Corporate sustainability reporting: Linkage of corporate disclosure information and performance indicators

K.A.K. Gnanaweera, N. Kunori

Publisher: Cogent OA

Journal: *Cogent Business Management*

DOI: http://doi.org/10.1080/23311975.2018.1423872

Corporate sustainability reporting: Linkage of corporate disclosure information and performance indicators

K.A.K. Gnanaweera*, N. Kunori

* Dept. of Environmental Engineering, Faculty of Engineering,
Toyama Prefectural University, 5180 Kurokawa, Imizu-city, Toyama, Japan
Faculty of Art and sciences, Sagami Women's University,
2-1-1 Bunkyo, Minami-ku, Sagamihara-city, Kanagawa, Japan

Abstract

The research was designed to evaluate the determinants of corporate sustainability disclosure practices for 85 Japanese companies listed on Tokyo Stock Exchange (TSE) in the First Section, from 2008 to 2014. The study examined disclosure information from CSR and annual - integrated reports and corporate websites. The study's objective is to measure corporate sustainability disclosure guidelines determination (CSDF rate) and the relationship between CSDF rate and corporate sustainability performance. The content analysis and regression analysis were conducted to examine the research objective. The results of content analysis indicate that listed firms on TSE disclose some extent on environmental, social and economic information but the level of disclosure is vary; CSDF indicator with maximum disclosure level attributed to '*Total amount of greenhouse emissions*' with 99% disclosing rate and the minimum is the '*Index and Grades*' with 0%. Moreover, the study finds mixed results conforming to correlation and regression analysis. Similar to some existing studies, sustainability disclosure level and sustainability performance indicators have no strong association. Because there is a weak positive significant linkage among CSDF rate and water consumption, firm's size, and environmental conservation effort. Nevertheless, to consistent with social values, ensuing the

guidelines and the accuracy of the disclosure information are important for corporate sustainability reporting.

Keywords: CSR, Sustainability, Corporate Disclosure, Performance Indicators

JEL classifications: M14; M10; M19

1. Introduction

Over the years in a devastating climate change, organizations (profit and non-profit) insentiently recognized the importance of the social responsibility to conscientious responsible business to dominate in sustainable development. Momentum of momentarily, corporate financial disclosure is not new, however, non-financial disclosure (ethics, values, principles, environmental progression, innovations, community development, etc.) is not entirely new at all. Non-financial reporting is seen as an essential corporate communication process by most members of a company's stakeholder community (Breitbarth et al., 2010). Today, a profitable business is not remaining as an exclusive status for the economic growth. The awareness of the corporate environmental performance (CEP) is growing as an invaluable information tool for global resources. The sustainability reporting is a useful application to provide environmental information initiated by the organization and as a form to evaluate the environmental initiatives on organization. Increasing value of proper CEP initiatives should be an important bound for the organizations' managerial decisions to increase the value of corporate social responsibility (CSR). Consequently, corporate information could also have expected to fluctuate according to shareholder's view and stakeholder's demand for the organizations (Wang, 2016). Intent behind the reporting on corporate sustainability is to provide the transparent to evaluate the maturity level of the sustainability performance.

The above considerations highlight the importance of linkage of corporate sustainability disclosure information and sustainability performance evaluation for CSR determination. The most important is not just following the guidelines but the accuracy of the disclosure information on environmental, social, and economic measurements. Because difficulties of sustainability performance measurement can be realized as competing frameworks, suggest but not mandate, improper constancy and less consensus on a common reporting guidelines (Carroll; 2001, Hubbard; 2009, Kolk; 1999, and Scholtz et al.; 2014). Disclosing information regarding organization's sustainability performance is a key issue due to its premature status in corporate world. Consistently, Habek and Wolniak (2015) informed that promoting transparency in non-financial information is a key problem on the European Union agenda. But Habek (2013) indicated western part of the Europe is active region for CSR reporting.

Brouwers et al. (2014) explored that Asian region is accounting for huge carbon emission, nearly half of the world's. Therefore, it is important to consider the impact level of environmental responsibility and corporate sustainability from this region too. Further, Brouwers et al. (2014) posit that Asian firms' environmental regulations and its effectiveness on firms' performance has only barely been studied compare to mature market economies in U.S. and European regions. The global impact on climate change cannot be restricted to either western or non-western regions, therefore, it is vital to consider the Asian region's environmental issues and its responsibilities; especially industrialized nations in Asian region. Brouwers et al. (2014) elaborate that Japan is a one of the most prominent region in Asia to consider in any discussion of the impact of environmental regulation on firm performance. Examples include the earth summit in Rio de Janeiro, Brazil, in 1992 organized by the United Nation Conference on Environmental Development (UNCED) was a major event for the Japanese delegations (Hunsberger, 1996) and the Japanese Basic Anti-Global Warming Law of 2010 (Brouwers et al., 2014). Japanese economy was considered as a miracle economy for three

decades; from 1960s to 1980s, gaining continuous rapid improvement in international business arena. As a first developed nation in non-western regions, Japan has gained constant progression for CSR determination too. Japan is one of the largest economies that contribute towards sustainability reporting, in Asian region, compare to other regions; Europe, North America, East Asia, etc. (Kolk; 2005, KPMG; 2008, 2011, 2013 and 2015), therefore, Japanese companies are chosen for the study. Jennifer and Taylor (2007) also found that the extent of overall triple-bottom-line (TBL) reporting is higher for Japanese firms to U.S. firms. Japan is a remarkable example in the global context for improving the environment and economy with experience and lessons learned in the latter half of the 20th Century. Because economic growth since postwar in Japan, the country accompanied environmental destruction and among the advance economies, Japan also have the worst record of environmental damages (Funabashi, 1994). Reviewing Japanese environmental performance from dawn of 21st century, Japan reinforced its procedures to safeguard the accountability for the environmental protection policies and plans with stimulation of governments bodies like Japanese ministry of the environmental (MOE) and its major advisory body the Central Environment Council.

This paper provides an evaluation of Japanese' corporate reporting with an overview of corporate sustainability and responsibility. In this regard, the study's objective is to measure corporate's determination to follow its sustainability reporting guidelines and the corporate sustainability performance measurements. Therefore, two investigations were declared in the study based on corporate sustainability reporting guidelines and performance indicators. The first investigation was to identify, through sustainability disclosure guidelines' percentage (CSDF Rate), whether corporations are following the specific reporting guidelines on environmental, social, and economic measurements (measurements of CSR) which related to sustainability information. Secondly, to analyze the empirical linkage of sustainability disclosure guidelines' percentage (CSDF Rate) and sustainability performance indicators. The

research question of the study is "do sustainability performance indicators have linkage to reveal the corporate determination to follow its sustainability reporting guidelines?"

CSR determination can be illustrating in different artifacts by a company. The most common factor is non-financial reporting trends like '*CSR Reports*' or '*Sustainability Reports*'. The disclosure of corporate environmental, social, and governance aspects has gained an attention to discuss in the recent periods and these aspects are typically covered by CSR (Baron, 2014). Companies use various terms when reporting their CSR activities, therefore, for this study, corporate reports contain non-financial information are published under different kinds of naming, including: sustainability, environmental, corporate citizenship, CSR or any conventional naming, accepts for the study as particular information. The corporate reports contain financial indicators are published under annual or integrated reports. This variety of naming convention represents strategies that carefully arranged than going beyond philanthropy activities (Baron, 2014). The most demanded investigation according to previous literature, involving sustainability or environmental or corporate review, is the relationship between environmental performance and profitability (Ekatah et al., 2011; Saka and Oshika, 2014). This original contribution of the study highlights the point that both corporate sustainability guidelines' determination of Japanese corporations and investigation of linkage between corporate sustainability and responsibility performance and determination to disclose their information according to corporate sustainability reporting guidelines.

To address this research purpose, the remainder of the paper is organized as follows. The Section 2 reviews the existing literature on sustainability reporting, environmental guidelines, sustainability measurement frameworks, and organizational performance measurements. Section 3 illustrates research methodology / materials and section 4 display the results and discussion.

Based on research findings, section 5 conclude on relationship between the disclosed information respect to corporate sustainability performance.

2. Theoretical Perspective

Corporate business process, in the society (collection of individual), exist within the environment. Therefore, their business operates from small business platform to multinational layers within dynamic global environment. Corporate business venture is slanting by different threats in the market but some are seeking for gaining beyond profit venture looking for new opportunities. People cannot look into these issues to compromise because industries who are highly responsible for these global issues, hence, organizations cannot ignore their responsibility towards environmental problems or sustainability impact. Therefore, today's business algorithm is moving towards environmental friendly products or sustainability models due to the climate change and energy resources obstruction. Because, frequently, organizations rely on the environment for resources that they need to operate their business, and in order to acquire resources organizations continuously allied with their environment (Welbeck et al. 2017). Brouwers et al. (2014) claim that studies on the relationship between corporate pollution and firm performance can be broadly divided into mandatory and voluntary approaches. One way to disclose corporate environmental, social, and economic performances for public opinion is a voluntary approach, that is corporate social and environmental reporting (annual or integrated reporting). Welbeck et al. (2017) explored that idea behind the corporate social and environmental reporting behavior is to gain legitimacy or social acceptance. This is one of the exercises has applied a variety of different theoretical perspective, in order to understand the motivation behind corporate social and environmental reporting as a voluntary approach.

