Company Characteristics and Environmental Disclosure: An Empirical Investigation on Companies Listed on Borsa Istanbul 100 Index

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ABSTRACT

The main purpose of this paper is to investigate the relationship between company characteristics and the extent of the environmental disclosures of Turkish companies. The sample of the study consists of 62 non-financial firms listed on the BIST-100 index at the end of 2011. In order to measure the extent of environmental disclosure, the annual reports of sampled firms for the year of 2011 were analyzed through content analysis. On the other hand, based on the previous literature, 5 company characteristics are considered as the independent variables that may influence the extent of environmental disclosures of sampled companies, namely, size, leverage, profitability, industry membership and age. Results of the regression analysis indicate that company size and industry membership are positively related to the extent of environmental disclosure, while profitability is negatively related. However, neither leverage nor age has a statistically significant relationship with the extent of disclosure.

Anahtar Kelimeler: *Environmental disclosure, company characteristics, Turkish companies.*

JEL Sınıflandırması: *M00, M4, Q00.*

Firma Özellikleri ve Çevresel Açıklama: Borsa Istanbul 100 Endeksinde Yer Alan Firmalar Üzerine Ampirik Bir Araştırma

ÖZET

Bu çalışmanın temel amacı, Türk firmalarının çevresel açıklamalarının miktarı ile firma özellikleri arasındaki ilişkinin incelenmesidir. Çalışmanın örneklemi 2011 yılı sonunda Borsa İstanbul 100 endeksinde yer alan 62 reel sektör firmasından oluşmaktadır. Çevresel açıklamaların miktarını ölçmek için, örneklemi oluşturan firmaların 2011 yılı faaliyet raporları içerik analizi ile incelenmiştir. Diğer yandan yazın incelemesi sonucunda, örneklemi oluşturan firmaların çevresel açıklamalarını etkileyebilecek bağımsız değişkenler olarak, 5 firma özelliği dikkate alınmıştır: büyüklük, kaldıraç, karlılık, içinde bulunulan sektör ve yaş. Regresyon analizinin sonuçları, firma büyüklüğü ve içinde bulunulan sektörün çevresel açıklamaların miktarı ile pozitif yönlü ilişkili olduklarını gösterirken, karlılığın ise negatif yönlü ilişkili olduğunu göstermektedir. Bununla birlikte, kaldıraç ve yaş ile çevresel açıklamaların miktarı arasında istatistiksel açıdan anlamlı bir ilişki bulunmamaktadır.

Keywords: *Çevresel Açıklama, firma özellikleri, Türk firmaları.*

Jel Classification*: M00, M4, Q00.*

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1. INTRODUCTION

The negative environmental impacts of economic development, such as climate change and global warming, natural disasters and pollution, have increased concerns of governmental bodies, environmentalists, shareholders, creditors and society about the protection of the natural environment worldwide. Due to these growing concerns, the firms have been facing severe pressure to operate in an environmentally responsible manner and to provide information about their environmental performance (Da Silva Monteiro and Aibar-Guzmán, 2010a: 186; Ribeiro and Aibar-Guzman, 2010: 404; Da Silva Monteiro and Aibar-Guzmán, 2010b: 414; Iwata and Okada, 2011: 1691; Pahuja, 2009: 227; Jose and Lee, 2007: 307; Dixon et al., 2005: 702).

