Chapter 14
The Impact of Corporate Characteristics on Social Responsibility and Environmental Disclosures in Turkish Listed Companies

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Abstract Corporate social reporting proposes several advantages to corporate entities of our time, for instance; it enhances an entity's image and position, and it strengthens community relations, and legitimizes the entities of activities. This study seeks to explore the nature and extent of the corporate social and environmental reporting (CSER) practices of manufacturing companies listed on the Istanbul Stock Exchange. The study also examines the impact of the corporate characteristics on the CSER disclosures of these listed companies. The sample of the study consists of manufacturing companies listed on the Istanbul Stock Exchange (ISE) in 2010. The related data was collected by adopting content analysis of annual reports of the constituent companies. The relationship between the CSER disclosures with corporate characteristics was investigated with multiple regression analysis. The model includes a dependent variable (i.e. corporate social and environmental reporting index) and eight independent variables (i.e. firm size, profitability, leverage, auditor size, ownership structure, proportion of independent directors on board, listing age, and industry). The contribution of this paper to the literature is of great importance, because there is no prior study in Turkey that has dealt with the relationship between the firm characteristics and corporate social responsibility and environmental reporting disclosure level to this extent.

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S.O. Idowu and K.T. Çaliyurt (eds.), *Corporate Governance*,
DOI 10.1007/978-3-642-45167-6_14, © Springer-Verlag Berlin Heidelberg 2014

14.1 Introduction

Corporate social responsibility and environmental disclosures have been one of the rapidly growing body of accounting literature due to their importance for all stakeholders. 'Pollution, resource depletion, waste, product quality and safety, the rights and status of the workers, and the power of large corporations are issues which have become the focus of increasing attention and concern' (Gray et al. 1987, p. 1). Companies try to make their activities more visible by making voluntary disclosure about their social activities. Some of those voluntary disclosures are directed at investors, whereas others are for the benefit of customers, employees, media, general public, or other stakeholder groups (Simnett et al. 2009). Stakeholders can get additional information about the companies' social responsibility and environmental activities and practices through analyzing their annual reports, web sites, or other sources of information. So, corporate social reporting is a key tool for entities in managing the relationship with their stakeholders (McMurtrie 2005).

Environmental disclosures are one of the most costly disclosures that are made voluntarily (Verecchia 1983). Corporate social reporting and environmental disclosures are costly, but they offer many advantages to the companies. For instance, entity's image and position can be enhanced and advocated by those disclosures which may also strengthen customer and community relations (Williams and Pei 1999). Stakeholders gain an overall understanding of a company's social and environmental performance through this type of reporting (Bouten et al. 2011). Corporate social and environmental disclosures of the companies can be understood much better within legitimacy theory which is discussed in the literature by various researchers (Dowling and Pfeffer 1975; Newson and Deegan 2002; O'Donovan 2002; Staden and Hooks 2007). Especially, poor environmental performers choose to disclose more than the other firms to legitimize their activities (Hughes et al. 2001; Freedman and Patten 2004). Organizations are reluctant to disclose any negative implications of their activities in their reports because of the pressure groups and so tend to disclose positive environmental information more than their counterparts to counter the negative news (Deegan and Rankin 1996). Besides, Dawkins and Fraas (2011) indicate that high environmental performers also tend to disclose voluntary information to distinguish themselves from their competitors.

Corporate social responsibility and environmental disclosures can be presented as a part of annual report, or as a discrete report. Discrete report can be an environmental report itself, or a sustainability report that covers all environmental disclosures and sourcing activities of the entity. There are many studies that focus on the relationship between several company characteristics and social corporate responsibility and environmental disclosures (Williams 1999; Cormier and Gordon 2001; Gao et al. 2005; Hasseldine et al. 2005; Staden and Hooks 2007; Branco and Rodrigues 2008; De Villiers and Van Staden 2011). However, there is no study in Turkey as a developing country that deal with the relationship between the firm characteristics and corporate social responsibility and environmental reporting

disclosure level. This paper will fill this gap by providing an empirical study that analyzes the association between firm characteristics and the corporate social responsibility and environmental reporting.

The rest of this article is organized as follows. In the next two sections, literature review and theoretical framework are provided, respectively. Section 14.4 develops nine hypotheses. Section 14.5 includes the sample, data, and determination of the corporate social and environmental disclosure index. Finally, the conclusion part discusses the results, implications, and limitations of the study.

14.2 Literature Review

In recent years, firms have been evaluated on the basis of not only their financial performance, but also on their social responsibility and environmental performance. Many organizations realized that financial reporting alone no longer satisfies the needs of the shareholders, customers, communities, and other stakeholders for information about the overall organizational performance (Siregar and Bachtiar 2010). So, the companies tend to make disclosures about their corporate social and environmental activities in addition to the financial information. Reporting based on three items (corporate social, environmental, and financial information) is referred to as triple bottom-line reporting by several researchers (Deegan 2004; Abd Rahman et al. 2011; Cormier et al. 2011). Carroll (1979, p. 500) defines corporate social reporting as encompassing 'the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point of time'. Companies try to meet those expectations of the society by making such social responsibility and environmental activities and by disclosing them in several channels. Deegan and Rankin (1996, p. 56) give the definition of environmental disclosures as 'any disclosures pertaining to the organizations' interaction with the environment (i.e. the installation of environmentally friendly machinery, undertaking site rehabilitation, recycling activities, admission of pollution emissions, incurrence of fines relating to environmental misdemeanours, and the like)'. Karim et al. (2006, p. 81) defined corporate social and environmental disclosure as 'the set of information items that relate to a firm's past, present, and future environmental management activities and resulting financial implications'. Social corporate and environmental disclosure communicates the social and environmental effects of an organization's economic actions to particular interest groups within society and to society at large (Gray et al. 1987). Hence, the determinants of corporate financial reporting are different from corporate social reporting in that, while the corporate social reporting appeals to all society, corporate financial reporting's focus is on information needs of investors and creditors (Van Der Laan Smith et al. 2005). Corporate social and environmental disclosures differ from country to country (Williams and Pei 1999; Hooghiemstra 2000; Newson and Deegan 2002; Hope 2003; Freedman and Jaggi 2005; Van Der Laan Smith et al. 2005; Golob and Bartlett 2007), and from industry to industry (Hackston

