on corporate social responsibility activities than the annual reports suggested in Deegan and Rankin (1997) and Lynch (2010). Therefore, both types of reports are used in this study to gather as much information as possible. It is important to note that disclosure follows certain principles, guidelines and indexes. For sustainability disclosure, a number of guidelines were developed over time, such as AccountAbility 1000 (AA1000), SA8000, SustainAbility, Dow Jones, FTSE4 Good and Global Reporting Initiative (GRI). Most of them are narrowly focused to meeting

certain needs of a particular group of stakeholder and lack of flexibility and auditability with multi-stakeholder approach. Among them, the most widely used framework for reporting all aspects of corporate sustainable development outcomes is the Global Reporting initiative (GRI) guidelines. The current guideline used is the GRI (G3). The G3 consist of 34 aspects and 79 core and additional indicators. 30 of the 79 indicators relate to environmental issues and 40 and 9 to social and economic issues respectively. Most corporations find the core indicators more relevant to their sustainability activities than the additional indicators. It is, therefore, expedient to adopt the GRI (G3) as a reporting framework for this study for the purpose of collecting secondary data on environmental aspects of the sample companies.

3.2 Hypotheses
3.2.1 Financial and company specific indicators hypotheses

Leverage (debt ratio)
It is envisaged that companies with high leverage ratios are likely to incur high monitoring and agency cost (Jensen and Meckling 1976). High leverage companies are, therefore likely to continually disclose more voluminous information. This is because increased disclosure can reduce information asymmetry and assure creditors of the company stability to fulfil their obligations. Leverage, in this research, is a proxy of the ratio of total debt to total equity as used in Oliveira and Rodrigues (2006). Similar to the suggestions made by Jensen et al. (1976), Ku, Ismail and Chandler (2004) this study predicts a positive relationship between leverage and the extent of environmental disclosure:

> H_1:   *Environmental disclosure is higher in companies with higher leverage than in companies with lower leverage*

Liquidity
Highly liquid companies produce more voluntary comprehensive information to assure short-term creditors and other stakeholders of their continuous ability to meet their short-term contracts. Contrary to this opinion, others suggest that less liquid companies will strive to increase disclosure as shareholders may prefer firms with low liquidity since such companies can use corporate assets to increase business growth Alsaeed (2006). Similar to the measurement used by Ho and Taylor (2007), the ratio of current assets to current liabilities is used as a proxy for liquidity in this research. This study is of the view that, cash flow in highly liquid firms is likely to be higher than cash flow in less liquid firms and therefore, highly liquid firms can access more funds to increase their disclosure. This study, therefore predicts a positive relationship between liquidity and environmental disclosure:

> H_2:   *Highly liquid companies are likely to disclose more information than companies with lower liquidity*

Return on Assets
Return on assets, an accounting-based measure, provides information on a company's internal efficiency status (Orlitzky, Schmidt and Rynes 2003). It is envisaged that profitable companies with high return on asset ratios are likely to perform better in their sustainability performance and reporting because of their access to internal funds. Return on assets rather than return on equity is used in this study because it is envisaged that return on equity may be influenced by the leverage variable. The ratio of EBIT to total sales is used to measure the variable return on assets. EBIT is adopted instead of earnings after tax because returns are regarded as income earned before tax in most multinational companies. This study agrees with Cormier and Magnan (1999) that companies with high return on assets are likely to increase disclosure. Therefore, this study predicts a positive association between return on assets and disclosure:

> H_3:   *Companies with higher return on asset disclose more information than companies with lower return on assets*

Firm Age
Stakeholders expect corporations to provide them with value-relevant information for decision-making. Corporations able to meet the expectations of stakeholders gain competitive advantage over their rivals. One of the factors that determine the ability to provide such value-relevant information is the age of the corporation. Only few researchers including Menassa (2010) have examined the effect of firm age on the level of disclosure. This study will improve knowledge on such relationship by further examining the effect of firm age on environmental disclosure. This study examines Lang's (1991) assertion that younger corporations are likely to inform stakeholders of their ability to continue to perform into the future by increasing disclosure. The hypothesis is:

H$_{4:}$ *Younger companies disclosure more information on their environmental activities than older companies*

3.2.2 Legitimacy indicator hypotheses

Board Structure

It is assumed that when high-level managers hold leadership positions in a company, it has substantial impact on corporate performance. Although other factors may also be relevant in assessing this association (Waldman, Ramirez, House and Puranam 2001), board structure is a factor that this research envisages does affect performance and subsequently influence reporting. The reason for this assumption is because of the high level of advocacy for board reforms in recent years coupled with the distinct roles board members are expected to play to ensure corporate survival. Furthermore, similar to the suggestion made by stakeholders, the ASX also recommends a larger membership of independent directors on corporate boards in its best governance practice recommendations (Hill and Thomas 2012). This is because unlike non-independent directors, the interest of independent non-executive directors is not in conflict with that of the owners of the companies. This study will adopt a proxy of the percentage of independent non-executive directors to total number of directors. The following hypothesis is therefore tested:

H$_5$:   *Corporate boards with high levels of independent non-executive directors will increase environmental disclosure*

Internal Policies (Voluntary Environmental, Ethical and Whistle Blowing Policies)
Voluntary Environmental Policy

For the past two decades the public, governments and corporations have continuously expressed their desire for more sustainable development practices (Proto and Supino 2000). It follows that in order to thrive in this current socially competitive environment, organisations must disseminate legitimate information regarding the efforts they make to: manage the negative environmental impacts of their operations, promote social equity and stimulate economic growth. Companies can also employ other proactive tools to achieve better outcomes from their environmentally sustainable development goals. One such tool is through the implementation of internal voluntary environmental policy. Benefits to be derived from implementing these policies include increased profits (Hart 1997), improved share prices (Gottsman and Kessler 1998) and lower operational costs – mostly from less waste from the production process. It is therefore hypothesized that:

H$_6$:   *Companies with both environmental and ethical policies are likely to show increased environmental disclosure*

Code of Ethics and Whistle Blower Policy

Codes of ethics are principles set by organisations to guide their employees to recognise positive behaviours they should emulate and negative behaviours to avoid (Long and Driscoll 2008). Adoption of ethical programs is likely to enhance corporate reputation as this communicates to stakeholders how a corporation adheres to societal norms and values through its policies and internal structures. This form of disclosure can result in competitive advantage and increase corporate value (Lordi 2000). In companies where ethical codes of conduct are not adequately implemented, illegal acts such as violation of professional standards, human rights violations or incompetency, can be exposed in other ways by 'whistle blowers'. Exposure of such unethical or illegal conducts is likely to adversely affect the reputation of a company and subsequently its legitimacy (Boatright 2000). One form of curbing external exposure of such unethical acts is by setting up whistle blower hot lines or directing that reports of breaches of ethical behaviours be made to the ethics ombudsman Patten (2002) also suggested that companies whose unethical activities impacts negatively on the environment make effort to increase positive disclosures. Although not statistically tested, studies, including those of Callahan, Dworhin, Fort and Schipani (2002), suggest a negative relationship between disclosures and whistle-blowing. This is because corporations do not want any negative information about their operations to be publicly reported. It is therefore hypothesised that:

> **$H_{7)}$:**   *Companies with environmental, ethical and whistle blower policies are likely to show decreased environmental disclosure*

Ownership Concentration (Directors)

According to principal-agent relationship or agency theory, directors acting as company stewards are required to act in the interest of the owners of the business – who are normally the shareholders. Contrary to this requirement, directors will normally allocate more of the corporate resources in their interest to the detriment of outsiders (Jensen et al. 1976). However, this natural desire sometimes subsides and directors pursue value maximization by aligning their interests more to that of shareholders. This change can occur when insider equity ownership increases, thereby reducing the divergence between the interest of directors and owners (De Miguel, Pindado, De La Torre 2004). On the other hand, when the demand for more incentives by directors is internal met without the consent of shareholders, they may decrease disclosure to prevent such information from getting to report users. The study adopts the dichotomous measurement of managerial ownership of $\geq 5\%$ as a measure of directors' ownership concentration. This argument above has prompted the hypothesis below:

> **H_8:**   *Companies with higher ownership control invested directors management are likely to show lower environmental disclosure levels*

3.2.3 Stakeholder indicator hypothesis

Ownership Concentration - (Institutional)

The degree to which a company's shares are concentrated in either a small number of investors or dispersed among a large number of small investors is said to have an effect on corporate disclosure (Brammer and Pavelin 2006). The lack for the use of the ownership variables in studies other than the U.S, U.K, German and Japanese businesses have prompted the inclusion of the variable in this research. An ownership proxy of 5% or more is adopted in this study in line with Philip (2002). A positive relationship between ownership concentration and corporate disclosure is envisaged because of the numerous social legislations that mandate corporate management to exercise due care and responsibility in the execution of their duties. It is argued that ownership concentrated amongst institutional investors is likely to result in the demand for more transparent disclosure. It is therefore hypothesised that:

> **H_9:**   *Companies with higher ownership control invested in institutional shareholders are likely to show higher levels of environmental disclosure*

Diversification (Product and Geographical)

Diversification is generally associated with the extent of corporate operations across national borders as well as corporate expansion into foreign markets. MNE's are likely to improve their external operations and take advantage of economies of scale as they diversify their product(s) into global markets and other geographical areas; thereby building lower and more efficient value-chain partnerships. These outcomes will have to be disclosed to stakeholders. However, most studies on product and geographical diversification relate to performance rather than disclosure. The Herfindalhl measure, a resource-based type of measure which considers the number of corporate segments and their relative importance to total assets/sales (Geringer, Tallman, and Olsen 2000) is considered appropriate for adoption as a diversification measure in this thesis. The ratio of assets per segment to total assets is, therefore, adopted as a proxy for geographical diversification measurement; and the ratio of sales per segment to total sales is adopted as a proxy for product diversification. Similar to previous research, a positive relationship is predicted between product diversification and disclosure, as well as geographical diversification and disclosure. It is, therefore, hypothesised that:

> **H_{10}:**   *A significant relationship exists between product diversification and environmental disclosure*
> **H_{11}:**   *A significant relationship exists between geographical diversification and environmental disclosure*

Sustainability Assurance

Management of listed companies are faced with several issues when making decisions about the quantity of information to voluntarily disclose. For example, companies listed on multiple international stock exchanges can increase disclosure in order to reduce shareholder monitoring costs (Lopes and Rodrigues 2007). On the other

hand, companies may also reduce agency costs and manage information asymmetry through assurance of sustainability reports (Oliveira et al. 2006). This occurs because assurance enhances credibility of reports. It is observed that more empirical studies have been conducted on the association between assurance provider and performance than on the association between assurance and sustainability disclosures. Therefore, this study finds it expedient to include the variable assurance. It is argued in this study that the high cost associated with assurance engagements encourage corporations to increase disclosure levels before seeking assurance for their reports. It is, therefore, hypothesised that:

H_{12}:   *Companies that assure their environmental reports are likely to increase disclosure*

3.2.4 Demographic indicator
The demographic variables, company size and industry also serve as control variables in this study**.**

Size
Size has been identified in prior literature as relating positively with the level of corporate disclosures (Liu and Eddie 2007). Various studies have reported the existence of a relationship between size and the level of corporate disclosure and generally concluded that firm size had a positive significant relationship with the level of sustainable disclosures. Furthermore, the assumption in prior literature that production cost is influenced by economies of scale implies that the larger the company, the lower its cost of production and subsequently the more information it can publicly disclose (Clarkson et al. 2008). Inspite of these assumptions and outcomes, the relationship between size and specific environmental components which the current study will examine is yet to be considered.

Industry
It is considered that disclosure differs amongst various industry sectors. This implies that companies in the same industry sector are likely to implement similar disclose strategies and therefore the failure of a company to follow industry-wide disclosure practices is interpreted as concealing bad news (Oyelere, Laswad and Fisher 2003). It follows that, corporations whose activities produce substantial amount of emissions into the atmosphere or pollute water bodies, are likely to be encouraged by society to provide more information on their emission or pollution reduction strategies. Similar to the size variable, the industry variable has been considered in most disclose studies. However these studies have always produced generalised results. The current study will therefore strengthen and expand results from prior studies by examining how environmentally sensitive and environmentally non-sensitive industries respond to specific environmental disclosure components.

4. METHODOLOGY

Clarkson, Li, Richardson and Vasari (2008), recommend a disclosure index similar to the GRI guidelines that could be adopted in voluntary environmental disclosure studies. The focus of this study is also on how corporate specific and financial factors influence environmental indicator components disclosures. This study adopts and modifies the disclosure index recommended by (Clarkson et al. 2008).

The dependent variables consist of the environmental disclosures of the selected companies that have been sorted out and grouped through Principal Component Analysis (PCA) into three components namely preservation, initiatives and responsibility components. The preservation component relates to issues regarding water, biodiversity and materials; the initiatives component comprises energy and the environmental impact of products and services and the responsibility component relates to emissions, effluents and waste. Company specific factors and financial factors, amongst others have been noted in previous studies as likely to be the cause of differences in disclosure amongst companies. Similar to studies on voluntary disclosure this study categorises predictor variables into four groups namely demographics, stakeholder, legitimacy and financial variable sets. The stakeholder variables comprise product and geographical diversification, institutional ownership and assurance. Board structure, director's shareholding, internal environment and ethical policies make up the legitimacy variables, and leverage, liquidity, return on assets and firm age make up the financial and company specific variable set. Finally, the demographic variable set consists of size and industry. The demographic variable set also represents the control variables used in the study.

The following multiple regression model is developed to test the hypotheses of the study:

$$DINDEX = \beta_0 + \beta_1 LOG\ LEV + \beta_2 LOGLIQ + \beta_3 LOGROA + \beta_4 AGE + \beta_5 BST + \beta_6 INPO1 + \beta_7 INPO2 + \beta_8 LOGOWNMA + \beta_9 OWNIN + \beta_{10} PDI + \beta_{11} GDI + \beta_{12}\ ASSR + \beta_{13} SIZ + \beta_{14} INDS + e_j$$