Legitimacy theory is one of the dominant theoretical perspectives for corporate, social and environmental reporting and one of the most discussed theories to explain the voluntary approach of social and environmental disclosure information in annual reports (Deegan and Gordon, 1996; Deegan et al., 2002; O'Donovan, 2002; Patten, 1991). This theory built on the concept of organizational legitimacy and this has been described the gap between social and

environmental responsibility aspects that fit into societal expectation attribute and financial performance and corporate reputation aspects that belong to the organization's expectations. The organization cannot ignore their existence in the society due to its social contract where its existence or growth are based on the delivery of some socially desirable ends to society. Further, companies seek to establish compatibility between the social values associated with their practice but due to the dynamic social expectations like economic, legal, and ethical bounds, companies have to operate within these bounds, otherwise, public opinion will be displeased (Dowling and Pfeffer 1975). Based on these aspects, there is always a threat to the organizations their legitimacy. Legitimacy can be accomplished by representing companies' activities which consistent with social values; complying with legislation, community service, environmental audits and conservation, and align with environmental advocates (Mousa and Hassan, 2015). Therefore, corporations become progressively accountable for their social responsibilities other than stock performance under financial viability. The scholars (Aupperle, Carroll, & Hatfield, 1985; Porter and Kramer, 2006), who profoundly occupied on this matter (social responsibility vs financial performance) because they argue that firms do not invest on social responsibility will face unsophisticated disadvantages compared to responsible firms. But one's view of this matter is social responsibility could not bring financial benefits towards corporation or it is an extra cost (McGuire et al, 1988).

However, organizations are pressurized to focus on their activities on social requirements because companies' environmental conduct is very controversial (Christmann, 2004). Empirical research studies argue that organizations commitment towards information disclosure practices to reduce the expectation gap and satisfy the stakeholders for some extent (O'Donovan, 2002). Further, consistent to O'Donovan, (2002), Milne and Patten (2002) also claim that managers' engagement in a legitimation process is also a certain degree to maintain or defend an organization's legitimacy. Therefore, organizations may attempt to achieve legitimacy through

communication to enhance their existence while claiming the reputation. In addition to reputation building, corporate disclosure information may give organization to obtain more benefits too. The sustainability/CSR reporting has been seen as the major communication medium and data source for many scholars who are involved in researches in sustainability and environmental management. In Japan, MoE has already introduced reporting guidelines for the corporate sector from 2003, with rapid continuous amendments. Further, Japanese government advise the consumers to take this information into an account when making an investing or purchasing decision. Accordingly, this study expects, in Japanese context, stakeholder activism is much stronger to exert pressure on Japanese organizations. Therefore, it is predictable that Japanese firms disclose proper information on environmental and sustainability aspects and follow exact guidelines to accomplish the legitimacy of business entity.

3. Literature Review

Once, CSR reporting was a domain for few organizations but today it emerges as a common practice around the world. Reporting its activities is vital for a company to achieve its sustainability in global economy, besides it is an important phase to measurement of a company's social responsibility activities. Reporting conveys information on companies' responsibilities and accountabilities towards society which linked to global economy in altered parameters. According to Porter and Kramer (2007), the significant improvement depicted in sustainability reporting because more than 64% of the multinational companies disclosed on CSR information as a separate report or combine with annual reports. Before beginning of CSR surface most organizations were bound to reveal their financial and shareholder value through annual reports. The naming convention in global reporting is profoundly volunteer basis therefore reports are commonly given in different titles; integrated, environmental, CSR or sustainability, and reporting can take various forms, including web or print, stand alone or combined (GRI, 2011).

Sustainability reporting has a long history to disclose shareholder values but it was merely attached to CEP. The first phase of CSR reporting was highly related to focusing on environmental perspective between 1970s and 1980s however there was no linkage to corporate performance (Marlin and Marlin, 2003) and the first environmental reports were published by companies in the chemical industry due its serious image distraction in 1980s. In additional, tobacco industry is the first entity to take rapid adoption of reporting an earlier than the rest of corporate sectors. The reason behind this rapid adoption was, mainly, ethical investing was a rising matter in this era. Then in 1990s, institutionalizing the triple bottom line concept developed to measure economic, environment, and social, a paradigm shift occurred to 'reporting' on health and safety or community based activities. Therefore, over the last two decades, non-financial reporting has gained remarkable trend with guidelines and poses. Behind this reporting trend expansion has variety of reasons; transparency, stakeholder interest, global business expansion, reputation, shareholder interest, social values, etc. But mainly, companies choose to produce the sustainability reports with intention of accountability while improving internal processes engaging shareholders then persuade more investors to exist the operation in long term other than narrowing into profit. But is it possible to demonstrate the true results by clarifying the disclosed activities than measuring the outcomes?

Siew (2015) explored that stakeholders are increasingly demanding to disclose both economic performance and environmental performance than social practices. Because growth of empirical research on CSR reporting and sustainability management have made to understand that outputs are useful but predictability is inconsistent. The most companies disclose the sustainability information is just to fulfill the reporting purpose according to annual business schedules. But firms, intently, do follow the attempt of sustainability management with understanding its values. Companies should obligate sustainability disclosure as how sustainability affect for the business not how reporting affect the business. Sustainability measurement indexes and variety

of frameworks are developed in different capacities by scholars, practitioners, and bodies. The main objective of the indexes and frameworks is to evaluate and report on managerial decisions on environmental, economic and social impacts. But early editions of indexes and frameworks were developed for environmental performance measurement with mere concentration on sustainability development (Kolk and Mauser, 2002). There are many competing conceptual frameworks to measure and report social and environmental performance of the organization and some are basic or sophisticated but intuitively not beneficial (Hubbard, 2009). Disclosure of Environmental Information (EI) is firstly promoted by Bowen (2009) adopting document analysis (Carreira et al., 2014), but, in preference to Kolk and Mauser (2002) suggest the first author who came up with the model to describe on environmental concerns of business behavior was Petulla in 1987. Parenthetically, there is a complexity and diversity in environmental management system (EMS) practice by companies therefore many academics and practitioners volunteered to study its consistency. From late 1980s, many dedicated studies tried to pinpoint a proper normative models to take an action in order to reach sustainable future (Kolk and Mauser, 2002). The sustainability reporting is a corporate practice, voluntarily, formulated by different number of frameworks and standards invented by different bodies; no precise guidelines to follow and no government regulations yet (Baron, 2014). Some existing, popular, frameworks for corporate sustainability reporting can be described. Primarily, GRI initiated in 1997 with the intention of this reporting framework is to apply as a global structure and today it is a most acceptable and referring guidelines by other guidelines to follow (GRI, 2011; Siew, 2015). In GRI guidelines defined six dimensions to categorize certain activities to disclose; economic, environment, society, labor, product, and human rights (Bradford et al.,2014). Further, some standards in sustainability management are AA1000, SA8000, ISO 14001, AS/NZS, EMAS, and OHSAS 18001. Then several ratings tools can be seen in the global market which measure environmental, social, and corporate governance and performance,

such as Asian Sustainability Rating, Dow Jones Sustainability Index, Bloomberg ESG disclosure scores, and Trucost.

According to Niskala and Pretes (1995) there is evidence on environmental disclosure (ED) that reporting basis can be subjective due to its voluntary basis. Currently, there is high diversity in environmental management concerns and leverage in the reporting structures due to vast number of guidelines according to national level: Japanese Ministry of the Environment (MoE), Portugal Accounting and Financial Reporting Standards, or international frameworks (Carreira et al., 2014; Kolk and Mauser, 2002; Kolk; 2005, Milne and Gray; 2007, Kaufman and Olaru, 2012; Brouwers et al.; 2014; Siew, 2015). The Boston College Center for Corporate Citizenship and Ernest and Young LLP conducted a survey on sustainability reporting in 2013: *Value of Sustainability Reporting*. The following pinpoints are depicted: improved reputation, increase employee loyalty, reduce inaccurate information, increased consumer loyalty, led to waste reduction, etc. GRI's Reporting 2025 Project (2015) schemes how disclosure will progress in the next decade. The Project revealed companies will be held accountable than used to, decision makers of business entities will take sustainability issues intensely into account then ethics and risk management will guide decision makers and technology will play a major role towards sustainability reporting.