and Milne 1996; Gray et al. 2001; Newson and Deegan 2002; Freedman and Jaggi 2005; Hasseldine et al. 2005; Clarkson et al. 2008; Sobhani et al. 2009; Bouten et al. 2011; Dawkins and Fraas 2011). Thus, the number of corporate social and environmental disclosure items is higher in the environmentally sensitive industries (Campbell 2003; Bouten et al. 2011). This indication also supports the legitimacy theory, because environmental disclosures are being used to close legitimacy gaps which will be structurally higher in aggregates, chemicals, and petrochemicals than in retailing and brewing (Campbell 2003). Another point about corporate social disclosures is that those disclosures have increased, especially, in developed countries because of increases in legislation, risk, and activities of pressure groups, ethical investors, specific events, awards, economic activities, media interest, societal awareness, and politics (Haniffa and Cooke 2005).

'Corporate social disclosure covers a broad and diverse range of disclosures including product information, environmental impact of corporate operations, labor practices and relations, and supplier and customer relations' (Van Der Laan Smith et al. 2005, p. 124). Several studies categorize corporate social and environmental disclosure into different sub groups. Haniffa and Cooke (2005) categorize it as environmental disclosure, employee disclosure, community disclosure, product disclosure, and value-added disclosure. Sobhani et al. (2009) categorize it as human resource disclosure, consumer and product disclosure, community disclosure, environmental disclosure, and general disclosure.

14.3 Theoretical Framework

While many researchers work out the corporate social reporting and environmental disclosure behavior, there is no consensus on the theoretical framework of this concept. However, there are several theories used to explain the corporate social reporting and environmental disclosure behavior of the entities, such as legitimacy theory, political economy theory, and stakeholder theory (Gray et al. 1995; Cormier and Gordon 2001; Newson and Deegan 2002; O'Donovan 2002; Campbell 2003; Freedman and Jaggi 2005; Naser et al. 2006). Although there is not a consensus in the accounting profession and theoretical accounting literature about why companies disclose information of their social and environmental activities, the number of companies which disclose those information voluntarily has increased (Hackston and Milne 1996).

Legitimacy theory emphasizes the relationship between organizations and the society. Organization is a social institution and its activities and role must be accepted by the society for its survival and growth (Sethi 1978). There are some contracts between organizations and societies through which they can legitimize their activities and sustain their survival and growth (Cormier and Gordon 2001). Therefore, the "social contract" concept which represents the expectations of the society from the organizations is central to organizational legitimacy (Newson and Deegan 2002). Legitimacy theory indicates that as the likelihood of unfavorable

social perceptions of how an organization is acting increases, the level of attempts of organizations to manage these perceptions also increases (O'Donovan 2002). Companies can manage legitimacy effectively (O'Donovan 2002) by determining publics' social and environmental values and perceptions of the corporation and by evaluating the tactics and disclosure options that are available and suitable to meet those expectations. If the companies cannot manage the legitimacy effectively, there will be a gap between the business performance and societal expectations. If this gap continuously widens, the company will lose its legitimacy and its survival will be threatened (Sethi 1978). Therefore, society may act to remove the organization's rights to continued operations (Deegan and Rankin 1996). Lindblom (1994) describes four strategies that firms should adopt to legitimize their business. These strategies are:

- The relevant public may be informed and educated by the organization about actual changes in its performance and activities,
- The organization may seek to change the perceptions of the relevant publics without having to change its actual behavior,
- Perception of the public may be manipulated by the organization by deflecting attention from the issue of concern to other related issues,
- The organization may seek to change external expectations of its performance.

With those strategies, the companies will prevent the "legitimacy gap" and obtain the support of the society. Of course, no organization can completely satisfy all audiences and no manager can completely ignore the expectations of the public, but the management can make their activities as desirable, proper, and appropriate as possible (Suchman 1995).

Stakeholders contain all of the groups that have a direct or indirect relationship with the company (i.e. managers, customers, stockholders, employees, customers, suppliers, and the general public). To survive and to succeed in the long-term entities should gain the support of all of the stakeholders by communicating them via several channels (Van Der Laan Smith et al. 2005). This communication is sustained and the public pressure by stakeholders is responded to by the management by disclosing demanded information voluntarily they demand (Tilt 1994; Freedman and Jaggi 2005). Therefore, management's concern is the continued survival and success of the company and this requires the approval of their activities by the stakeholders (Gray et al. 1995). Corporate social and environmental disclosures sustain communication with a varied set of recipients by giving social, political, and economic messages to avoid possible regulation regarding its disclosure (Naser et al. 2006).

14.4 Hypotheses Development

14.4.1 Firm Size

There is a consensus in the literature that larger firms prefer to disclose more information about their corporate social and environmental activities, and thus make them more visible to the society. This attitude of the firms can be more understandable via the legitimacy theory. Larger firms which are scrutinized by various larger groups would disclose their social activities to legitimize their business (Cowen et al. 1987). Although some studies could not find any significant relationship between size and corporate social reporting and environmental disclosure level (Staden and Hooks 2007; Elsayed and Hoque 2010), there are many others that found a positive relationship between size and corporate social and environmental disclosure level (Belkaoui and Karpik 1988; Hackston and Milne 1996; Choi 1999; Williams 1999; Cormier and Gordon 2001; Gray et al. 2001; Chau and Gray 2002; Freedman and Jaggi 2005; Gao et al. 2005; Haniffa and Cooke 2005; Hasseldine et al. 2005; Naser et al. 2006; Branco and Rodrigues 2008; Clarkson et al. 2008; Monteiro and Aibar-Guzmán 2010; Siregar and Bachtiar 2010; Abd Rahman et al. 2011; Cormier et al. 2011; Uwuigbe 2011; Andrikopoulos and Kriklani 2012). Thus, the proposition is constructed as:

H1. There is a positive association between the firm size (as measured by sales revenues) and corporate social and environmental disclosure level.