Where,

DINDEX =	Disclosure index in each company's environmental disclosure,
ENCOMP1 =	Environmental Disclosure Index on Preservation (i.e. water, biodiversity and materials),
ENCOMP2 =	Environmental Disclosure Index on Initiatives (i.e. energy and the environmental impact of products and services),
ENCOMP3 =	Environmental Disclosure Index on Responsibility (i.e. emissions, effluents and waste),
LOGLEV =	Leverage is the debt as a ratio of Equity
LOGLIQ =	Liquidity is the current asset as a ratio of current liabilities,
LOGROA =	ROA is the net profit before tax as a ratio of total assets
AGE =	Firm age is the number of years since incorporation to date,
BST =	Board structure is independent non-executive directors as a ratio of total directors,
INPO1 =	Internal Policy 1 is environmental policy, ethical policy, whistle blowing policy of each company (dummy variable 1, 0),
INPO 2 =	Internal environmental, whistle blowing policy, ethical policy of each company (dummy variable 1, 0),
LOGOWNMA =	Directors' ownership is the directors' shares as a percentage of total shares,
OWNIN =	Institutional ownership is the percentage of institutions owing 3% or more shares,
PDI=	Product diversification as a herfindhal type quantitative measurement of sales per each segment squared to total sales squared
GDI =	Geographical diversification as a herfindhal type quantitative measurement of asset per each segment squared to total assets squared,
ASSR =	Assurance is a dichotomous variable (0,1) of companies that have assured their reports and those companies that have not assured their reports,
SIZ =	Size is the log of sales,
INDS =	Industry is a dichotomous variable of 1, 0; 1 for sensitive and 0 for non-sensitive industries.

The focus of the study is on how specific corporate demographic, stakeholder, legitimacy and financial factors influence environmental disclosure components. We expect that the ability of multinational companies to adhere to societal expectations and legitimately report is influenced by corporate board structure, majority shareholders, environmental and ethical policies, diversification strategies and certain financial indicators. These factors relate to the causes and influence of social phenomena and other indicators on environmental reporting and therefore play a significant role is the adoption of an appropriate methodology for the study (Yin 1994). The study also involves concepts that have to be operationalized so they can be measured for causality. With the above circumstances surrounding the study and in order to obtain meaning outcomes to the research questions, the quantitative methodology is regarded as the appropriate method to be adopted for the research. It is also envisaged that outcomes from the rigorous form of hypotheses-testing and statistical analysis will be objective, generalizable and reliable across settings and can therefore be of much significance in policy making and decision taking.

Hierarchical regression, a multivariate analysis is applied to test the significance or otherwise of the variables in this research. Hierarchical regression is recommended by Pallant (2007) as an appropriate method in studies where theoretically based hypotheses are used. Furthermore, hierarchical regression analyses instead of Ordinary Least Square (OLS) regression is used to overcome the anomaly of violating normal distribution and homogenous error variance where the dependent variable is dichotomous (Noreen 1988; Polman and Leitner 2003). This is therefore an improvement on prior studies on disclosure where Ordinary Least Square (OLS) regression analyses have been performed. Also, this method is a better regression model to be adopted with small sample sizes. With hierarchical regression analysis, predictors are entered into the prediction model on the basis of a pre-determined theoretical order. The set of demographic predictors was entered initially into the

hierarchical regression model. This first order entry was designed to initially control for the effect of demographic diversity amongst the companies prior to considering the other sets of theoretically-based factors. This was similar to the order of entry suggested by Cohen, Cohen, West and Aiken (2003). The stakeholder set of four variables was the next to be entered into the hierarchical regression. It is the additional theoretically-based variable proposed in this study to positively improve accountability and transparency, and contribute to increases in sustainability disclosure when considered before the legitimacy set of predictors. This is followed by the legitimacy set which contain factors considered immediately before disclosure to show corporate adherence to societal norms and expectations. Achievement of corporate objectives of transparent and accountable environmental reporting will require financial resource. It was therefore found appropriate to enter the level and type of funding after demographic, stakeholder and legitimacy factors that could influence improvements in performance have been accounted for and included in corporate strategy.

5. EMPIRICAL FINDINGS

Table 1 and Table 2 in the Appendix present descriptive statistics and correlations of all dependent and independent variables. As for dependent variables in Table 1, 3 economic (ENCOMP1, ENCOMP2 and ENCOMP3) are used to observe the determinants of these sustainability disclosure components. The mean scores of all disclosure items are 1 or higher than 1 with minimum score 0 and maximum 2 in 0, 1, 2 categorical scores of disclosure. This indicates that environmental sustainability reporting prevails over average levels for the sample period of sample firms in these three countries. In regards to the 14 independent variables of the regression model, 4 different categories of variables used in a hierarchical linear regression framework, such as 2 variables in demographics [industry (INDS) and firm size (SIZ)], 4 variables in stakeholders [institutional ownership (OWNIN), Product diversification (PDI), Geographical diversification (GDI), assurance (ASSR)], 4 variables in legitimacy [directors ownership (LOGOWNMA), board structure (BST), Internal Policy 1 (INPO1) and Internal Policy 2 (INPO2), and 4 variables in firm-specific/financials [firm age (AGE), financial performance (LOGROA), liquidity (LOGLIQ) and leverage (LOGLEV)]. These variables include firms' ownership structure, board structure, internal and external engagements. In Table 1, ownership structure variables show high-level of average external institutional ownership (43%) indicating more external stakeholder involvements. Board structure also shows that about 67% board members are independent external members, once again indicating high external stakeholder involvements. In terms of financials, leverage remains is at very high level of more than 70% as is an indicator of risky levered firms, while liquidity remains at far below standard level. Again, the mean scores of internal environmental policy 1, both types of diversification and assurance are at above average level, but internal environmental policy 2 is not. Finally, as expected, size of the firms remains very large.