In Japan, Ministry of Environment (MoE) has already introduced reporting guidelines for the corporate sector since 2003. MoE Environmental Reporting Guidelines 2007 Version (p.4) stated "Environmental Reporting is a tool for organizations to fulfill their obligations to be accountable regarding their environmental impacts and the environmental aspects of their activities and the status of their environmental impacts and environmental considerations". In 2007 reporting guidelines underline that Japanese commercial activities are getting rapid development in global perspective, par with this movement environment issues are becoming

more complicated. Therefore, the Japanese government needs organizations to disclose information according to their environmental activities appropriately. Some companies are volunteer to follow different guidelines e.g. Toyota Automobiles follows ISO standards (Toyota, 2014) and most Japanese organization tail into MoE guidelines.

But the most important is not the method but the accuracy of the information. Because from potential investors to academics will follow the disclosure information to determine the right potentials on the environmental and social indexes: industrial behavior, EMS models, management principles, labor rights, greenhouse gas emission, energy consumption, etc. Sustainability reporting and organization performance measurements are still a blossom, may be due to volunteer system, so it has yet to be progressed but need a rapid advancement. Some corporate reporting structures are following the standards partially or sometimes null. The perception of this practice is sometimes it looks like is part of a public relations act. So, can corporate performance outline be the true evidence to follow? Carroll (1991) asked "*What does it mean for a corporation to be socially responsible?*" Further academics and practitioners informed that what measurement do corporate follow? and is there any particular stable global standard to follow? In this case, the authors of this study pursue to find out whether corporates are following the sustainability reporting guidelines, to practice CSR, under theme of 'true' corporate citizenship. But it is not too distance future to be mandatory to report organizations' sustainable performance through stakeholder views and strategies that take more than shareholder performance (Hubbard, 2009).

3.2 Hypothesis Development

The above review of the literature has proven that a rigorous effort has been made to examine on the relationship between determinants of sustainability disclosures and corporate sustainability performance. Hence, according to the purpose of this study, following hypotheses

were developed to evaluate the linkage between corporate sustainability disclosure guidelines determination (CSDF Rate) and corporate's financial and non-financial performance:

Environmental Performance Indicators (EPI)

Clarkson et al. (2008) posit that previous empirical studies provides mixed results on the relationship between corporate environmental performance and the level of environmental disclosures. Patten (2002) posits why inconsistent in relation between environmental performance and environmental disclosure in the existing research. Then, Al-Tuwaijri et al. (2004) found significant & positive relationship between good environmental performance & extensive quantifiable environmental disclosure. Further, Freedman and Patten (2004) found in their study that companies with more extensive voluntary environmental disclosures suffered less negative market reactions compare to firms with worse pollution performance. Clarkson et al. (2008) further posit that reason for the mixed results in the existing research can be seen in the research design due to the factors associated with the level of environmental disclosure, inadequate sample selection, and inadequate measures of environmental performance and disclosure. This study pursues to reconsider the relation between environmental performance and the level of environmental and sustainability disclosure information. This study adopts two environmental performance indicators (EPI) as control variables: water consumption (EPI_1; WC) and amount of greenhouse gasses (CO_2) emissions (EPI_2; GHG). The study hypothesizes that:

H1: There is a significant correlation between the extent of corporate sustainability disclosure guidelines determination and environmental performance.

Environmental Accounting

The government initiatives are the main driver of environmental reporting and environmental accounting for Japanese firms (Saka, 2003). The decisive moment was the publication of the

environmental accounting guidelines by the Ministry of the Environment (MoE) in 2000., since then environmental accounting practices were developing rapidly (Kokubu and Nashioka, 2008; Saka, 2003). According to MoE guidelines (2007) environmental accounting is an essential element to estimate the impact of CSR on financial performance and a tool for managing investments and costs related to environmental conservation effort for Japanese companies (Kokubu and Nashioka, 2008; MOE, 2007). Further, Saka (2003) explored that there is a connection between environmental management certification and the introduction of environmental accounting; companies who are certified in environmental management system tend to reveal their environmental activities and performance through their environmental reports than non-certified companies. Therefore, this study adopts environmental conservation investments and costs expressed in monetary terms as a control variable: environmental conservation effort (EE). The study hypothesizes that:

H2: There is a significant correlation between the extent of corporate sustainability disclosure guidelines determination and environmental conservation effort.

Financial Performance Indicators (FPI)

Profit and firm size are another detailed aspect that many scholars have found significant evidence in relationship measurement on environmental/sustainability disclosure. As a result, this study was set off to explore the answer for the main objective, the following two financial indicators are proposed; firm size and profitability.

FPI 1: Firm Size

The studies on relationship between company size and environmental/sustainability disclosure has serval empirical studies (Becker et al., 2010; Clarkson et al., 2008, Dang and Li, 2015; Lopez et al., 2007). The particular studies have attempted to explain why firm size is directly related to disclosure information and these studies argued that bigger firms are

visible and exposed because their size and image (Barth et al.,1996; Welbeck et al., 2017). Empirical researchers in corporate finance also consider firm size an important and fundamental firm characteristic - firm size matters in determining the dependent variables (Dang and Li, 2015; Orlitzky, 2001). Even though all firm size measures are theoretically and empirically different but they are significantly correlated. The size of the firm can be measured in number of ways; market cap, total revenue, and total assets, and these measures are the most prevalent firm size proxies in empirical corporate finance research (Dang and Li, 2015). This study adopts the natural logarithm of total assets as the proxy variable, therefore, the study hypothesizes that:

H3: There is a positive correlation between the extent of corporate sustainability disclosure guidelines determination and firm's size.

FPI 2: Profitability

CSR is important aspect to the sustainable operations of corporations, similarly, profitability is undeniably fundamental to the continuity of any organization. The studies on relationship between profitability and environmental/sustainability disclosure also have several empirical studies (Al-Tuwaijri et al., 2004; Aras et al., 2009; Brine et al., 2006; Hart and Ahuja, 1996; Wagner, 2005; Preston and O'bannon, 1997; Russo and Fouts, 1997; Clarkson et al., 2008;). Whereas some of the studies concluded that there is a positive relationship between profitability and environmental disclosure (Al-Tuwaijri et al., 2004, Hart and Ahuja, 1996; Clarkson et al., 2011). However, several studies failed to find a significant relationship between these two variables (Brammer and Pavelin 2008; Brine et al., 2006; Cowen et al. 1987; Freedman and Jaggi 1982; Hackston and Milne 1996; Patten 1991). Previous studies posit that effect of profit on environmental disclosure have inconsistent relationship. Fairfield and Yohn (2001) explored that there is a small and growing literature examining the determinants of profitability ratios like return on equity (ROE) and return on net operating assets (RNOA). Consequently, return on equity (ROE) use as a variable in this study to signify the profitability ratio. The study hypothesizes that:

H4: There is a positive correlation between
the extent of corporate sustainability disclosure guidelines determination and profitability.

4. The Data

The sample for the study was drawn from the Tokyo Stock Exchange (TSE). Data was gathered for a 7-year period from 2008 to 2014. The Japanese companies belong to the various industrial categories are considered for this study (Retail Trade; Iron & Steel; Wholesale Trade; Electric Appliances; Glass & Ceramics Products; Chemicals; Pharmaceutical; Rubber Products; Oil & Coal Products; Precision Instruments; Transportation Equipment; Electric Power & Gas, Machinery; Nonferrous Metals; Marine Transportation; Construction; Information & Communication; Metal Products; Land Transportation; Pulp & Paper; Foods). The data (disclosed information) were obtained from CSR, environmental or sustainability, integrated or non-integrated annual reports or financial reports in manual formats and web based information. Such published reports for assessment is taken from on Ministry of Economy, Trade and Industry (METI) and corporate websites. The data collections are mainly on sustainability disclosure information to develop the disclosure framework to assess performance disclosure information aspects; environmental, social and economic.

4.1 Variable Definitions

The analysis measurements are based on 1 dependent variable (DV) and 5 major independent variables (IV) related to environmental, sustainability, and financial performance. Tables 1 illustrates the variables and measurements used in the study.