14.4.2 Performance

High performing entities tend to disclose more information than low performers because they can afford to spend more on environmental activities (Freedman and Jaggi 2005). To legitimize their existence by demonstrating their contribution to the society's well being, profitable companies disclose more social information (Haniffa and Cooke 2005). In the literature, there are many studies that could not find any significant relationship between corporate social and environmental disclosure level and corporate performance (Belkaoui and Karpik 1988; Hackston and Milne 1996; Chau and Gray 2002; Freedman and Jaggi 2005; Clarkson et al. 2008; Monteiro and Aibar-Guzmán 2010; Siregar and Bachtiar 2010; Abd Rahman et al. 2011). However, there are also many studies that have denoted positive association between corporate social and environmental disclosure level and corporate performance (Cormier and Gordon 2001; Gray et al. 2001; Haniffa and Cooke 2005; Branco and Rodrigues 2008; Uwuigbe 2011). Hence, the hypothesis is proposed as follows:

H2. There is a positive association between the performance (as measured by return on equity (ROE)) and corporate social and environmental disclosure level.

14.4.3 Leverage

There is not a common view in the literature about the association between the corporate social and environmental disclosure level and leverage. According to some researchers, the companies with high debt ratio tend to disclose more detailed information to assure investors and lenders than those who have low levels of risk (Naser et al. 2006), to reduce uncertainty (Iatridis 2011), and to avoid agency costs (Jensen and Meckling 1976). According to another view, as the debt of the companies' increases, they prefer not to disclose much information because debt holders do not require information as shareholders (Rahman 2002). Negative association between leverage and social disclosure indicates that managers of companies with debt to equity ratios tend to choose an accounting procedure that reduces reported earnings (Belkaoui and Karpik 1988). Therefore, management of highly leveraged firms is likely to be adverse to make environmental disclosure in their company's reports (Karim et al. 2006). There are contradictory results in prior studies which analyze the relationship between leverage and environmental disclosure level. Some have found a negative relationship (Belkaoui and Karpik 1988; Cormier et al. 2011; Andrikopoulos and Kriklani 2012), some a positive one (Choi 1999; Cormier and Gordon 2001; Naser et al. 2006; Clarkson et al. 2008), and others a non-significant relationship (Chau and Gray 2002; Freedman and Jaggi 2005; Haniffa and Cooke 2005; Karim et al. 2006; Siregar and Bachtiar 2010; Abd Rahman et al. 2011; Cormier et al. 2011). By taking the literature into consideration, proposition is developed as follows:

H3. There is negative association between the leverage (as measured by debt to total assets) and corporate social and environmental disclosure level.

14.4.4 Ownership Structure

Agency theory indicates that the separation between ownership and management causes agency costs because of the conflicts of interest between contracting parties (Jensen and Meckling 1976). There are some studies that could not find any significant relationship between ownership structure and corporate social and environmental disclosure (Choi 1999; Naser et al. 2006). Many studies also propose that the wider the ownership diffusion, the higher the level of corporate social and environmental disclosure level (Chau and Gray 2002; Cormier et al. 2011). Thus, the fourth hypothesis is constructed as:

H4. There is a positive association between ownership diffusion and corporate social and environmental disclosure level.

14.4.5 Auditor

The auditors' guidance affects the companies' corporate social and environmental disclosure behavior. As the auditing firm size increase, they are less subject to the influence of their clients and the level and quality of the corporate social reporting and environmental disclosure will also increase (Choi 1999). The level of disclosures of the companies which are audited by big auditing firms will be high because they tend to follow internal procedures and controls that are required by their affiliated international auditing firms (Uwuigbe 2011). Contrary to expectations, however, Chau and Gray (2002) found no significant relationship between the auditing firm size and the corporate social disclosure level. Yet, there are some studies that indicate positive association between auditing firm size and corporate social and environmental disclosure level as expected (Choi 1999; Uwuigbe 2011). Hence, the hypothesis is developed as:

H5. There is a positive association between the size of auditor and corporate social and environmental disclosure level.

14.4.6 Independent Directors

Presence of independent directors on the board as a representative of other stakeholders put pressure on the management to behave on their behalf (Haniffa and Cooke 2005). Moreover, the existence of independent directors plays a crucial role in corporate governance by forcing the entity to release more information about its activities (Akhtaruddin et al. 2009). There are contradictory results in the literature about the affect of the presence of independent directors on the disclosure level of the corporations. Some studies found negative relationship between the ratio of independent directors and corporate social and environmental disclosure level (Haniffa and Cooke 2005), some found no significant association (Naser et al. 2006), and still others found a positive association (Barako and Brown 2008; Kathyayini et al. 2012). The proposition is thus constructed as:

H6. There is a positive association between the number of independent directors on the board and corporate social and environmental disclosure level.

14.4.7 Institutional Ownership

Jensen and Meckling (1976) propose that institutional investors play an important role in the monitoring process of the companies. Karim et al. (2006) suggests that large institutional shareholders' influence the management due to their possible effect on the price of stocks. For example, the sale of stock by a large institutional

investor can cause a large drop in a company's stock price. The existence of the institutional owners forces the management to make more disclosure about their corporate social and environmental activities (Naser et al. 2006). The proposition is constructed as:

H7. There is a positive association between the institutional ownership and corporate social and environmental disclosure level.

14.4.8 Board Size

Larger board size will make the monitoring process more effective and this will force management to disclose more corporate social and environmental information (Cormier et al. 2011). Said et al. (2009), Siregar and Bachtiar (2010), Cormier et al. (2011), and Kathyayini et al. (2012) have found significant positive relationship between board size and corporate social and environmental disclosure level. The proposition is constructed as:

H8. There is a positive association between the board size and corporate social and environmental disclosure level.