Table 2 presents correlation matrix of independent variables. None of the relationship between the variables is high to indicate any multicollinearity problem. The correlations reveal that board structure is positively associated with institutional ownership but negatively with directors' ownership and size of the firm. On the other hand, directors' ownership relates positively with geographical diversification while product diversification is linked to financial performance. Also as expected, firm's financial performance, liquidity and assurance are more aligned to industry affiliation.

Again, the regression findings of the environmental components (i.e. GRI performance indicator of water, biodiversity and materials component (ENCOMP1), the energy and impact of products, and services component (ENCOMP2) and the emissions, effluents and waste component (ENCOMP3) are provided, respectively, in Table 3, Table 4 and Table 5.

5.1 ENCOMP1: Preservation component (Water, biodiversity and materials)

The demographic and financial sets of predictors contributed significantly to an explanation of variability in the preservation component (see panel A of Table 3). Furthermore, the individual variable of industry within the demographic set was significantly predictive of the preservation component (see panel B of Table 3). This outcome showed that companies in the sensitive industry sectors were associated with higher levels of disclosure on the preservation component compared to companies in non-sensitive industry sectors. In addition, the individual variables of firm age and log of return on assets were significantly predictive of the preservation component (see panel B of Table 3). This relationship showed that older companies were associated with a decrease in the quantity of disclosure on the preservation component. Similarly, companies with higher return on assets ratios were also associated with increase in the quantity of disclosure on the preservation component.

However, stakeholder and legitimacy variable sets were not significant in predicting the preservation component (see panel B of Table 3).

5.2 ENCOMP2: Initiatives Component (Energy and Environmental Impact of Products and Services)

The demographic, stakeholder, legitimacy and financial sets of predictors contributed significantly to explanation of variability in the initiatives component (see panel A of Table 4). Furthermore, the individual variable of size within the demographic set was significantly predictive of the initiatives component (see panel B of Table 4). This result showed that larger companies were associated with higher disclosure on the initiatives component than smaller companies. Furthermore, the individual variable of assurance was significantly predictive of the initiatives component amongst the stakeholder variables (see panel B of Table 4). This relationship showed that companies with assurance environmental reports were associated with increase in the quantity of disclosure on the initiatives component. In addition, the individual variable of board structure was significant in predicting the variance in legitimacy on the initiatives component (see panel B Table 4). This implies that companies with large numbers of independent non-executive directors on their boards were associated with increase in disclosure on the initiatives component. This effect could arise if independent non-executive directors would express perspectives from outside the company; more strongly advocate for greater investment in sustainability activities and subsequent disclosure of outcomes from these activities. However, only the variable firm age was significantly predictive of the initiatives component of environmental disclosure (see panel B Table 4). The result showed that, younger companies were associated with more disclosure on the initiatives component than older companies.

5.3 ENCOMP3: Responsibility Component (Emissions, Effluents and Waste)

The demographic, stakeholder and financial sets of predictors contributed significantly to an explanation of variability in the responsibility component (see panel A of Table 5). Furthermore, the individual variable of industry within the demographic set was significantly predictive of the responsibility component (see panel B of Table 5). This outcome indicated that companies in the sensitive industry sector were associated with increased levels of disclosure on the responsibility component compared to companies in non-sensitive industries. The individual variable of assurance was significantly predictive of the responsibility component (see panel B of Table 5). This relationship showed that companies with assurance environmental reports were associated with increased quantity of disclosure on the responsibility component. Only return on assets was significantly predictive of the responsibility component (see panel B of Table 5). The result showed that companies with higher levels of return on assets ratios were associated with increased disclosure on the responsibility component compared to older companies.

6. DISCUSSION OF FINDINGS

The results that a greater level of assurance was predictive of a greater level of disclosure on the Initiatives and Responsibility components was an improvement upon previous studies because previous studies only reiterated report users' acknowledgement for assurance of environmental disclosures. The current study has, therefore, gone a step further to highlight specific areas of importance which companies must address in order to encourage report users and stakeholders to positively respond to their assurance reports. Results also indicate that companies with higher levels of return on assets or profitable companies are endowed with more financial resource and will therefore devote more resources to disclosure on issues relating to water, biodiversity and materials re-use and recycling as well as reduction of emissions, effluents and wastes. Similarly, companies in the sensitive industry sector were likely to disclose more information on water, biodiversity and materials re-use and recycling as well as reduction of emissions, effluents and waste.