TABLE 1: DESCRIPTION OF VARIABLES

Variables	Description
Dependent	
CSDF Rate	Sustainability disclosure guidelines' percentage
Independent	
CO2 contribution (GHG)	Direct and indirect emissions of greenhouse gas (CO_2)
Water Consumed (WC)	Total water consumption (M3)
Environmental Accounting Indicator (EE)	Investments and costs related to environmental conservation effort
Logarithm of Total Assets (TA)	To measure firm size
Return on Equity (ROE)	To measures a corporation's profitability

CSDF Rate

The '*CSDF Rate'* constitute the dependent variable for the study (refer table 1). The environmental reporting needs the essential items to make environmental reporting work as a tool for environmental communication (MOE, 2007). Data for CSDF Rate derives according to content analysis from annual and integrated reports. To conduct the content analysis, constructed a Corporate Sustainability Disclosure Framework (CSDF) revising the studies of Cochran and Wood (1984), Patten (2002), Cho and Patten (2007), Bowen (2009), Zhongfu et al. (2011), Slapper and Hall (2011), and Habek & Wolniak (2015). For CSDF, mainly, 20 indicators are encompassing on economic success, social integrity, and environmental concern, and quality factors for exemplary reporting guiding principle. Stakeholders use these indicators as tools of communication in reporting, to obtain as useful information. The CSDF data are attributed into two categories; *Essential Information Indicators* (10 indicators) – EII and *Quality Assessment Variables* (10 indicators) – QAV (refer table 2). The EIIs are essential information that included in environmental reporting and which classified into four categories by MoE Environmental Reporting Guidelines (2003;2007): basic information (BI), management performance indicators (MPI), operational performance indicators (OPI) and social performance indicators (SPI). Then, QAVs were recognized to assess the quality of reporting structure according to 2007 MoE guidelines, GRI guidelines- ver. 3.1 (2011), and a user guide of Boston College Center for Corporate Citizenship (2010).

Table 2: CORPORATE SUSTAINABILITY DISCLOSURE FRAMEWORK (CSDF)

Indicator No	Description	
Essential Information Indicators and Category		
1	CEO's Statement	BI
2	Fundamental Requirements of Reporting	BI
3	Summary of the Organization's Business	BI
4	Status of Environmental Management and Policies in activities	MPI
5	Environmental Accounting Information	MPI
6	Material Balance of Organizational Activities (Input/Output)	OPI
7	Total amount of greenhouse gas emissions	OPI
8	Total amount of Water Consumed	OPI
9	Information for Employment	SPI
10	Information for Occupational Health and Safety	SPI
Quality Assessment Variables		
11	Mission and Value statement	
12	Data in a comparable format	
13	Future goals as well as Past Practices	
14	Include BAD news as well as GOOD news	
15	Integrate CSR reporting with Financial Reporting	
16	Third party assurance statement	
17	Summaries of key facts and figures	
18	Interviews and Surveys	
19	Stakeholder Engagement	
20	Index and Grades	

The CSDF consisted of checklist items and rating on scale with twenty (20) primary indicators (EEI and QAV) to calculate the sustainability disclosure guidelines' percentage; also referred as '*CSDF Rate*'. Each category is assigned a score of zero (0) or one (1) which indicate the absence or presence of the attribute in the corporate report for each year (refer Table 3). The scores attributed to the firms, for each year. Afterwards scores expressed as a percentage for each company; refer table 3 for an example for sustainability disclosure guidelines' percentage calculation.

Table 3: Calculation method of sustainability disclosure guidelines' percentage - CSDF Rate

Year	Essential Information Indicators										Quality Assessment Variables										Total Count	Total Indicators	CSDF Rate
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*			
2008	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	16	20	80%
2009	0	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	14	20	70%
2010	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	16	20	80%
2011	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	16	20	80%
2012	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	16	20	80%
2013	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	16	20	80%
2014	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	16	20	80%

Sustainability Performance Indicators

The study considers five corporate sustainability performance indicators as control variables (explanatory), (refer table 1), that may influence sustainability disclosure guidelines' percentage

(CSDF Rate) i.e. CO_2 contribution (GHG), Water Consumption (WC), Environmental conservation effort (EE), Logarithm of Total Assets (TA), and Return on Equity (ROE). The data for these variables are extracted from the CSR reports and integrated-annual reports. These performance indicators are utilized to analyze the empirical linkage on CSDF Rate.

4.2 The Assessment Model

After revising a range of research methods, the methodology utilized a mixed approach, both quantitative and qualitative components. The first component of the analysis is essentially qualitative approach for disclosure guidelines, followed by content analysis technique to arrange the qualitative information in anecdotal and literary form then derive quantitative scales. The second component of the approach is quantitative; in order to test the hypotheses. This study uses the multiple regression model for quantitative approach:

$$Y_{CSDF} = \beta 0 + \beta_1 EPI_1 + \beta_2 EPI_2 + \beta_3 EAI + \beta_4 FPI_1 + \beta 5\ FPI_2 + e$$

Where, Y_{CSDF} = CSDF Rate, ß0 = Constant, $\beta_1 EPI_1$ = Water Consumed (WC), $\beta_2 EPI_2$ = CO_2 contribution (GHG), β_3 EAI= Environmental conservation effort (EE), β_4 FPI_1= Logarithm of Total Assets (TA) $\beta 5$ FPI_2= Return on Equity (ROE), and e = Error Term.

5. Empirical Results

The following section represents the results of the study obtained from the selected variables and information to illustrate the evaluation of Japanese' corporate reporting determination with an overview of corporate sustainability and responsibility. This section mainly divided into two divisions as 'Hypothesis Testing' and 'Disclosure Analysis'. Hypothesis testing is about regression analysis on hypothesis, employing dependent variable and independent variables, then, disclosure analysis about structured content analysis of the disclosure information to

depict the corporate sustainability disclosure guidelines determination through sustainability disclosure guidelines' percentage (CSDF Rate).

5.1 Disclosure Analysis

The major object of this section was to analyze the content of reports according to CSDF rate from corporate sustainability disclosure framework; yearly basis, to analyze the sustainability reporting trend (disclosure guidelines determination). This analysis could helpful to identify the CSR commitment of the companies via guidelines determination and reporting trends. According to chapter 3; *Methodology*, above indicators have divided into two main categories and each category has 10 indicators; EII and QAV. The figure 1 described difference between the EEI and QAV; consistently level for sustainability reporting of selected companies. Therefore, according to the figure 1, 9 indicators of EII have more than 80% information by companies except 11th indicator (77%) and QAV has only 1 variable to achieve more than 80% i.e. 17th; 81% (7th indicator). Further, EII has categorized into four sub-categories according to MoE guidelines: BI, MPI, OPI, and SPI. Among these categories, MPI 1st ,2nd and 3rd in BIs, 4th and OPI 7th and 8th have gained more than 90% for disclosed information. The highest among these sub-categories is 8th OPI i.e. '*Total amount of greenhouse gas emissions*' with 99% disclosing rate. This is a good sign for disclosure information on GHG emission of Japanese corporation.

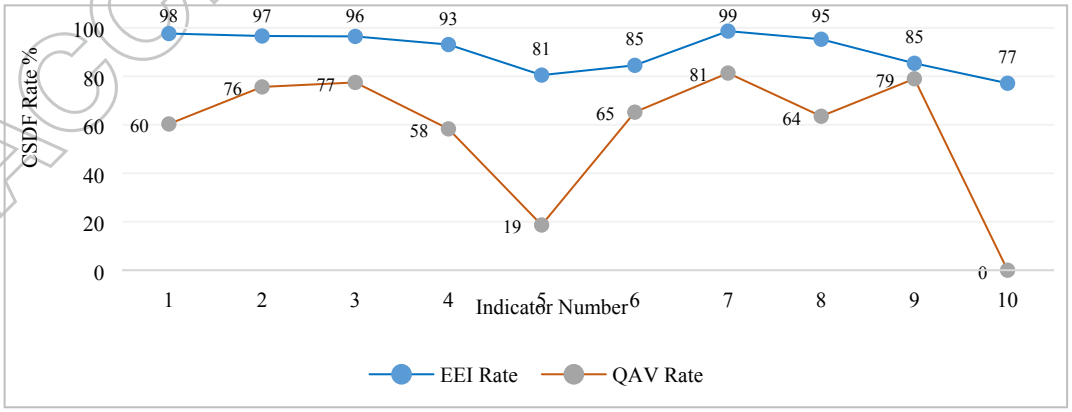

Figure 1: Different Between EEI Rate and QAV Rate

For further evaluation, information on degree of CSDF rate for the selected (20) indicators depicted in the figure 2:

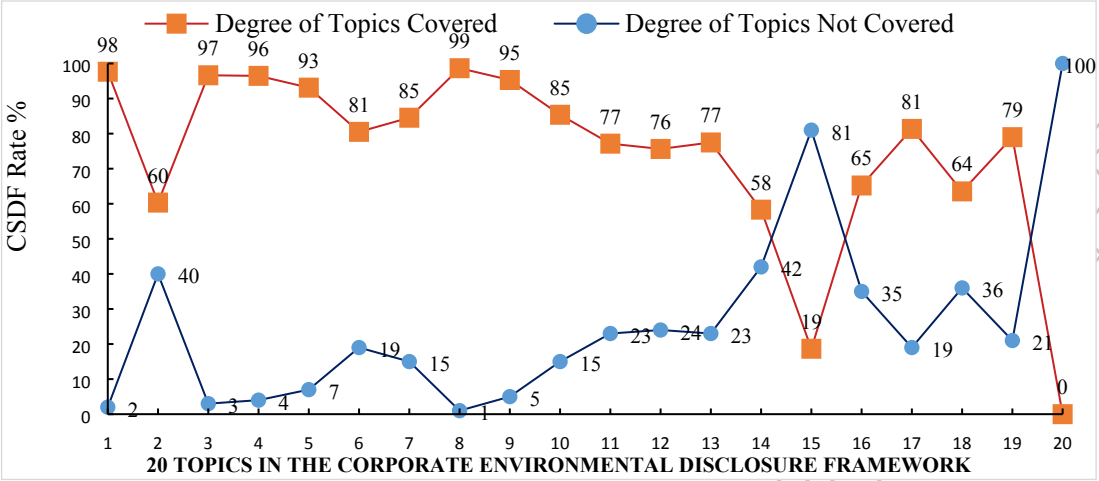

Figure 2: Comparison of Topics covered from Corporate Sustainability Disclosure Framework (CSDF)