14.4.9 Industry

Industry is a factor that has potential to affect the corporate social and environmental reporting disclosure level of the entities (Hackston and Milne 1996). Industry will affect the corporate social and environmental reporting disclosure level of the entities because pollution propensity and outside monitoring vary from industry to industry (Dawkins and Fraas 2011). The sectors may be divided as "more environmentally sensitive or high profile" and "less environmentally sensitive or low profile" according to their activities' possible effect on the environmental pollution and exploitation and their exposure to the political and social environment (Newson and Deegan 2002; Campbell 2004). Those corporations which operate in the environmentally sensitive sectors such as electricity and utility or high profile industries such as raw material extraction, chemical, wood and paper are more likely to disclose more about environmental issues (e.g. waste recycling, energy conservation and pollution control) and corporate social activities in order to create a positive social image (Newson and Deegan 2002; Gao et al. 2005). Companies in high environmentally sensitive sectors try to legitimize their activities (Campbell 2003; Prado-Lorenzo et al. 2009) and engage in reputation building activities (Hasseldine et al. 2005) by disclosing more information about their operations. Karim et al. (2006) have found that petroleum industry has the highest average score of corporate social and environmental reporting because it is one of the most pollution prone industries. According to Haniffa and Cooke (2005)

chemical industries are likely to disclose more environmental information to show their sensitivity to environmental problems and similarly consumer oriented industries can be expected to disclose their social activities to enhance their corporate image. Brown and Deegan (1998) proved that entities in industries such as chemicals, forestry and forest products, gold etc. make more environmental disclosure to confirm legitimization motive by corporate managers. Hence, the hypothesis is developed as follows:

H9. Corporate social and environmental reporting disclosure level is affected by the type of industry.

14.5 Research Methodology

14.5.1 Data

The sample of the study consists of manufacturing companies listed on the Istanbul Stock Exchange (ISE) in 2010. There are 138 manufacturing companies from various industries such as food, beverage; wood, paper, printing; chemical, petroleum, plastic; basic metal; metal products, machinery; nonmetal mineral products; textile, leather. Previous studies obtain the related data by examining mostly annual reports (see for example, Hackston and Milne 1996; Williams 1999; Williams and Pei 1999; Cormier and Gordon 2001; Hughes et al. 2001; Chau and Gray 2002; Newson and Deegan 2002; Campbell 2003; Gao et al. 2005; Haniffa and Cooke 2005; Hasseldine et al. 2005; Hossain and Reaz 2007; Brüggen et al. 2009; Sobhani et al. 2009; Elsayed and Hoque 2010; Bouten et al. 2011; De Villiers and Van Staden 2011), web sites (Williams and Pei 1999; Clarkson et al. 2008; Orens et al. 2009) or other sources such as environmental reports (Clarkson et al. 2008) and sustainability reports of the companies separately. Some of the studies get the data by analyzing all of those reports together (Freedman and Jaggi 2005; Van Der Laan Smith et al. 2005; Staden and Hooks 2007; Branco and Rodrigues 2008). Most of the prior studies have used annual reports because they are printed regularly and are widely read (Gray et al. 1995), have a widespread distribution (Unerman 2000), are the most commonly preferred measure of corporate social and environmental disclosure (Tilt 1994), and are more accessible to researchers compared to other corporate reports (Woodward 1998). Taking into consideration such related literature, we have also used the annual reports of the firms. The annual reports of companies were downloaded for the year 2010 from their corporate web sites. However, annual reports of some companies were unavailable on their web sites. So, we requested the annual reports of those firms via email. Most of them responded and sent their annual reports again by email or cargo. As a consequence, the final sample of our study comprised 131 corporations.

The sample consisting of 131 manufacturing firms is broken down into seven sectors based on the ISE industry classification as shown in Table 14.1.

Table 14.1 Industrial breakdown of sample firms

Industries	Frequency	Percent
Food, beverage	18	13.7
Wood, paper, printing	16	12.2
Chemical, petroleum, plastic	21	16.0
Basic metal	14	10.7
Metal products, machinery	22	16.8
Nonmetal mineral products	26	19.8
Textile, leather	14	10.7
Total	131	100.0

14.5.2 Corporate Social and Environmental Reporting Disclosure Index

In the literature, generally, content analysis is performed to determine the disclosure level of the companies. Content analysis is defined by Krippendorff (1980, p. 21) as "a research technique for making replicable and valid inferences from data according to their context". In prior studies, various techniques of content analysis have been used. Some are based on counting words (Campbell 2004; Haniffa and Cooke 2005; Gao et al. 2005); others on counting lines or sentences (Williams and Pei 1999; Hughes et al. 2001; Newson and Deegan 2002; Hasseldine et al. 2005; Sobhani et al. 2009; De Villiers and Van Staden 2011), and still others pages (Unerman 2000) that refer to social corporate and environmental activities of the entity. Pros and cons may be cited for each of those techniques. Counting words, sentences or lines may be a useful way of determining disclosure level, but they omit the graphs, charts, and photographs which are mostly used to disclose the corporate social and environmental information (Preston et al. 1996; Unerman 2000) and thus may cause enumeration errors (Unerman 2000). There are also many studies that check presence or absence of the disclosure item to determine the disclosure level (Choi 1999; Williams 1999; Chau and Gray 2002; Haniffa and Cooke 2005; Freedman and Jaggi 2005; Staden and Hooks 2007; Branco and Rodrigues 2008; Elsayed and Hoque 2010; Bouten et al. 2011). Following these studies, we have performed a content analysis by analyzing the annual reports of the companies about social corporate responsibility and environmental disclosures. There are 11 items, 5 of them under social responsibility, and other 6 under environmental disclosure. Each of these items is evaluated according to its presence or absence. An item is scored "1" if it was disclosed and "0" otherwise. Thereby, the corporate social and environmental disclosures score (CSESCOR) is formulated as follows (Hossain and Reaz 2007):

$$\mathbf{CSESCOR} = \sum\nolimits_{j=1} \frac{d_j}{n}$$

Where;