In order to respond to these pressures, companies all over the world have begun to seek the ways of reducing their negative impacts on the environment and started voluntarily reporting their environmental performance and so environmental information disclosure has become an important dimension of accounting information systems. (Da Silva Monteiro and Aibar-Guzmán, 2010a: 186; Da Silva Monteiro and Aibar-Guzmán, 2010b: 416; Pahuja, 2009: 227; Holland and Foo, 2003: 2; Belal, 2000: 114; Ahmad and Mousa, 2010: 150). Dixon et al. (2005) argue that the main reasons for the development of environmental disclosure are the increase of environmental regulations and pressure for clean air, clean water etc. by various groups, the increase of environmental risks and companies' desires to improve their images or gain financial benefits by using this kind of disclosure (Dixon et al., 2005: 704).These developments have also led to a substantial increase in the academic research in the area of environmental disclosure. (Kolk et al., 2001: 15; Ahmad and Mousa, 2010: 150). However, it can be said that the literature has still provided little empirical evidence on the environmental disclosure practices of the developing countries (Saha and Akter, 2013: 75; Belal, 2000: 115; Tsang, 1998: 624; Pahuja, 2009: 228; Uwuigbe, 2012: 27; Kolk et al., 2001: 16). Especially, in Turkey, there are only a few studies with regard to the environmental disclosures of Turkish companies. In this context, the findings of Kavut (2010), Kaya and Varici (2008) and more recently Akbas and Canikli (2014) indicate that there has been an increase in the volume of environmental disclosures of Turkish companies over time. These studies are mostly descriptive in nature. The purpose of this study therefore to analyze empirically the relationship between selected company characteristics and the extent of environmental disclosures made by companies operating in a developing country, Turkey. The sample consists of 62 non-financial firms listed on the Borsa Istanbul 100 (BIST-100) – formerly named Istanbul Stock Exchange 100 (ISE-100)- index at the end of 2011. The environmental disclosure data were retrieved from the annual reports of the companies by conducting content analysis. On the other hand, data for the company characteristics (dependent variables) were gathered from the web sites of Public Disclosure Platform and sampled companies.

The findings of the study reveal that company size, industry membership and profitability are important company characteristics that can have influence on the extent of environmental disclosure. According to the results, size and industry membership have a positive and statistically significant relation with the extent of the environmental disclosure, while profitability has a negative relationship.

The main contribution of this paper is to extend the related literature to developing countries by providing some empirical results from a developing country, Turkey. In particular, this is the first attempt to analyze the company characteristics influencing the environmental disclosures of Turkish companies.

The paper is organized in the following manner. After this introduction, Section 2 provides an overview of the previous related literature and introduces the hypotheses of the study. Section 3 outlines the data and methodology. Section 4 presents the empirical findings of the study. Finally, Section 5 discusses the conclusion, limitations and future research opportunities.

2. LITERATURE REVIEW AND HYPOTHESES

Prior empirical research on the corporate environmental disclosure can be categorized into five groups. The first group studies measure the volume of corporate environmental disclosure with some comparisons on countries, sectors or media. The second group studies focus on the quality of information disclosed. The third group investigates the determinants of the corporate environmental disclosure while fourth group explorers the relationship between environmental disclosure and corporate environmental performance. Finally, the fifth group of studies analyzes the market reactions to corporate environmental disclosure (Andrikopoulos and Kriklani, 2013: 58; Damak-Ayadi, 2010: 23; Jose and Lee, 2007: 309-310). This study fits into the second group. Based on the existing literature related to this topic, five company characteristics are considered as the company attributes that may have a relationship with the extent of the companies' environmental disclosures: size, leverage, profitability, industry membership and age. Each of these characteristics is discussed in turn and hypotheses on their relation with the extent of environmental disclosure are proposed below.

2.1. Size

The relationship between company size and the extent of environmental disclosure has been investigated by a number of studies. With a few exceptions, most of these studies have found a positive relationship between the company size and the amount of environmental disclosure (e.g., Adams et al., 1998; Al-Tuwaijri et al., 2004; Andrikopoulos and Kriklani, 2013; Brammer and Pavelin, 2006; Cormier and Gordon, 2001; Cormier and Magnan, 1999, 2003; Cormier et al., 2005; Da Silva Monteiro and Aibar-Guzmán, 2010a; Deegan and Gordon, 1996; Déjean and Martinez, 2009; Freedman and Jaggi, 2005; Gao et al., 2005; Gray et al., 2001; Ho and Taylor, 2007; Huang and Kung, 2010; Liu and Anbumozhi, 2009; Michelon and Parbonetti, 2012; Milanés-Montero and Pérez-Calderón, 2011; Neu et al., 1998; Pahuja, 2009; Patten, 2002; Sutantoputra et al., 2012; Suttipun and Stanton, 2012; Wang et al., 2012). The literature provides some explanations for this positive relationship. Patten (2002) argues that larger firms tend to disclose more information than smaller firms because of visibility concerns (Patten, 2002: 765-766). Similarly, Cormier and Gordon (2001) states that, in the context of legitimacy theory, as a firm increases in size, it becomes more visible and therefore more accountable for environmental issues (Cormier and Gordon, 2001: 607). Hence, larger firms are expected to provide more environmental information to present that their operations are legitimate and consistent with good corporate citizenship (Cormier and Gordon, 2001: 607; Brammer and Pavelin, 2006: 1173). Furthermore, it is suggested that gathering and disclosing this kind of information is a costly process and contrary to larger firms, small firms might not have sufficient funds for such costs (Da Silva Monteiro and Aibar-Guzmán, 2010a: 188; Pahuja, 2009: 232). Based on these explanations, large companies are expected to disclose more environmental information than small ones and the first research hypothesis is formally stated as follows:

H1: There is a positive relationship between company size and the extent of the environmental disclosure.

2.2. Leverage

Although leverage has been considered as an important company characteristic that can have an influence on the environmental disclosure, it is possible to say that there is no consensus in the literature on the relationship of this characteristic with the extent of disclosure. As stated by Andrikopoulos and Kriklani (2013), leverage can affect the volume of environmental disclosure in two-fold manner (Andrikopoulos and Kriklani, 2013: 59). It is argued that as firm debt (leverage) increases, the investors' monitoring demand for information also increases in order to keep themselves informed about operating performance of the company, including environmental performance (Clarkson et al., 2008: 314; Clarkson et al., 2011: 39; Freedman and Jaggi, 2005: 220; Andrikopoulos and Kriklani, 2013:59; Pahuja, 2009: 233; Huang and Kung, 2010: 445). Furthermore it is suggested that companies with higher leverage are more likely to increase the volume of corporate disclosure to reduce agency costs (Ho and Taylor, 2007: 131). Because of these reasons, a positive relationship between leverage and environmental disclosure can be expected and this argument is supported by the results of the empirical studies such as Clarkson et al. (2008), Meng at al. (2013), Huang and Kung (2010). On the other hand, Brammer and Pavelin (2006, 2008) argue that companies with relatively lower leverage may be able to have sufficient funds for financing environmental disclosures and to have the opportunity to focus organizational activities that are only indirectly affect the financial success of the company such as voluntary disclosure by the reason of facing less pressure from creditors (Brammer and Pavelin, 2006:

1174; Brammer and Pavelin, 2008: 125). In a similar vein, Cormier and Gordon (2001) suggest that environmental information disclosure may increase proprietary costs for high leveraged firms and such costs could make credit negotiations more difficult and costly (Cormier and Gordon, 2001: 604). Moreover, it is argued that highly leveraged firms have less environmental issues to report because such companies are more likely to comply with environmental regulations (Wu et al., 2010: 79). By these reasons, a negative relationship between financial leverage and volume of environmental disclosure can also be expected. This negative relationship has also been documented by empirical studies such as Brammer and Pavelin (2006), Andrikopoulos and Kriklani (2013), Wu et al. (2010), Ahmad et al. (2003), Ho and Taylor (2007) and Eng and Mak (2003).

Based on these contradictory conclusions from both theoretical and empirical studies, a positive, negative or no relationship between leverage and the extent of environmental disclosure can be expected. Therefore, the second hypothesis is formulated as follows:

H2: There is a relationship between leverage and the extent of the environmental disclosure.

2.3. Profitability

As leverage, the results of previous empirical studies provide mixed results with regard to the relationship between profitability and the extent of environmental disclosure. Some studies found a positive relationship (e.g., Cormier and Magnan, 1999; Pahuja, 2009; Saha and Akter, 2013; Gray et al., 2001; Liu and Anbumozhi, 2009 and Al-Tuwaijri et al., 2004), while other studies found a negative relationship (e.g., Andrikopoulos and Kriklani, 2013; Wu et al., 2010; Huang and Kung, 2010; Kathyayini et al., , 2012; De Villiers and Van Staden, 2011; Michelon and Parbonetti, 2012; Ho and Taylor, 2007; Neu et al., 1998 and Chen and Jaggi, 2000). Moreover, some studies (e.g., Zeng et al., 2012; Sun et al., 2010; Ahmad et al. 2003; Cho et al., 2010; Galani et al., 2012; Déjean and Martinez, 2009; Brammer and Pavelin, 2006; Freedman and Jaggi, 2005; Clarkson et al., 2011 and Eng and Mak, 2003) report that there is no relationship between profitability and the volume of disclosure (Da Silva Monteiro and Aibar-Guzmán, 2010a: 189 and Kathyayini et al., 2012: 150).