CSFD Indicators that showed less CSDF rate by companies is the interesting implication that can be realized in figure 2. Firstly, indicator 20; *Index and Grades*, scored 0%. Reason for this result could be MoE guidelines have no such a mechanism to follow. GRI standards has included in the sustainability guidelines and it is identified as "Application Level" (Sawhny, 2008). Then one of the most important aspects on sustainability guidelines is (16) - *Third party assurance statement*. For the current analysis it has gained the fifteenth position in CSDF outcome; gaining 65%. two of the least indicators are 20th are 15th; in QAV. The figure 1 verified the degree of disclosure on each indicator varies, notably remarkable variation between EII and QAV. Next graph (figure 3) illustrates about sum of information covered on each degrees of disclosure rate from 2008 to 2014:

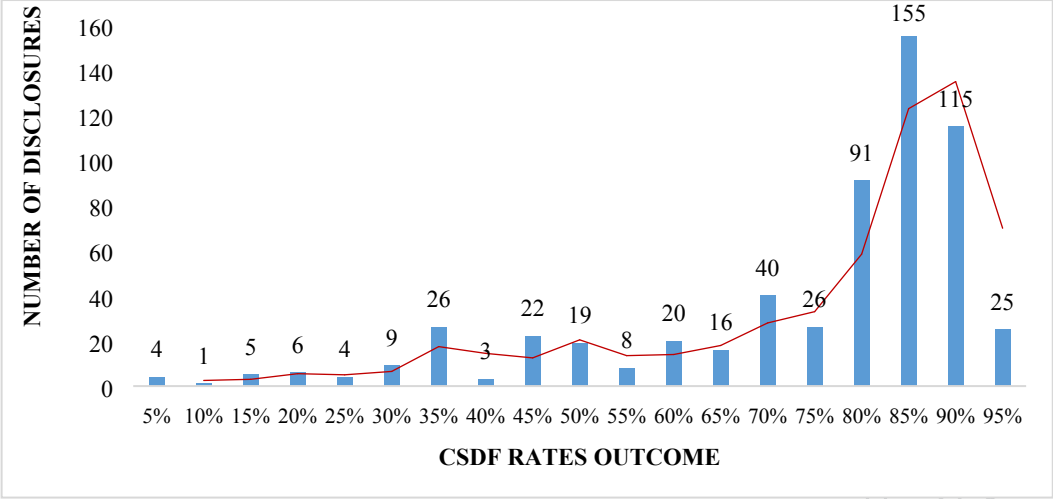

Figure 3: Number of information disclosed by firms in CSDF**, from 2008 to 2014, n = 595**

The Following summary was given in the figure 4 for CSDF rate for each year:

CSDF Rate	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**	**%**
5% to 55%	24	15	14	14	14	14	13	108	18%
60% to 75%	14	17	16	15	15	12	12	101	17%
80% to 95%	49	52	55	56	56	59	59	386	65%
Total	87	84	85	85	85	85	84	595	100%

Figure 4: CSDF rates for each year

The figure 5 (Number of Disclosure Rate covered), top line in the graph represent the values for $0.8 \leq 0.9$ rate with 'light' fluctuation for the drafted years consecutively, overall, the rate for all seven years showed some steady upward trend compare with other rates; downward trend, and $0.5 \leq 0.59$ shows lowest among other degree of rates.

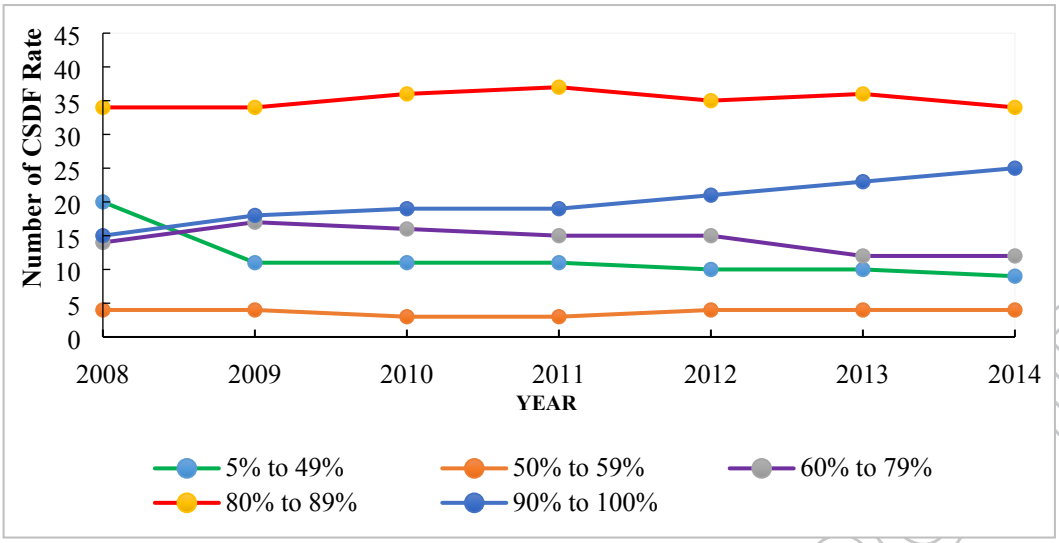

Figure 5: Number of CSDF Rate Coverage from 2008 to 2014

5.2 Hypothesis Testing

The following tables 3, 4, 5 & 6 are illustrating the summary of analysis outcome of correlation and regression analysis. The outcome of table 3 is indicating; the correlation matrix, the correlations between dependent variable (DV) and independent variables (IV) to examine the existing correlation among these variables

Table 3: Correlations Matrix

	Variable	CSDF Rate	GHG	WC	EE	TA	ROE
R-value	CSDF Rate	1.000					
	GHG	.049	1.000				
	WC	.085	.268	1.000			
	EE	.227	.064	.181	1.000		
	TA	.118	.049	-.101	.138	1.000	
	ROE	-.010	.071	.004	.000	-.016	1.000
p-value	CSDF Rate						
	GHG	.117					
	WC	.019	.000				
	EE	.000	.058	.000			
	TA	.002	.114	.007	.000		
	ROE	.399	.043	.458	.495	.353	

Correlation is significant at the 0.05 level, Dependent Variable (DV) - CSDF Rate

Observation from the table 3 indicated low correlation between DV and IVs. The largest and positive relationship; among independence variables, was witnessed for EE (r (593) = .227, P = .00). But this relationship can be depicted as weak correlation; if R ≤ .30 (Field, 2013; Graves

and Waddock, 1994). Further, WC (r (593) = .085, P = .019) and TA (r (593) = .118, P = .002) also show a significant but slight positive relationship with CSDF rate. Then ROE depicted as negative correlation and no evidence to show significant at all (P = .399).

Table 4: Model of Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	.089[a]	.008	.005	.200
2	.233[b]	.054	.049	.190
3	.251[c]	.063	.056	.190
4	.251[d]	.063	.055	.190

a. Dependent Variable: CSDF Rate
b. M1- Predictors: (Constant), Water Consumed, Greenhouse Emission
c. M2- Predictors: (Constant), Water Consumed, Greenhouse Emission, Environmental Effort
d. M3- Predictors: (Constant), Water Consumed, Greenhouse Emission, Environmental Effort, Total Assets
e. M4- Predictors: (Constant), Water Consumed, Greenhouse Emission, Environmental Effort, Total Assets, Return of Equity

Table 4 represents the model of summary which illustrates the overall fit of the model. From M_1 to M_3 indicated significant increment in R and R^2 values but from M_3 to M_4 showed constant observation; the M_2 has R = .233 and R^2 = .054 and M_3 and M_4 depicted constant values for R (.251) and R^2 (.063). After observation, M_1 to M_4 are not accounted for the prediction capacity. Overall, the table 4 suggests that, overall explanatory power of the regression (R^2) is mere for Model 1 to 4 (M1 = 0.8%, M_2 = 5.4%, M_3 and M_4 = 6.3%). This suggests that factors examined in this study are not explaining the variation in the CSDF Rate. Therefore, other variables are not indicated in the models probably better predictors of the relationship between disclosure determination and firms' performance. Jennifer and Taylor, 2007 also found that the results for total disclosures are primarily driven by non-economic disclosures (R^2 = 43.6%) and lowest for economic disclosure (6.2%). Even though, Jennifer and Taylor (2007) find that the extent of overall TBL reporting is higher for Japanese firms to U.S., but they suggested that result could be attributed to the differences in nations' culture, the environmental regulations, and other institutional factors. Hence, the sustainability disclosure information of a firm most likely influence by different stakeholders and other reasons, apparently controlled firms' performance and reputation to a significant extent.