$d_j = 1$ if the item is disclosed; 0 otherwise
n = number of items

Table 14.2 Corporate social and environmental disclosure index

Social responsibility disclosure index		**Min.**	**Max.**	**Mean**	**Std. Dev.**
1.	Sponsoring public health	0.00	1.00	0.305	0.46
2.	Sponsoring sport activities	0.00	1.00	0.305	0.46
3.	Sponsoring cultural recreations	0.00	1.00	0.335	0.47
4.	Sponsoring education	0.00	1.00	0.549	0.49
5.	Charitable donations	0.00	1.00	0.473	0.50
Environmental reporting disclosure index		**Min.**	**Max.**	**Mean**	**Std. Dev.**
6.	Environmental policy	0.00	1.00	0.656	0.47
7.	Environment friendly products	0.00	1.00	0.351	0.47
8.	Environmental indicators	0.00	1.00	0.358	0.48
9.	Environmental awards and certificates	0.00	1.00	0.564	0.49
10.	Environmental costs	0.00	1.00	0.007	0.08
11.	Environmental education for employees and others	0.00	1.00	0.297	0.45
	Average social responsibility disclosure index	0.00	0.91	0.382	0.27

Corporate social and environmental reporting disclosure items are presented in Table 14.2. The average of the corporate social and environmental reporting disclosure index score is 38.2 %. There are some companies that disclose none of the corporate social and environmental reporting items, there are also some companies that disclose 91 % of them. The most highly disclosed items are environmental policy (mean = 65.6 %), environmental awards and certificates (mean = 56.4 %), sponsoring education (mean = 54.9 %), and charitable donations (mean = 47.3 %). The least disclosed item is environmental costs (mean = 0.7). Majority of the items are disclosed between 30 % and 50 % level; so, there is not a huge difference between the means of disclosure items among Turkish companies.

14.5.3 Model Development

Ordinary Least Square (OLS) regression is employed to explore the association between the explanatory variables and corporate social and environmental disclosure level. We have initially examined this relationship with three different research models by changing the dependent variable. In the first model, the dependent variable is the total corporate social and environmental reporting index. In the second and third models, we have divided the total corporate social and environmental reporting index into corporate social reporting index and environmental reporting index and analyzed them separately. There are seven independent variables in Model 1, Model 2, Model 3 as sales, return on equity (ROE), leverage, auditing firm size, ownership diffusion, proportion of independent directors on the board, and listing age. We further developed another three models by adding industry as an independent variable. There are 14 independent variables in those

research models. Seven of the fourteen variables are industry-specific which are included into model to explore the effect of the industry on the corporate social and environmental disclosure level of the corporations. Model 1, Model 2, Model 3, Model 4, Model 5, and Model 6 are presented below:

Model 1.

$$\text{CSESCOR} = \beta_0 + \beta_1 \text{SALES} + \beta_2 \text{ROE} + \beta_3 \text{LEVER} + \beta_4 \text{AUDIT} + \beta_5 \text{OWDIF} + \beta_6 \text{INDIR} + \beta_7 \text{LAGE} + \varepsilon$$

Model 2.

$$\text{CSSCOR} = \beta_0 + \beta_1 \text{SALES} + \beta_2 \text{ROE} + \beta_3 \text{LEVER} + \beta_4 \text{AUDIT} + \beta_5 \text{OWDIF} + \beta_6 \text{INDIR} + \beta_7 \text{LAGE} + \varepsilon$$

Model 3.

$$\text{ESCOR} = \beta_0 + \beta_1 \text{SALES} + \beta_2 \text{ROE} + \beta_3 \text{LEVER} + \beta_4 \text{AUDIT} + \beta_5 \text{OWDIF} + \beta_6 \text{INDIR} + \beta_7 \text{LAGE} + \varepsilon$$

Model 4.

$$\text{CSESCOR} = \beta_0 + \beta_1 \text{SALES} + \beta_2 \text{ROE} + \beta_3 \text{LEVER} + \beta_4 \text{AUDIT} + \beta_5 \text{OWDIF} + \beta_6 \text{INDIR} + \beta_7 \text{LAGE} + \beta_8 \text{XFOOD} + \beta_9 \text{XPAPER} + \beta_{10} \text{XCHEM} + \beta_{11} \text{XMET} + \beta_{12} \text{XMACH} + \beta_{13} \text{XMINR} + \beta_{14} \text{XTEXT} + \varepsilon$$

Model 5.

$$\text{CSSCOR} = \beta_0 + \beta_1 \text{SALES} + \beta_2 \text{ROE} + \beta_3 \text{LEVER} + \beta_4 \text{AUDIT} + \beta_5 \text{OWDIF} + \beta_6 \text{INDIR} + \beta_7 \text{LAGE} + \beta_8 \text{XFOOD} + \beta_9 \text{XPAPER} + \beta_{10} \text{XCHEM} + \beta_{11} \text{XMET} + \beta_{12} \text{XMACH} + \beta_{13} \text{XMINR} + \beta_{14} \text{XTEXT} + \varepsilon$$

Model 6.

$$\text{ESCOR} = \beta_0 + \beta_1 \text{SALES} + \beta_2 \text{ROE} + \beta_3 \text{LEVER} + \beta_4 \text{AUDIT} + \beta_5 \text{OWDIF} + \beta_6 \text{INDIR} + \beta_7 \text{LAGE} + \beta_8 \text{XFOOD} + \beta_9 \text{XPAPER} + \beta_{10} \text{XCHEM} + \beta_{11} \text{XMET} + \beta_{12} \text{XMACH} + \beta_{13} \text{XMINR} + \beta_{14} \text{XTEXT} + \varepsilon$$

where:

CSESCOR	Total Corporate Social and Environmental Reporting items disclosed/maximum score for firm
CSSCOR	Total Corporate Social Reporting items disclosed/maximum score for firm
ESCOR	Total Environmental Reporting items disclosed/maximum score for firm
SALES	Total sales revenues