Despite these contradictory empirical results, a positive relation between profitability and the extent of environmental disclosure can be expected based on the argument that more profitable companies may have sufficient funds for compensating costs of environmental disclosures (Brammer and Pavelin, 2008: 125; Brammer and Pavelin, 2006: 1174). It is also argued that companies with high profitability ratios may disclose more information in order to prevent negative attention stems from excess profitability (De Villiers and Van Staden, 2011: 514) and to increase their credibility among investors (Cormier and Magnan, 1999: 435). Therefore, the third research hypothesis is proposed as follows:

H3: There is a positive relationship between company's profitability and the extent of the environmental disclosure.

2.4. Industry Membership

The relationship between industry membership and the extent of the environmental disclosure has been investigated by many theoretical and empirical studies due to the fact that each sector has some distinctive characteristics that may relate to risks to society, potential growth, employment, competition and government interference (Ahmad et al., 2003: 76; Gao et al., 2005: 236). In this context, it is possible to say that the results of the previous empirical studies, with regard to the relationship between industry membership and the volume of environmental disclosure, usually indicate that companies operating in environmentally sensitive industries disclose more environmental information than companies operating in non- environmentally sensitive industries (e.g., Deegan and Gordon, 1996; Patten, 2002; Cho and Patten, 2007; Brammer and Pavelin, 2008, 2006; Aerts and Cormier, 2009; Cormier and Magnan, 2003; Choi, 1999; Ho and Taylor, 2007; Pahuja, 2009; Galani et al., 2012; Liu and Anbumozhi, 2009). The literature provides some theoretical explanations for these empirical results. Pahuja (2009) argues that companies from environmentally sensitive industries disclose more environmental information than less polluting companies, because of their significant impacts on the environment. (Pahuja, 2009: 232). In line with this argument, it is also suggested that these firms have incentives for disclosure beyond their environmental performance, since they face greater pressure and scrutiny from powerful stakeholders (De Villiers and Van Staden, 2011: 514; Cho and Patten, 2007: 642). Based on these explanations, the following hypothesis is stated:

H4: There is a positive relationship between the industry in which the company operates and the extent of the environmental disclosure.

2.5. Age

Finally, company age has been considered as another important company characteristic that can influence the extent of environmental disclosure. It is suggested that age of the company can serve as an indicator of perceived stability of the firm (Liu and Anbumozhi, 2009: 597) and represent some aspects of stakeholder power, strategic posture and financial performance (Roberts, 1992: 605). It is also argued that as a company matures, its reputation and involvement in discretionary activities, such as environmental protection activities and disclosure of environmental information, can become entrenched and more valuable to company (Roberts, 1992: 605; Choi, 1999: 88). In this sense, a positive relationship between age of the company and the extent of environmental disclosure can be expected. Therefore, the fifth hypothesis is formulated as follows:

H5: There is a positive relationship between company age and the extent of the environmental disclosure.

3. DATA AND METHODOLOGY

3.1. Sample

This study primarily aims to analyze the relationship between selected corporate characteristics and the extent of environmental disclosures of Turkish companies. In this context, the sample of the study is retrieved from companies listed on the BIST-100 index in the financial year 2011 due to two reasons: First, BIST 100 index represents approximately %90 of the BIST market capitalization and results of the previous studies indicate that larger firms tend to disclosure more environmental information (Cormier and Magnan, 2003: 58; Deegan and Gordon, 1996: 198). Second, these companies also represent a diverse range of industry sectors, including food and beverage, wood, paper and printing, metal products and machinery, electricity, wholesale and retail trade and telecommunications. On the other hand, the financial companies are removed by the reason of their limited effect on the environment (Da Silva Monteiro and Aibar-Guzmán, 2010a:191). Consequently, the final sample consists of 62 companies. Companies in the sample are classified into 15 sectors by following Borsa Istanbul classification.