Table 5: Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	*p-value*
1	Regression	.18	2	.09	2.39	.093[b]
	Residual	22.69	592	.04		
	Total	22.88	594			
2	Regression	1.24	3	.41	11.31	.000[c]
	Residual	21.63	591	.04		
	Total	22.88	594			
3	Regression	1.44	4	.36	9.88	.000[d]
	Residual	21.44	590	.04		
	Total	22.88	594			
4	Regression	1.44	5	.29	7.91	.000[e]
	Residual	21.44	589	.04		
	Total	22.88	594			

The results in the table 5 contains an ANOVA (analysis of variance) to test whether the model is significantly better at predicting the outcome. Table 5 split into four section under each model and results can be interpreted according to *F-ratio* and *P-value*, therefore, except M_1, from M_2 to M_4 showed significant improvement for ability to predict the outcome variables with $P < .001$.

Table 6: Coefficients a (Parameters of the Model)

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	*p*
	B	Std. Error	Beta		
(Constant)	.457	.085		5.38	.00
GHG	.003	.007	.018	.42	.67
WC	.006	.005	.053	1.25	.21
EE	.020	.004	.204	4.96	.00
TA	.031	.013	.094	2.31	.02
ROE	-.010	.037	-.010	-.26	.80

a. Dependent Variable (DV): CSDF Rate

The final illustration in table 6, the output is about concerning with the parameters of the model; Coefficients. In table 6, the *b* value is to indicate the relationship between CSDF Rate and each predictor. If the value is positive then there is a positive relationship between the predictor and the outcome, else, it is a negative relationship of a negative coefficient represent. From control variables EE (environmental effort) and TA (company size) are accounted for predictors to an extent, and others not.

According to the results from correlation matrix and regression analysis, the following assessment can be obtainable to discuss the hypothesis testing in the study:

Unlike Al-Tuwaijri et al. (2004), Clarkson et al. (2008), Oba et al. (2012), the results show mixed results in the study for relationship between environmental performance and corporate sustainability disclosure guidelines determination (CSDF rate). In the correlation matrix, only WC (water consumption) shows a positive and significant relationship with CSDF rate contrast to GHG emissions' correlation; a positive but insignificant. Even though WC shows positive relationship, the minor correlation exists in the results ((r (593) = .085, P = .019). Similarly, explanatory power of the regression (R^2) is also mere for WC and GHG (0.8%). Furthermore, while the coefficient estimate for the WC and GHG emission suggest positive relations between CSDF rate, these relationships find not to be statistically significant; *p-values*. Hence, these evidence lend no support hypothesis H_1. For hypothesis H_2, Environmental conservation effort (EE) is positively associated with sustainability disclosure guidelines determination at the level of 22.7%. In addition, the coefficient estimate for the EE suggests a positive result (*p-value* = 0.00). Even though explanatory power of the regression (R^2) is mere for environmental conservation effort variable, the findings of this study do support predicted hypothesis H_2.

The results indicate that, specific to CSDF rate, the relationship between TA (Firm's Size); most voluntary disclosure studies control for firm's size (Clarkson et al., 2008), show a positive and a significant relationship. Thus, in line with the correlation matrix suggest a TA (r (593) = .118, P = .002) and the coefficient estimate for the TA suggests a positive relationship existence too. Therefore, hypothesis H_3 accepted in this study. The result of this study is consistent with many empirical research findings specific to the level of disclosure with firm's size (Hackson and Milne, 1996; Belkaoui and Karpik,

1989; Trotman and Bradley, 1981; Adams and Hart, Brammer and Pavelin, 2006; Burgwal and Vieira, 2014). However, some empirical finding has no significant relationship between firm's size and social responsibility reporting too (Singh and Ahuja, 1983).

Iwata and Okada (2010) claimed that reducing greenhouse gas increased ROE for manufacturing firms in Japan and Hart and Ahuja (1994) claimed that pollution prevention and emissions reduction initiatives showed that ROE could increase operating efficiencies within two years. Further, consistent to Russo and Fouts (1997), Stanwick and Stanwick (1998) also determined that a significant correlation existed between low emissions and profitability for firms. Specific to hypothesis $H_{4;}$ alluded to findings of this study do not support such contention between profitability and corporate sustainability disclosure guidelines determination, given negative and insignificant results in correlation matrix and the coefficient estimate for the profitability variable (ROE) suggest a negative relationship and insignificant existence on CSDF rate. Hence, supporting to previous empirical studies (Cowen et al. 1987; Freedman and Jaggi 1982; Hackson and Milne, 1996; Brammer and Pavelin, 2006; Patten, 1991; Brine et al., 2006), the findings of this study also do not support hypothesis $H_{4;}$ in the Japanese context. In general, the results obtained from regression analysis and correlation matrix show mixed results; since environmental performance indicators (GHG and WC) depicted mixed results, EE and TA depicted a mere positive correlation and regression was significant. The ROE depicted neither positive nor significant correlation at all as variable for profitability measurement.

6. Conclusion

The main objective of the study is to identify the relationship between CSR reporting guidelines of disclosure information and corporate sustainability performance indicators, in the process of recognizing sustainability values according to firms own economic, environmental, and social impacts. The study was empirical, the research designed to evaluate the corporate reporting with overview of corporate sustainability and responsibility for 85 Japanese companies listed in Tokyo Stock Exchange on the first section, from 2008 to 2014. Empirical studies on carbon emission and corporate values were analyzed (Brouwers et al., 2014; Griffin et al., 2012) and Saka and Oshika (2014) also argued on relationship between carbon management disclosure and the market value of equity. The results for previous studies were either positive or neutral; mixed results. This study evaluated to answer for the following research question, 'Do sustainability performance indicators have linkage to reveal the corporate determination to follow its sustainability reporting guidelines?' Nevertheless, the findings indicate mixed results too. This study revealed that outcome of following disclosure guidelines by Japanese firms is vary with its sustainability performance relationship.

From the disclosure analysis investigation results on corporate determination to follow its specific sustainability disclosure guidelines also summarized. There is a variant in the degree of disclosure of CSDF Rate for each indicator and variable in the framework. The results indicate that, for total disclosure on corporate sustainability (environmental, social and economic categories), overall, out of 20 indicators 10 indicators surpassed 80% CSDF rate. But overall, for each year shows same CSDF rates for more than 75%; there is no significant increment for CSDF rates from previous year to final year (2014). There is intensely less progression or fluctuation on disclosure feedback from indicators 11^{th} to 20^{th} compare to EEI rate and QAV rate, because QAV has only one index more than 80%. To suggest, EEI is more likely to dominant than QAV by companies on the First Section of the Tokyo Stock Exchange. In

KPMG Survey for Corporate Responsibility Reporting 2015 specified that 'Japanese companies lead the field in reporting on carbon emissions from the use and disposal of their products and services'. Consistent to KPMG 2015 report, referring to figure 1 and 2, the highest CSDF rate (99%) shows in the CSDF outcome for '*Total amount of greenhouse gas emissions*'. Saka and Oshika (2014) also mentioned "Japanese firms typically display carbon emission level is higher than many comparable countries". But in hypothesis testing, H_1 lend to reject due to the insignificant and weak relationship between GHG emission and CSDF rate in the study.

For the investigation of empirical linkage of sustainability disclosure guidelines and sustainability indicators show; observation of hypothesis testing, variant results too. The primary concern of the results can be seen that EE, TA, and WC have some linkage to reveal the corporate sustainability disclosure guidelines determination to an extent but others not. Therefore, the testing can be realized that predictors of the analyses have variant power to identify the correlation between disclosure information and performance indicators. Although, variables like EE, TA (company size) and WC, have positive but mere correlation and the same output for prediction capacity. Jennifer and Taylor, 2007, also found in their study that company size is supported for all types of disclosures except for economic disclosure and the results for total disclosures are primarily driven by non-economic disclosures. This study explored that one of the environmental performance indicators (GHG emission) did not show significant relationship between CSDF rate. Hence, study revealed, there is no empirical results to inform that corporate sustainability disclosure outcome has significant impact on environmental and financial performances. But, there is a slightly positive significant linkage among corporate sustainability disclosure outcome, company size and environmental conservation effort. Further, analysis indicates that results for the disclosure information are driven by both financial and non-financial indicators to some extent. But results could be an evident that the study does not provide a huge positive explanation for the prediction power of the sustainability indicators. In

general, improving the overall sustainability disclosure to reveal the determination by company itself (planning, reporting, evaluating, updating and managing) is much healthier for the economic issue like scarcity of resources and environmental issue like climate change. Therefore, it is important to disclose information about sustainability management of firms for public view; legitimacy theory. Evidently, Japanese companies' involvement in CSR and quality of sustainability disclosure information can be enhanced while improving their economic performance; larger firms disclose more CSR-related information than smaller firms. According to the sample data for this study from 2008 to 2014, almost every Japanese company has disclosed their environmental conservation investment and cost, measured GHG emission (greenhouse gas) and measured water consumption; however, financial reporting aspect is more robustness than sustainability reporting aspect. Nevertheless, to consistent with social values, ensuing the guidelines and the accuracy of the disclosure information are important for corporate sustainability reporting.