On the other hand, the size of a company does not impact on disclosure on issues relating to water, biodiversity and materials. Similarly, the size of a company does not also impact disclosure on issues relating to emissions, effluents and waste. On the other hand, larger size companies will increase disclosure relating to the energy usage and the impact of products and services on the environment. Contrary to the general view of size and its relationship with disclosure in prior research, the above findings, on a more specific note, indicated that issues relating to water, biodiversity and materials and emissions, effluents and waste will be disclosed by all companies irrespective of their sizes. Whereas sensitive industries did tend to disclose more in terms of Preservation and Responsibility components, Initiatives component disclosure was independent of industry sensitivity. The findings of the current study which indicated that industry, rather than size, accounted for more

variations in environmental sustainability disclosure, implied that more companies in sensitive industry sectors tended to increase their sustainability disclosures than companies operating in the non-sensitive industries. Companies in sensitive industries may be subject to greater public and political scrutiny (due to their higher pollution intensity) and this may explain the higher levels of environmental disclosures reported by such companies. Furthermore, results also implied that actions on the initiative component of environmental disclosure should be implemented irrespective of corporate liquidity, return on assets and leverage ratios. Also, neither product diversification nor geographical diversification was likely to influence corporate environmental disclosure. This outcome was consistent with the reports by Hossain et al. (2006) and Amran, Bin and Hassan (2009) that no relationship existed between either product or geographical diversification and environmental disclosure.

Recently, institutional investors have expressed much interest in sustainability issues and have subsequently increased their investments in many socially responsible corporations (Sparkes et al. 2004). Thus, in corporations where institutional investors were in the majority, management would be unable to ignore their requests and expectations with regards to environmental issues (Sparkes et al. 2004). However, results from the current study indicated that this was not the case in relation to the initiatives and responsibility components of environmental disclosure. Results from this study showed that such majority shareholders did not influence disclosure on issues pertaining to neither the preservation, responsibility nor the Initiative components. The outcome that majority independent non-executive directors on corporate boards could advocate for increase in environmental disclosure is effect could arise if independent non-executive directors would express perspectives from outside the company and more strongly advocate for greater investment in environmental activities. Issues in which independent non-executive directors could advocate for increase investment and disclosure include those relating to the Initiatives components.

To thrive in this current competitive environment, organisations must manage any negative environmental impact of their operations, promote social equity and disseminate information publicly;. One way of achieving this objective is by implementing environmental, ethical and whistle blower polices. It is envisaged that environmental, ethical and whistle blower polices policies implemented to achieve these objectives are likely to result in competitive advantage. Thus, companies with good ethical programs that impacted positively on their environmental activities were likely to increase their disclosure (Patten 2002). On the other hand, a likelihood of a negative relationship between whistle blowing and disclosure has been predicted (Callahan et al. 2002). However, results imply none of the internal policies discussed above impact on disclosure on either the initiative, preservation or responsibility components of environmental disclosure.

7. SENSITIVITY ANALYSIS

Sensitivity analysis is considered essential in any study in which models are built to represent a theoretical measurement system (Saltelli 2002). In accordance with the suggestions from prior research, including that of Saltelli (2002), sensitivity analyses were conducted to determine the robustness of the initial results of the study in the entire environmental performance indicator domain. Tobin's Q (TobQ) was not part of the initial predictors used in the multiple regression analyses because both return on assets (ROA) and TobQ can be used interchangeably as measures of performance and disclosure. However, the TobQ variable was used to test robustness of the results from the initial multiple regression analyses. The predictor, TobQ therefore, replaced ROA in the sensitivity analysis. Results were expected to be similar.

For the initial sensitivity analyses, hierarchical analyses were performed in two separate groups by substituting two mutually exclusive variables, ROA and TobQ in the first group (group 1); and member of board with environmental duties (med) and sustainability committee (SCM) in the second group (group 2). Each of the two groups consisted of two sub-groups. It must be noted that results from the ROA sub-group (of group 1) was from the initial hierarchical analyses performed in the studies. All other subsequent results were, therefore, benchmarked again this sub-group to test the robustness or otherwise of the outcomes. Similarities were recorded amongst all two groups of analyses.

In relation to preservation, both substituted variables in the first group of analysis recorded significant predictions for the demographics and financial variables sets in both sub-groups. Also, the entire four variable sets, namely demographics, stakeholders, legitimacy and financial, were significantly predictive of the initiative component in both sub-groups of the first group. Similar to results from the preservation component, the demographic and stakeholder sets of variables were significantly predictive of the responsibility component. Although this result was also consistent with both sub-groups, the outcome from the ROA sub-group recorded additional significance in the financial variable set.

In the second group, the demographics and the financial variable sets were significantly predictive of the preservation component in both sub-groups. This outcome is consistent with results of the preservation component in both sub-groups of the first group. The initiatives component also showed significance outcomes for the four variable sets in both sub-groups, which is also in agreement with the outcome in the first group of analysis. Furthermore, the demographics, stakeholder and financial variables sets of both sub-groups in the second group were predictive of the responsibility component. This outcome is consistent with the results of the ROA sub-group in the first group of analysis.