Table 1 demonstrates the composition of the sample. According to the Table 1, chemical, petroleum and plastic sector, with 13 companies, has the highest percentage of companies within the sample (20.97%) and followed by the metal products and machinery sector (16.13%). On the other hand, with 1 company textile and leather and other services sectors have the smallest number of companies in the sample.

Table 1: Distribution of Companies by Sectors

Sector	Number of Companies	Percentage
Food and Beverage	4	6.45
Textile and Leather	1	1.61
Wood, Paper and Printing	5	8.06
Chemical, Petroleum and Plastic	13	20.97
Nonmetal Mineral Products	4	6.45
Basic Metal	5	8.06
Metal Products and Machinery	10	16.13
Other Manufacturing	2	3.23
Electricity	2	3.23
Transportation	2	3.23
Wholesale and Retail Trade	5	8.06
Telecommunications	2	3.23
Sports	4	6.45
Technology	2	3.23
Other Services	1	1.61
Total	**62**	**100**

3.2. Variables

3.2.1. Dependent Variable – The Extent of Environmental Disclosure

Environmental disclosure can be defined as disclosures that related to a company's past, current and future environmental management decisions, activities and performance (Berthelot et al., 2003: 2). In this context, based on the review of previous studies analyzing the extent of environmental disclosures, 8 main themes related to the environmental information are determined, namely, environmental policy, environmental protection activities, compliance with Environmental Management Standards and regulations, air emission information, energy, waste management, awards and other environmentally related information.

In order to measure the extent of environmental disclosure of Turkish companies, the annual reports of sampled firms for the year of 2011 are analyzed through content analysis, which is widely used in the research of this topic. Abbott and Monsen (1979) p.504 defined content analysis as: "*A technique for gathering data that consists of codifying qualitative information in anecdotal and literary form into categories in order to derive quantitative scales of varying levels of complexity*" (Abbott and Monsen, 1979: 504). The annual reports are chosen as a basis for data collection on environmental disclosure due to the following reasons:

- The annual reports are compulsory as they are required by legislation and so they are produced regularly especially by all listed companies and by these reasons making comparisons relatively easy (Tilt, 2001: 193).
- The annual report also has a wide availability and is the most often used communication channel by the companies in order to communicate with all stakeholders in a systematic manner (Hughes et al., 2001: 224).
- Finally, the findings of the study by Tilt (1994) indicate that compared to all other disclosure formats, annual reports are considered as the most credible medium for environmental disclosures (Tilt, 1994: 56).

Selection of a "unit of analysis" represents another important issue in determining the extent of environmental disclosure through content analysis. (Guthrie and Abeysekera, 2006: 120; Gamerschlag et al., 2011: 241). In this respect, Holsti (1969) p. 116 defined recording unit as "the specific segment of content that is characterized by placing it into a given category" (Holsti, 1969: 116). This study uses number of words as the unit of analysis in order to measure the extent of environmental disclosures of Turkish sampled firms, since number of words as a recording unit has the advantage of being categorized more easily (Damak-Ayadi, 2010: 28) and needs less subjective judgment of the researcher (Gamerschlag et al., 2011: 241).

Table 2: Summary of Independent Variables

Independent Variables	Description	Hypothesis	Expected Sign
Size	Company size, measured as the natural logarithm of total assets at the end of fiscal year 2011	H1	+
Leverage	Leverage ratio, measured as the ratio of the total debt to equity at the end of fiscal year 2011	H2	+/-
Profitability	Return on assets, measured as the ratio of net profit after tax to total assets at the end of fiscal year 2011	H3	+
Industry Membership	Dummy variable which is equal to 1 if the company operates in an environmentally sensitive industry and 0 otherwise.	H4	+
Age	Company age as of 2011	H5	+

3.2.2. Independent Variables – Company Characteristics

Table 2 presents the independent variables which are selected on the basis of previous literature analyzing the relationship between company characteristics and the extent of environmental disclosure. The data related to the size, leverage and profitability variables were retrieved from the web site of Public Disclosure Platform. On the other hand, as shown in Table 2, the industry membership is a dummy variable which takes 1 for companies belonging to environmentally sensitive industries and 0 for those belonging to non-sensitive industries. In this study, based on the previous empirical studies, food and beverage, textile and leather, wood, paper and printing, chemical, petroleum and plastic, nonmetal mineral products, basic metal, metal products and machinery, other manufacturing, electricity and other services industries are considered as environmentally sensitive industries. Finally, the data for the age variable were retrieved from the websites of the sampled companies.