ROE	Return on equity
LEVER	Leverage as measured by total liabilities divided by total assets
AUDIT	Dummy variable for audit firm size, coded as 1 for Big-4 and 0 otherwise
OWDIF	Ownership diffusion (i.e. percentage of shares held by unknown shareholders)
INDIR	Proportion of independent directors on the board
LAGE	Listing age
XFOOD	Food, beverage (Dummy variable; 1 for XFOOD, 0 for else)
XPAPER	Wood, paper, printing (Dummy variable; 1 for XPAPER, 0 for else)
XCHEM	Chemical, petroleum, plastic (Dummy variable; 1 for XCHEM, 0 for else)
XMET	Basic metal (Dummy variable; 1 for XMET, 0 for else)
XMACH	Metal products, machinery (Dummy variable; 1 for XMACH, 0 for else)
XMINR	Nonmetal mineral products (Dummy variable; 1 for XMINR, 0 for else)
XTEXT	Textile, leather (Dummy variable; 1 for XTEXT, 0 for else)

14.6 Analysis and Results

14.6.1 Descriptive Statistics

Table 14.3 shows the descriptive statistics for the independent variables of the research model. The average return on equity (ROE) ratio is 3 %. The average sales revenue is 1,015,119,239.79 TL (Turkish Liras). Firms are moderately leveraged (44 %). Sixty-one percent of the corporations are clients of the Big-4 auditing firms. The average mean of shares held by unknown shareholders is 35.02 %. On average, 5 % of board members are independent directors. This ratio is quite below the average ratio provided in two other studies; namely, Haniffa and Cooke (2005) and Akhtaruddin et al. (2009), respectively, 49.87 % and 38.3 %. The average listing age of the firms is 17.67 years. Since the ISE was established in 1985, the average listing age of the firms is not very high.

14.6.2 Correlation Analysis

The multicollinearity among the explanatory independent variables and the dependent variable is tested by the Pearson correlation analysis. The results of the

Table 14.3 Descriptive statistics for the independent variables (N = 131, year 2010)

	Minimum	Maximum	Mean	Std. Deviation
Corporate social and environmental reporting disclosure index	0.00	0.91	0.38	0.27
Sales (TL[a])	4,090,310.00	26,165,954,000.00	1,015,119,239.79	2,937,426,045.47
Return on equity	−0.76	0.56	0.03	0.23
Leverage	0.02	1.04	0.44	0.22
Auditing firm size	0.00	1.00	0.61	0.49
% of shares held by unknown shareholders	0.49	95.07	35.02	20.41
Independent directors	0.00	0.60	0.05	0.11
Listing age	1.00	27.00	17.67	6.09

[a]Turkish Liras

analysis are presented in Table 14.4. Findings of the correlation analysis shows that corporate social and environmental reporting disclosure index, corporate social disclosure index, and environmental reporting disclosure index have significant positive correlation with sales and auditing firm size. Corporate social and environmental reporting disclosure index has significant negative correlation with textile industry. However, multicollinearity is not a problem in this analysis because all of the significant correlation coefficients are below the threshold values of 0.8 (Bryman and Cramer 2001) or 0.90 (Hair et al. 2009).

14.6.3 Multivariate Analysis

Results of the OLS regression are presented in Table 14.5. This analysis shows that all of the models are statistically significant. Adjusted R^2 values of models 1, 2, and 3 are 0.256, 0.214 and 0.157, respectively, implying that the research model explains 25.6 % of the variance in corporate social and environmental reporting disclosure index, 21.4 % of the variance in corporate social reporting disclosure index, and 15.7 % of the variance in environmental reporting disclosure. After the industry is introduced into the research model as an explanatory variable, the adjusted R^2 values of the models do not change much. The adjusted R^2 of values of models 4, 5, and 6 are 0.253, 0.212, and 0.142, respectively, implying that the research model explains 25.3 % of the variance in corporate social and environmental reporting disclosure index, 21.2 % of the variance in corporate social reporting disclosure index, and 14.2 % of the variance in environmental reporting disclosure. Thus, inclusion of industry did not improve the expected power of independent variables. Adjusted R^2 values of previous studies using OLS regression vary from 9.50 % to 46.70 % [(e.g. Hackston and Milne (1996), 46.70%; Williams (1999), 21.60 %; Freedman and Patten (2004), 9.50 %; Siregar and Bachtiar (2010),

Table 14.4 Pearson correlation analysis

	CSESCOR	CSSCOR	ESCOR	SALES	ROE	LEVER	AUDITOR	OWDIF	INDIR	LAGE	XFOOD	XPAPER	XCHEM	XMET	XMACH	XMINR	XTEXT
CSESCOR	1																
CSSCOR	0.865**	1															
ESCOR	0.863**	0.492**	1														
SALES	0.389**	0.313**	0.359**	1													
ROE	0.157	0.169	0.102	0.143	1												
LEVER	−0.073	−0.110	−0.016	0.167	−0.470**	1											
AUDITOR	0.370**	0.393**	0.246**	0.187*	0.078	−0.044	1										
OWDIF	−0.168	−0.161	−0.129	−0.076	−0.131	−0.059	−0.287**	1									
INDIR	0.148	0.100	0.157	0.028	0.037	−0.009	−0.071	0.079	1								
LAGE	0.116	0.117	0.084	0.024	0.079	−0.024	0.171	−0.178*	−0.251**	1							
XFOOD	0.054	0.033	0.061	−0.046	−0.194*	0.164	0.046	−0.047	0.039	−0.187*	1						
XPAPER	−0.073	−0.034	−0.092	−0.103	−0.034	−0.112	−0.132	−0.064	0.036	−0.183*	−0.149	1					
XCHEM	0.144	0.140	0.109	0.264**	0.174	−0.088	0.221*	−0.173*	−0.104	0.209*	−0.174*	−0.163	1				
XMET	0.076	0.078	0.053	−0.017	−0.018	0.002	−0.231**	0.120	0.149	0.076	−0.138	−0.129	−0.151	1			
XMACH	−0.011	−0.087	0.069	0.086	0.022	0.252**	−0.060	−0.020	0.121	−0.033	−0.179*	−0.168	−0.196*	−0.155	1		
XMINR	−0.022	0.020	−0.057	−0.114	0.125	−0.321**	0.162	0.073	−0.143	0.099	−0.199*	−0.186*	−0.217*	−0.172*	−0.224*	1	
XTEXT	−0.190*	−0.165	−0.162	−0.093	−0.125	0.148	−0.079	0.136	−0.069	−0.010	−0.138	−0.129	−0.151	−0.120	−0.155	−0.172*	1