According to empirical results and previous literature in CSR principles, sustainability disclosure and corporate sustainability performance evaluation are still stood under developing concept but momentum is growing (Kolk, 1999; 2003; 2005). Nevertheless, the findings indicate mixed results, therefore, the view that sustainability disclosure information and sustainability performance indicators have no strong association but mere association. Furthermore, there is less improvement in the disclosure information to reveal the performance of the company. Finally, Kolk (2003) indicated that one could view sustainability reporting as mere "window-dressing", due to the pressure of stakeholders companies are willing to disclose their information but once these pressure fade away, the improvement of corporate disclosing also likely to be faded.

ACKNOWLEDGEMENTS

The authors gratefully acknowledge Department of Environmental Engineering, Faculty of Engineering, Toyama Prefectural University, Japan for the assistance and providing resources and inspiration for the research. We also thank Professor Tomonori Kawakami, Department of Environmental Engineering, for his encouragement extend to us.

Reference

Adams, C. A., & Harte, G. (1998). The changing portrayal of the employment of women in British banks' and retail companies' corporate annual reports. Accounting, Organizations and Society, 23(8), 781-812.

Al-Tuwaijri, S. A., Christensen, T. E., & Hughes, K. E. (2004). The relations among environmental disclosure, environmental performance, and economic performance: a simultaneous equations approach. Accounting, organizations and society, 29(5), 447-471.

Aras, G., & Crowther, D. (2008). Governance and sustainability: An investigation into the relationship between corporate governance and corporate sustainability. Management Decision, 46(3), 433-448.

Aras, G., Aybars, A., & Kutlu, O. (2010). Managing corporate performance: Investigating the relationship between corporate social responsibility and financial performance in emerging markets. International Journal of productivity and Performance management, 59(3), 229-254.

Aupperle, K. E., Carroll, A. B., & Hatfield, J. D. (1985). An empirical examination of the relationship between corporate social responsibility and profitability. Academy of management Journal, 28(2), 446-463.

Baron, R. (2014). The evolution of corporate reporting for integrated performance, background paper for the 30th Round Table on Sustainable Development, 25 June 2014. [online] Available at: http://www.oecd.org/sd-roundtable/meetings/30throundtableonsustainabledevelopment.htm [Accessed 22 November 2014.

Barth, M. E., McNichols, M. F., & Wilson, G. P. (1997). Factors influencing firms' disclosures about environmental liabilities. Review of Accounting Studies, 2(1), 35-64.

Becker-Blease, J. R., Kaen, F. R., Etebari, A., & Baumann, H. (2010). Employees, firm size and profitability in US manufacturing industries. Investment Management and Financial Innovations, 7(2), 7-23.

Belkaoui, A., & Karpik, P. G. (1989). Determinants of the corporate decision to disclose social information. Accounting, Auditing & Accountability Journal, 2(1).

Boston College Center for Corporate Citizenship. (2010). How to Read a Corporate Social Responsibility Report. [online] Boston College Center for Corporate Citizenship. Available at: <http://iri.hks.harvard.edu/files/iri/files/how_to_read_a_corporate_social_responsibility_report.pdf > [Accessed 10 June 2015].

Bradford, M., Earp, J. and Williams, P. (2014). Sustainability Reports: What Do Stakeholders Really Want?. Management Accounting Quarterly, 16(1).

Brammer, S., & Pavelin, S. (2006). Voluntary environmental disclosures by large UK companies. Journal of Business Finance & Accounting, 33(7-8), 1168-1188.

Brammer, S., & Pavelin, S. (2008). Factors influencing the quality of corporate environmental disclosure. Business Strategy and the Environment, 17(2), 120–136.

Breitbarth, T., Harris, P. and Insch, A. (2010). Pictures at an exhibition revisited: reflections on a typology of images used in the construction of corporate social responsibility and sustainability in non-financial corporate reporting. Journal of Public Affairs, 10(4), pp.238-257.

Brine, M., Brown, R., & Hackett, G. (2007). Corporate social responsibility and financial performance in the Australian context. Economic Round-up, (Autumn 2007), 47.

Brouwers, R., Schoubben, F., Van Hulle, C. and Van Uytbergen, S. (2014). The link between corporate environmental performance and corporate value: A literature review. Review of Business and Economic Literature, 58(4), pp.343-374.
Burgwal, D. V. D., & Vieira, R. J. O. (2014). Environmental disclosure determinants in Dutch listed companies. Revista Contabilidade & Finanças, 25(64), 60-78.
Carreira, F., Damião, A., Abreu, R. and David, F. (2014). Environmental disclosure: from the accounting to the report perspective. In 16th International Conference on Enterprise Information Systems (ICEIS 2014) (pp. 496-501).
Carroll, A.B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. Business horizons, 34(4), pp.39-48.
Carroll, A.B. (2016). Carroll's pyramid of CSR: taking another look. International journal of corporate social responsibility, 1(1), p.3.
Cho, C.H. and Patten, D.M. (2007). The role of environmental disclosures as tools of legitimacy: A research note. Accounting, organizations and society, 32(7), pp.639-647.
Christmann, P. (2004). Multinational companies and the natural environment: Determinants of global environmental policy. Academy of Management Journal, 47(5), 747-760.
Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. Accounting, organizations and society, 33(4), 303-327.
Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2011). Does it really pay to be green? Determinants and consequences of proactive environmental strategies. Journal of Accounting and Public Policy, 30(2), 122-144.
Cochran, P.L. and Wood, R.A. (1984). Corporate social responsibility and financial performance. Academy of management Journal, 27(1), pp.42-56.
Cowen, S. S., Ferreri, L. B., & Parker, L. D. (1987). The impact of corporate characteristics on social responsibility disclosure: A typology and frequency-based analysis. Accounting, Organizations and society, 12(2), 111-122.
Dang, C., & Li, F. (2015). Measuring firm size in empirical corporate finance. SSRN Electronic Journal.
Deegan, C., & Gordon, B. (1996). A study of the environmental disclosure practices of Australian corporations. Accounting and business research, 26(3), 187-199.
Dowling, J., & Pfeffer, J. (1975). Organizational legitimacy: Social values and organizational behavior. Pacific Sociological Review, 122–136.
Ekatah, I., Samy, M., Bampton, R. and Halabi, A. (2011). The relationship between corporate social responsibility and profitability: The case of Royal Dutch Shell Plc. Corporate Reputation Review, 14(4), pp.249-261.
Fairfield, P. M., & Yohn, T. L. (2001). Using asset turnover and profit margin to forecast changes in profitability. Review of Accounting Studies, 6(4), 371-385.
Freedman, M., & Jaggi, B. (1982). Pollution disclosures, pollution performance and economic performance. Omega, 10(2), 167–176.
Freedman, M., & Patten, D. M. (2004, March). Evidence on the pernicious effect of financial report environmental disclosure. In Accounting Forum (Vol. 28, No. 1, pp. 27-41). Elsevier.
Funabashi, Y. (Ed.). (1994). Japan's international agenda. NYU Press.
Gary O'Donovan, (2002) "Environmental disclosures in the annual report: Extending the applicability and predictive power of legitimacy theory", Accounting, Auditing & Accountability Journal, Vol. 15 Issue: 3, pp.344-371, https://doi.org/10.1108/09513570210435870
Glenn A. Bowen, (2009) "Document Analysis as a Qualitative Research Method", Qualitative Research Journal, Vol. 9 Issue: 2, pp.27-40, doi: 10.3316/QRJ0902027