It is, therefore, concluded that the outcomes of the repeated analyses indicated the robustness of the outcomes from the initial hierarchical analyses.

8. IMPLICATIONS FOR POLICY AND PRACTICE, LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The outcomes of the current study have some implications for companies (especially multinationals) in both developed and emerging economies, as well as for policy makers. Since companies in similar industry sectors tend to adopt similar patterns of disclosure in the areas relating to water, biodiversity and materials it is envisaged that the outcomes of the current study will communicate to MNEs information disclosed by their industry peers and the level of emphasis accorded to such information.

To enhance their legitimacy, it is expected that companies operating in the metal and mining, transport, energy, utility, chemical or oil and gas industries may focus more resources on the collection and processing of data on the above issues than their counterparts in the non-sensitive industry sectors. Furthermore, companies which are also legally required to provide information on their social responsibility performance in the area of environmental management may focus on disclosures relating to the preservation component.

From a policy perspective, these findings are specifically of much importance to the GRI as the study examines corporate disclosure of the GRI G3 reporting guidelines. The GRI has started making efforts to revise the current G3 guidelines and expects to produce revised guidelines (G4) by May 2013. It is expected that the findings from this study can form part of the inputs to be considered in the upcoming G4. As data collection and processing are costly, the current large number of aspects could also be reduced into fewer components such as the 9 components in this study. This reduction will allow companies to collect data at a lower cost, at the same time not compromising on quality or quantity and be able to provide more relevant outcomes in all three areas of reporting. Lower cost of data collection can also prevent some companies from attempting to 'tick the boxes' in order to meet the quantity of indicators reported by their peer in the industry sector. Furthermore, results from the study provide specific outcomes that can also positively contribute to the ongoing improvements of other environmental reporting guidelines.

Due to certain limitations of the current study, caution should be exercised with respect to the interpretation and generalisation of the results. One important limitation in the study was the small sample size. The small sample size was a result of the few companies that registered their sustainability reports on the GRI database in all the three countries in 2008. The small sample size would therefore limit association of the results with all business types. The small sample sizes achieved for each target country also prevented investigation of regression model differences between those three countries; the data were simply pooled for this study investigation.

Future research should increase the sample size to include both local and multinational companies. Also, the country and employee enhancement variables considered by the current study but not used in the analysis as well as other variables which are applicable to both type of companies could be included. This will enrich the model and make the findings more generalisable.

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Appendix:

Table 1: Descriptive Statistics of Predictors:

Independent Variables	N	Mean	Median	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis
ENCOMP1	67	1.002	1.000	0.551	0.000	2.000	0.062	-1.012
ENCOMP2	67	1.292	1.375	0.510	0.250	2.000	-0.327	-0.877
ENCOMP3	67	1.463	1.500	0.441	0.250	2.000	-0.615	-0.182
Leverage (LOGLEV)	66	0.725	0.735	0.148	0.26	1.02	-0.735	0.724
Liquidity (LOGLIQ) *	67	0.135	0.108	0.258	-0.462	0.727	0.135	-0.067
Return on assets (LOGROA) *	61	-1.044	-0.934	0.336	-2.059	-0.388	-0.761	0.544
Firm age (AGE)	67	0.594	0.590	0.424	0.040	1.770	0.524	-0.468
Board Structure (BST)	67	0.669	0.690	0.179	0.083	1.00	-0.526	0.389
Sustainability/environmental, ethical and whistle blower policy1 (MINPO1)	67	0.582	0.500	0.449	0.00	1.00	-0.334	-1.697
Sustainability/environmental, ethical and whistle blower policy2 (MINPO2)	67	0.306	0.000	0.435	0.00	1.00	0.855	-1.131
Directors' shareholdings (LOGOWNMA) *	66	-2.684	-2.921	0.952	-4.125	-0.246	0.776	0.043
Institutional shareholdings (OWNIN)	66	0.430	0.456	0.220	0.060	0.905	0.115	-0.905
Product diversification (PDI)	67	0.523	0.502	0.273	0.00	1.00	0.195	-0.602
Geographical diversification (GDI)	67	0.459	0.456	0.296	0.00	1.00	0.059	-0.816
Assurance (ASSR)	67	0.619	1.000	0.477	0.00	1.00	-0.503	-1.745
Size (SIZ)	67	3.932	3.983	0.727	1.806	6.066	-0.099	1.417
Industry (INDS)	67	0.545	1.000	0.490	0.00	1.00	-0.184	-1.976

*Skewness statistics < 0-3*s.e.