CSESCOR total Corporate Social and Environmental Reporting items disclosed/maximum score for firm, *CSSCOR* total Corporate Social Reporting items disclosed/maximum score for firm, *ESCOR* total Environmental Reporting items disclosed/maximum score for firm, *SALES* total sales revenues, *ROE* return on equity, *LEVER* leverage as measured by total liabilities divided by total assets, *AUDIT* dummy variable for audit firm size, coded as 1 for Big-4 and 0 otherwise, *OWDIF* ownership diffusion (i.e. percentage of shares held by unknown shareholders), *INDIR* proportion of independent directors on the board, *LAGE* listing age, *XFOOD* food, beverage (Dummy variable; 1 for XFOOD, 0 for else), *XPAPER* wood, paper, printing (Dummy variable; 1 for XPAPER, 0 for else), *XCHEM* chemical, petroleum, plastic (Dummy variable; 1 for XCHEM, 0 for else), *XMET* basic metal (Dummy variable; 1 for XMET, 0 for else), *XMACH* metal products, machinery (Dummy variable; 1 for XMACH, 0 for else), *XMINR* nonmetal mineral products (Dummy variable; 1 for XMINR, 0 for else), *XTEXT* textile, leather (Dummy variable; 1 for XTEXT, 0 for else)

*Significant at the 0.05 level (2-tailed); **Significant at the 0.01 level (2-tailed)

Table 14.5 OLS regression results

Independent variables															
Models		(Constant)	SALES	ROE	LEVER	AUDITOR	OWDIF	INDIR	LAGE	XFOOD	XPAPER	XCHEM	XMET	XMACH	XTEXT
Model 1 (Independent variable = CSESCOR)	Coef.	0.252	3.17E-011	0.013	−0.138	0.155	−0.001	0.448	0.004						
	t	2.435	4.228**	0.116	−1.256	3.438**	−0.803	2.363**	1.150						
	VIF		1.142	1.422	1.419	1.154	1.150	1.075	1.117						
Adjusted $R^2 = 0.256$															
F-ratio = 7.374 $p = 0.000$															
Model 2 (Independent variable = CSSCOR)	Coef.	0.241	3.09E-011	0.047	−0.194	0.226	−0.001	0.418	0.004						
	t	1.781	3.142**	0.329	−1.354	3.819**	−0.598	1.681*	0.924						
	VIF		1.142	1.422	1.419	1.154	1.150	1.075	1.117						
Adjusted $R^2 = 0.214$															
F-ratio = 6.063 $p = 0.000$															
Model 3 (Independent variable = ESCOR)	Coef.	0.260	3.23E-011	−0.016	−0.090	0.096	−0.001	0.473	0.004						
	t	2.236	3.835**	−0.131	−0.730	1.890*	−0.727	2.215**	0.976						
	VIF		1.142	1.422	1.419	1.154	1.150	1.075	1.117						
Adjusted $R^2 = 0.157$															
F-ratio = 4.465 $p = 0.000$															
Model 4 (Independent variable = CSESCOR)	Coef.	0.208	3.24E-011	0.032	−0.147	0.173	−0.001	0.365	0.004	0.093	0.032	0.006	0.134	0.028	−0.041
	t	1.772	4.041**	0.285	−1.219	3.608**	−0.635	1.861*	1.127	1.186	0.400	0.081	1.591	0.363	−0.498
	VIF		1.225	1.486	1.711	1.289	1.225	1.146	1.248	1.738	1.600	1.688	1.614	1.936	1.558
Adjusted $R^2 = 0.253$															
F-ratio = 4.380 $p = 0.000$															
Model 5 (Independent variable = CSSCOR)	Coef.	0.181	3.08E-011	0.088	−0.160	0.251	−0.001	0.336	0.004	0.082	0.061	−0.004	0.173	−0.031	−0.051
	t	1.172	3.024**	0.599	−1.013	4.001**	−0.453	1.306	0.885	0.794	0.585	−0.040	1.564	−0.314	−0.473
	VIF		1.225	1.486	1.711	1.289	1.225	1.146	1.248	1.738	1.600	1.688	1.614	1.936	1.558

(continued)

Table 14.5 (continued)

Independent variables															
Models		(Constant)	SALES	ROE	LEVER	AUDITOR	OWDIF	INDIR	LAGE	XFOOD	XPAPER	XCHEM	XMET	XMACH	XTEXT
Adjusted $R^2 = 0.212$															
F-ratio = 3.686 p =0.000															
Model 6 (Independent variable = ESCOR)	Coef.	0.231	3.19E-011	−0.015	−0.136	0.107	−0.001	0.389	0.004	0.103	0.007	0.014	0.102	0.077	−0.033
	t	1.736	3.619**	−0.117	−0.995	1.977**	−0.590	1.750*	0.970	1.153	0.082	0.169	1.065	0.890	−0.349
	VIF		1.225	1.486	1.711	1.289	1.225	1.146	1.248	1.738	1.600	1.688	1.614	1.936	1.558
Adjusted $R^2 = 0.142$															
F-ratio = 2.652 $p = 0.003$															

CSESCOR total Corporate Social and Environmental Reporting items disclosed/maximum score for firm, *CSSCOR* total Corporate Social Reporting items disclosed/maximum score for firm, *ESCOR* total Environmental Reporting items disclosed/maximum score for firm, *SALES* total sales revenues, *ROE* return on equity, *LEVER* leverage as measured by total liabilities divided by total assets, *AUDIT* dummy variable for audit firm size, coded as 1 for Big-4 and 0 otherwise, *OWDIF* ownership diffusion (i.e. percentage of shares held by unknown shareholders), *INDIR* proportion of independent directors on the board, *LAGE* listing age, *XFOOD* food, beverage (Dummy variable; 1 for XFOOD, 0 for else), *XPAPER* wood, paper, printing (Dummy variable; 1 for XPAPER, 0 for else), *XCHEM* chemical, petroleum, plastic (Dummy variable; 1 for XCHEM, 0 for else), *XMET* basic metal (Dummy variable; 1 for XMET, 0 for else), *XMACH* metal products, machinery (Dummy variable; 1 for XMACH, 0 for else), *XTEXT* textile, leather (Dummy variable; 1 for XTEXT, 0 for else)
*Significant at 0.10 level; **Significant at 0.05 level

10.80 %; Abd Rahman et al. (2011), 30.80 %; Cormier et al. (2011), 42.46 %)] indicating that adjusted R^2 values of the models of this study are at acceptable levels.