3.3. Model and Method of Estimation

For the purposes of investigating the relationship between selected company characteristics and the volume of environmental disclosure and testing the validity of the aforementioned hypotheses, the following ordinary least square (OLS) regression model with cross-sectional data is estimated:

$$EID_i = \alpha_0 + \beta_1 SIZE_i + \beta_2 LEV_i + \beta_3 PROF_i + \beta_4 IND_i + \beta_5 AGE_i + \varepsilon_i$$

Where:

EID: the extent of environmental disclosure of company *i* in 2011 (Total number of words related to the environmental issues in the annual report of the company)

α_0: intercept

SIZE: size of company *i* (natural logarithm of total assets at the end of year 2011)

LEV: leverage ratio of company i (ratio of the total debt to equity at the end of year 2011)

PROF: profitability of company i (ratio of net profit after tax to total assets at the end of year 2011)

IND: industry membership of company i (dummy variable, it takes 1 for companies in environmentally sensitive industries and 0 for those in non-sensitive industries)

AGE: age of the company i as of 2011

ε_i: random error term

4. RESULTS

4.1. Descriptive Statistics

Table 3 reports the descriptive statics. The mean, median, standard deviation, minimum and maximum values and measures of skewness and kurtosis for the numerical variables are presented in Panel A and the frequencies and percentages for the dummy variable, industry membership, are displayed in Panel B.

The mean value of the dependent variable of the study, the extent of environmental disclosure (EID), is 623.952 with a minimum value of 0 and maximum of 3854. Based on these figures, it won't be wrong to say that there is a wide range in the volume of environmental disclosures of sampled companies in their annual reports. Regarding to the independent variables, Table 3 shows that the mean value of size which is measured by natural logarithm of total assets at the end of year 2011, is 20.927 implying that average total assets in Turkish Lira terms of 3.008 bn, thus it can be easily said that the sample consists of relatively larger companies. Furthermore, companies in the sample have an average leverage (debt to equity ratio) of 83.7%, average ROA of 4.9% and average age of 38.613. Finally, according to the Panel B, majority of the (75.8%) sampled companies are from environmentally sensitive industries.

Table 3: Descriptive Statistics

Panel A – Dependent and Independent Variables

Variable	Obs.	Mean	Median	Std. dev.	Min.	Max.	Skew.	Kurt.
EID	62	623.952	300.500	849.113	0.000	3854.000	2.052	7.091
SIZE	62	20.927	20.937	1.375	17.824	23.565	0.189	2.345
LEV	62	0.837	1.053	3.916	-26.948	9.641	-5.705	42.690
PROF	62	0.049	0.064	0.190	-1.188	0.433	-4.368	30.430
AGE	62	38.613	41.500	16.239	10.000	80.000	0.121	2.423

Panel B – Dummy Variable

Industry Membership	Frequency	Valid Percentage
Sensitive (1)	47	75.8
Non-Sensitive (0)	15	24.2
Total	**62**	**100**

4.2. Correlation Matrix

Table 7 presents the Pearson correlations matrix between the dependent and independent variables. The results of the Pearson correlation analysis indicate that the highest correlation coefficient between independent variables is 0.477 for age and industry membership. Farrar and Glauber (1967) suggest that correlation between independent variables should not be considered as harmful until the correlation coefficients reach 0.8 or 0.9 (Farrar and Glauber, 1967: 98). In this sense, it is possible to say that there is no unacceptable level of multicollinearity between the independent variables.

Table 4: Pearson Correlation Matrix

Variables	EID	SIZE	LEV	PROF	IND	AGE
EID	1					
SIZE	0.435*	1				
LEV	-0.032	-0.031	1			
PROF	-0.030	0.213**	0.136	1		
IND	0.232	-0.019	-0.149	0.242	1	
AGE	0.139	0.111	0.180	0.202	0.477*	1

*Correlation is significant at the 0.01 level (2-tailed); **correlation is significant at the 0.10 level (2-tailed)

The results of the correlation analysis also show that the extent of environmental disclosure is, as expected, positively correlated to company size at the 1% significance level. However, the other independent variables are not statistically correlated to the extent of environmental disclosure, contrary to the expectations.