Table 2: Correlation of Predictors:

	LOGLEV	LOGLIQ	LOGROA	AGE	BST	MINPO1	MINPO2	LOGOWNMA	OWNIN	PDI	GDI	ASSR	SIZ	INDS
LOGLEV	1													
LOGLIQ	.086	1												
LOGROA	-.102	.289*	1											
AGE	.167	.067	.085	1										
BST	.097	.129	.006	.025	1									
MINPO1	-.063	-.097	.108	.079	-.002	1								
MINPO2	-.014	.026	-.069	-.145	-.049	-.790**	1							
LOGOWNMA	-.152	.172	.027	-2.63*	-.280*	.032	-.053	1						
OWNIN	-.042	.167	-.099	-.119	.298*	-.152	.068	.076	1					
PDI	.066	.160	.262*	-.028	.006	.000	.067	.086	.122	1				
GDI	-.099	.032	-.187	-.018	-.064	-.148	.093	.275*	.130	-.011	1			
ASSR	-.008	.074	-.095	-.049	.114	-.082	.077	-.358**	-.044	-.105	-.043	1		
SIZ	-.186	-.219	.223	.155	-.285*	-.219	.232	.009	-.205	-.295*	.104	.076	1	
INDS	-.071	.349**	.314*	.006	.062	-.051	.095	-.053	.042	.209	.080	.398**	-083	1

Table 3: Hierarchical Multiple Regression Analysis Predicting Preservation Disclosure (ENCOMP1):

PANEL A					PANEL B			
Variable Set	**R^2 Change**	**df**	**Partial F**	**Sig. Partial F**	**Variable**	**Part Corr**	**Partial F^a**	**Sig.**
Demographics (SIZ, INDS)	.130	2	4.269	0.018*	Industry (INDS)	.339	7.562	0.001*
Stakeholder (OWNIN, PDI, GDI, ASSR)	.040	4	0.660	0.622	NS			
Legitimacy (BST, INFO1, INFO2, LOGOWNMA	.020	4	0.323	0.860	NS			
Firm-specific/Financial (LOGLEV, LOGLIQ, LOGROA, AGE)	.142	4	2.341	0.069^m	Firm Age (AGE) Return on Assets (LOGROA)	-.293 .198	5.663 2.576	<0.001* 0.050*

Overall Model	R^2 =.332, adjusted R^2=.119; F (4,44)= 2.341,p = 0.069^m
	*≤ .05 considered significant
	^{m} .05<p≤.10 considered marginally significant
	^{a} Partial F for R^2 change and Part Corr. significance tests calculated using Model 11 Error with error df=44

*=p≤0.5; ^{m}=0.5 ≥p ≤.10

Table 4: Hierarchical Multiple Regression Analysis Predicting Initiatives Disclosure (ENCOMP2):

	PANEL A				PANEL B			
Variable Set	R^2 **Change**	**df**	**Partial F**	**Sig. Partial F**	**Variable**	**Part Corr**	**Partial F[a]**	**Sig.**
Demographics (SIZ, INDS)	.100	2	4.173	0.020*	Size (SIZ)	.316	8.333	<0.001*
Stakeholder (OWNIN, PDI, GDI, ASSR)	.106	4	2.215	0.079[m]	Assurance (ASSR)	.265	5.857	<0.001*
Legitimacy (BST, INFO1, INFO2, LOGOWNMA	.145	4	3.037	0.025*	Board Structure (BST)	.364	11.055	<0.001*
Firm-specific/Financial (LOGLEV, LOGLIQ, LOGROA, AGE)	.123	4	2.562	0.051[m]	Firm Age (AGE)	-.305	7.755	<0.001*

Overall Model	R^2=.474, adjusted R^2=.306; F (4,44)= 2.562, p =0.051[m]
	*≤ .05 considered significant
	[m] .05<p≤.10 considered marginally significant
	[a] Partial F for R^2 change and Part Corr significance tests calculated using Model 11 Error with error df=44

  *=p≤0.5; [m] =0.5 ≥p ≤.10

Table 5: Hierarchical Multiple Regression Analysis Predicting Responsibility Disclosure (ENCOMP3):

	PANEL A				PANEL B			
Variable Set	R^2 **Change**	**df**	**Partial F**	**Sig. Partial F**	**Variable**	**Part Corr**	**Partial F[a]**	**Sig.**
Demographics (SIZ, INDS)	.076	2	2.900	0.063[m]	Industry (INDS)	.267	5.435	0.006*
Stakeholder (OWNIN, PDI, GDI, ASSR)	.141	4	2.683	0.041*	Assurance (ASSR)	.297	6.731	<0.001*
Legitimacy (BST, INFO1, INFO2, LOGOWNMA	.038	4	0.718	0.583	NS			
Firm-specific/Financial (LOGLEV, LOGLIQ, LOGROA, AGE)	.167	4	3.168	0.022*	Return on Assets (LOGROA)	.361	9.914	<0.001*

Overall Model	R^2=.422;adjusted R^2=.238; F (4,44)= 3.168, p =0.022*
	*≤ .05 considered significant
	[m] .05<p≤.10 considered marginally significant
	[a] Partial F for R^2 change and Part Corr significance tests calculated using Model 11 Error with error df=44

  *=p≤ 0.5; [m] =0.5 ≥ p ≤.10