VIF values in all models are less than the threshold value of 10 implying that there is no multicollinearity problem (Chau and Gray 2002; Naser et al. 2006; Elsayed and Hoque 2010; Andrikopoulos and Kriklani 2012). The XMINR (non-metal mineral products industry) is automatically excluded from the regression analysis of Model 3, Model 4, and Model 5 because of collinearity issues.

The results of the regression analysis indicate that firm size, measured by sales revenues, has a positive significant relationship with CSESCOR, CSSCOR, and ESCOR at 0.01 level in all models. This shows that, as the firm size increases, the disclosure level of the corporate social and environmental activities also increases. Hence, Hypothesis 1 is accepted. Many earlier studies (i.e. Belkaoui and Karpik 1988; Hackston and Milne 1996; Williams 1999; Cormier and Gordon 2001; Gray et al. 2001; Haniffa and Cooke 2005; Hasseldine et al. 2005; Naser et al. 2006; Monteiro and Aibar-Guzmán 2010; Cormier et al. 2011; Andrikopoulos and Kriklani 2012) have also found a similar significant positive association between size and corporate social and environmental reporting disclosure level.

Auditing firm size also has a positive significant relationship between CSESCOR, CSSCOR, and ESCOR in Model 1, Model 2, Model 4, and Model 5 at 0.01 level and Model 3 and Model 6 at 0.05 level. Auditor firms were categorized as Big-4 and Non Big-4. This finding implies that, if an entity's auditor firm is in the Big 4 category, this entity will disclose more information about its corporate social and environmental activities. Therefore, Hypothesis 5 is accepted. This finding is parallel to the findings of earlier studies (Choi 1999; Uwuigbe 2011).

The existence of independent directors in the board of directors has a significant positive relationship with CSESCOR, CSSCOR, and ESCOR in all models, except Model 5. Hence, the presence of independent directors affects the corporate social disclosure. If there are independent directors in the board, the corporate social disclosure level of the entities increases. Hence, Hypothesis 6 is accepted.

As seen from the regression results, surprisingly, there is no significant relationship between the corporate social and environmental disclosure index and industry. The correlation analysis is also comparable with regression results. Corporate social and environmental reporting disclosure index has correlated negatively only with XTEXT according to Pearson Correlation analysis. Thus Hypothesis 9 is rejected.

Other variables such as performance (ROE), leverage, ownership structure, institutional ownership, and board size have no significant association with CSESCOR, CSSCOR, and ESCOR of the firms. Hence, Hypothesis 2, Hypothesis 3, Hypothesis 4, Hypothesis 7, and Hypothesis 8 are rejected.

14.7 Conclusions and Limitations

The purpose of this study was to measure the relationship between several firm characteristics and the corporate social and environmental reporting disclosure level. To examine this relationship, the annual reports of manufacturing companies listed on the ISE for the year 2010 were examined through content analysis. For deeper analysis, the corporate social and environmental reporting disclosure was divided into corporate social disclosure and environmental reporting disclosure. By adding industry as an explanatory variable, six different research models were developed. This study extends the previous research on the relationship between corporate characteristics and corporate social and environmental reporting disclosure index in several ways. First, the determinants of the corporate social and environmental reporting disclosure were investigated comprehensively for nine different hypotheses. Another aspect which makes this study different from prior studies was that it analyzed the corporate social and environmental reporting disclosure practices of Turkish companies. There are not many studies in Turkey examining the relationship between corporate social and environmental reporting disclosure level and corporate characteristics. Because Turkey is a developing country, and most of similar studies were conducted in developed countries, this study makes significant contribution to existing literature.

According to the findings of this study, firm size, presence of independent directors, and auditor firm size have positive and significant relationship with the corporate social and environmental reporting disclosure level. As the firm size increases, the corporate and social environmental reporting disclosure level of the companies increases. The firms which are audited by Big-4 make more corporate social and environmental reporting disclosure compared to the companies that are audited by non Big-4. The presence of independent directors also affects the corporate social and environmental disclosure level of the companies positively. This study also concludes that there is no any significant association between performance, leverage, ownership structure, institutional ownership, board size, industry and corporate social and environmental reporting disclosure level.

Those findings present several implications for corporations, auditing firms, investors, and regulators. Corporate social and environmental disclosures offer several advantages to corporations and investors. Managers should carefully evaluate the costs and benefits of those disclosures for their companies. Investors are the users of the corporate social and environmental reporting disclosures of the corporations. If they demand the necessary disclosures from the companies, the companies will consider the importance of those disclosures and will choose this channel for communication. In this way, the corporate social and environmental disclosure will serve a bridge between investors and companies. Auditing firms and regulators also have an important role in the corporate social and environmental disclosure level of the companies. Auditors and regulators offer guide the entities several guidelines and lead them into making better corporate social and environmental disclosures.

This study has some limitations. Firstly, the sample of the study consists only of manufacturing companies. This research may be expanded by adding other industries such as service and merchandising into analysis in future studies. Secondly, this analysis was conducted by analyzing only the annual reports of the entities. Future studies can examine other resources of corporate social and environmental reporting such as press releases, web sites, and prospectuses for deeper analyses. Finally, this research analyzed the annual reports of the firms for the year of 2010. This study may be extended by examining other years' annual reports.

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