Graves, S.B. and Waddock, S.A. (1994). Institutional owners and corporate social performance. Academy of Management journal, 37(4), pp.1034-1046.
Habek, P. (2013). Analysis of the European Union Regulatory Requirements with Implications for Sustainability Reporting. Universitatii Bucuresti. Analele. Seria Stiinte Economice si Administrative, 7, p.23.
Habek, P. and Wolniak, R. (2015). Factors Influencing the Development of CSR Reporting Practices: Experts' versus Preparers' Points of View. Engineering Economics, 26(5), pp.560-570.
Hackston, D., & Milne, M. J. (1996). Some determinants of social and environmental disclosures in New Zealand companies. Accounting, Auditing and Accountability Journal, 9(1), 77–108.
Hart, S. L., & Ahuja, G. (1996). Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance. Business strategy and the Environment, 5(1), 30-37.
Hubbard, G. (2009). Measuring organizational performance: beyond the triple bottom line. Business strategy and the environment, 18(3), pp.177-191.
Hunsberger, W. S. (Ed.). (1996). Japan's quest: the search for international role, recognition, and respect. ME Sharpe.
Ingley, C. B. (2008). Company growth and board attitudes to corporate social responsibility. International Journal of Business Governance and Ethics, 4(1), 17-39.
Initiative, G.R. (2011). G3 Sustainability Reporting Guidelines, Version 3.1 Amsterdam: Global Reporting Initiative.
Initiative, G.R. (2015). Sustainability and Reporting Trends in 2025: Preparing for the Future. May, Amsterdam, The Netherlands.
Jennifer Ho, L.C. and Taylor, M.E. (2007). An empirical analysis of triple bottom-line reporting and its determinants: evidence from the United States and Japan. Journal of International Financial Management & Accounting, 18(2), pp.123-150.
Kaufmann, M. and Olaru, M. (2012), March. The impact of corporate social responsibility on business performance–can it be measured, and if so, how. In The Berlin International Economics Congress (Vol. 1, pp. 1-16).
Kokubu, K., & Nashioka, E. (2008). Environmental management accounting practices in Japanese manufacturing sites. Environmental management accounting for cleaner production, 365.
Kolk, A. (1999). Evaluating corporate environmental reporting. Business Strategy and the Environment, 8(4), p.225.
Kolk, A. (2003). Trends in sustainability reporting by the Fortune Global 250. Business strategy and the environment, 12(5), pp.279-291.
Kolk, A. (2005). Sustainability reporting. VBA journaal, 21(3), pp.34-42.
Kolk, A. and Mauser, A. (2002). The evolution of environmental management: from stage models to performance evaluation. Business strategy and the environment, 11(1), pp.14-31.
KPMG. (2008). International survey of corporate responsibility reporting 2008. Amsterdam: KPMG International.
KPMG. (2011). International survey of corporate responsibility reporting 2011. Amsterdam: KPMG International.
KPMG. (2013). International survey of corporate responsibility reporting 2013. Amsterdam: KPMG International.
KPMG. (2015). International survey of corporate responsibility reporting 2015. Amsterdam: KPMG International.

López, M. V., Garcia, A., & Rodriguez, L. (2007). Sustainable development and corporate performance: A study based on the Dow Jones sustainability index. Journal of Business Ethics, 75(3), 285-300.
Marlin, A. and Marlin, J.T. (2003). A brief history of social reporting. Business Respect, 51.
McGuire, J. B., Sundgren, A., & Schneeweis, T. (1988). Corporate social responsibility and firm financial performance. Academy of management Journal, 31(4), 854-872.
Milne, M. J., & Patten, D. M. (2002). Securing organizational legitimacy: An experimental decision case examining the impact of environmental disclosures. Accounting, Auditing & Accountability Journal, 15(3), 372-405.
Milne, M.J. and Gray, R. (2007). Future prospects for corporate sustainability reporting. Sustainability accounting and accountability, 1, pp.184-207.
Ministry of Economy, Trade and Industry, Japan. (2007). Environmental Reporting Guidelines. (Tokyo, Japan, 2007), p.4.
Mousa, G. A., & Hassan, N. T. (2015). Legitimacy Theory and Environmental Practices: Short Notes. International Journal of Business and Statistical Analysis, 2(1), 41-53.
Nishitani, K., Jannah, N., Ridwan, H., & Kaneko, S. (2013). The Influence of Voluntary and Mandatory Environmental Performance on Financial Performance: An Empirical Study of Indonesian Firms (No. DP2013-01).
Niskala, M., Pretes, M. (1995). Environmental Reporting in Finland: A Note on the Use of Annual Reports. Accounting, Organizations and Society, 20: 457-466.
O'Donovan, G. (2002). Environmental disclosures in the annual report: Extending the applicability and predictive power of legitimacy theory. Accounting, Auditing and Accountability Journal, 15(3), 344–371.
Oba, V. C., Fodio, M. I., & Soje, B. (2012). The Value Relevance of Environmental Responsibility Information Disclosure in Nigeria. Acta Universitatis Danubius. Œconomica, 8(6).
Orlitzky, M. (2001). Does firm size confound the relationship between corporate social performance and firm financial performance?. Journal of Business Ethics, 33(2), pp.167-180.
Patten, D. M. (1991). Exposure, legitimacy, and social disclosure. Journal of Accounting and Public Policy, 10(4), 297–308.
Patten, D. M. (1992). Intra-industry environmental disclosures in response to the Alaskan oil spill: a note on legitimacy theory. Accounting, organizations and Society, 17(5), 471-475.
Patten, D.M. (2002). The relation between environmental performance and environmental disclosure: a research note. Accounting, organizations and Society, 27(8), pp.763-773.
Porter, M. E., & Kramer, M. R. (2006). Strategy and society: the link between corporate social responsibility and competitive advantage. Harvard business review, 84(12), 78-92.
Porter, M.E. and Kramer, M.R. (2007). The Link Between Competitive Advantage and Corporate Social Responsibility. Harvard business review.
Preston, L.E. and O'bannon, D.P. (1997) The corporate social-financial performance relationship: A typology and analysis. Business & Society, 36(4), pp.419-429.
Russo, M.V. and Fouts, P.A. (1997): A resource-based perspective on corporate environmental performance and profitability. Academy of management Journal, 40(3), pp.534-559.
Saka, C. (2003). Environmental accounting in Japan-recent evidence.

Saka, C. and Oshika, T. (2014). Disclosure effects, carbon emissions and corporate value. Sustainability Accounting, Management and Policy Journal, 5(1), pp.22-45.
Scholtz, B., Calitz, A.P., Gómez, J.M. and Fischer, F. (2014). Voluntary and Mandatory Company Sustainability Reporting: A Comparison of Approaches. In EnviroInfo (pp. 1-8).
Siew, R.Y. (2015). A review of corporate sustainability reporting tools (SRTs). Journal of environmental management, 164, pp.180-195.
Slapper, T. F., & Hall, T. J. (2011). The triple bottom line: What is it and how does it work? Indiana University Kelley School of Business, Indiana Business Research Center.
Stanwick, P. A., & Stanwick, S. D. (1998). The relationship between corporate social performance, and organizational size, financial performance, and environmental performance: An empirical examination. Journal of business ethics, 17(2), 195-204.
Toyota Motor Corporation. (2014). Sustainability report, 2014. [online] Available at: <http://www.toyotaglobal.com/sustainability/report/sr/pdf/sustainability_report14_fe.pdf> [Accessed 11 March 2015].
Trotman, K. T., & Bradley, G. W. (1981). Associations between social responsibility disclosure and characteristics of companies. Accounting, organizations and society, 6(4), 355-362.
Wagner, M. (2005). How to reconcile environmental and economic performance to improve corporate sustainability: corporate environmental strategies in the European paper industry. Journal of environmental management, 76(2), 105-118.
Wang, J. (2016). Literature Review on the Impression Management in Corporate Information Disclosure. Modern Economy, 7(06), p.725.
Welbeck, E. E., Owusu, G. M. Y., Bekoe, R. A., & Kusi, J. A. (2017). Determinants of environmental disclosures of listed firms in Ghana. International Journal of Corporate Social Responsibility, 2(1), 11.
Zhongfu, Y., Jianhui, J. and Pinglin, H. (2011). The study on the correlation between environmental information disclosure and economic performance-With empirical data from the manufacturing industries at shanghai stock exchange in China. Energy Procedia, 5, pp.1218-1224.

ABOUT THE AUTHOR:

Kamal Gnanaweera is a PhD candidate at Toyama Prefectural University, Japan. The focus area of his research is corporate sustainability and environmental management and their effectiveness in industrial perspective in mature market economies and developing economies. His research interests are to pursue organizations' real problems that inconsistent with social values.

PUBLIC INTEREST STATEMENT:

The industrial system has been responsible for upgrading the quality of life of people around the world. But the current system, however, has encountered to create unpremeditated and serious negative consequences, like climate change and global warming, for the environment at a global level. These consequences can be seen and be found in many layers of the companies, for example, no claims for zero discharges, non-environmental friendly products, industrial water pollution, misleading policies etc. Therefore, industries who are highly responsible for global issues cannot ignore their responsibility towards environmental problems or sustainability impact. Understanding these effects can improve future sustainability management process and policies. In the process of recognizing sustainability values according to firms own economic, environmental, and social impacts, this study explores to measure corporate sustainability disclosure guidelines determination and its relationship with corporate sustainability performance.