4.3. Regression Results

Table 5 reports the results of OLS regression analysis testing the relationship between the extent of environmental disclosure and company characteristics. According to the Table 5, F-statistic is 4.549 ($p=0.001$) and this result supports that the estimated model is statistically significant and the adjusted R-squared of 0.225 indicates that the independent variables explain the %22.5 of the variability of the extent of environmental disclosure, the dependent variable.

The results also indicate that, as hypothesized (H1), the company size has a positive and statistically significant relation ($p=0.000$) with the extent of environmental disclosure. This result provides supporting evidence for the first hypothesis and implies that the volume of environmental disclosure is greater for larger firms and this is consistent with the findings of the previous studies mentioned in literature review.

Table 5: Results of OLS regression analysis testing the relationship between "the extent of environmental disclosure" and "company characteristics"

Variable	Coefficient	Std. Error	t-Stat.	p-value
Intercept	-6126.531	1449.315	-4.227	0.000
SIZE	305.001	68.833	4.431	0.000
LEV	14.554	25.007	0.582	0.5630
PROF	-960.728	516.133	-1.861	0.068
IND	633.727	257.392	2.462	0.017
AGE	-2.019	6.737	-0.300	0.766
R-Squared	0.289			
Adjusted R-Squared	0.225			
F-statistic	4.549			
p-value of F-Statistic	0.001			

Similarly, in support of hypothesis 4, the regression results show a significant positive relationship between industry membership and the extent of environmental disclosure. This result is also in line with the previous research and suggests that companies operating in environmentally sensitive industries disclose more environmental information than companies operating in non- environmentally sensitive industries.

On the other hand, the coefficient on profitability is negative and statistically significant at 10% level, implying that an increase in profitability reduces the volume of environmental disclosure. In other words, companies with low profitability ratios tend to disclose more environmental information. Although this finding is contrary to initial predictions, it is in the same vein as the results of Andrikopoulos and Kriklani (2013), Wu et al. (2010), Huang and Kung (2010), Kathyayini et al. (2012), De Villiers and Van Staden (2011), Michelon and Parbonetti (2012), Ho and Taylor (2007), Neu et al. (1998) and Chen and Jaggi (2000). This result supports the arguments that profitable companies usually have less environmental problems to report (Wu et al., 2010: 79) or those companies may be disclosing environmental information through alternative medium, such as a separate environmental or sustainability report (Kathyayini et al., 2012:156). In consequence, hypothesis 3 is rejected.

Finally, according to the Table 5, the coefficients for the variables leverage and age are not statistically significant, suggesting that the debt to equity ratio and age of a company are unrelated to the extent of environmental disclosure so hypothesis 3 and 5 are also rejected.

5. CONCLUSION, LIMITATIONS AND FUTURE RESEARCH

This paper has empirically investigated the relationship between selected company characteristics and the extent of environmental disclosures of companies operating in Turkey, using a sample of 62 non-financial firms listed on the Borsa Istanbul 100 (BIST-100) index at the end of 2011. The extent of environmental disclosure is measured by the total number of words related to the environmental issues in the annual reports of the companies derived from content analyses. Based on the previous literature, 5 company characteristics are considered as the independent variables that may influence the extent of environmental disclosures of sampled companies, namely, size, leverage, profitability, industry membership and age.

The findings of the study reveal that only two out of the five hypotheses are supported. The results of the OLS regression analysis provide empirical evidence that there is a positive relationship between company size and the extent of the environmental disclosure for sampled Turkish firms (hypothesis 1). Thus, in consistent with the previous studies, this finding supports the argument that larger firms disclose more environmental information than smaller firms for the purpose of increasing their legitimacy (Huang and Kung, 2010: 449).

Similarly, the results provide supporting evidence for the hypothesis 2 that there is a significant positive relationship between industry membership and the extent of environmental disclosure. This is also consistent with the previous researches and suggests that companies from environmentally sensitive industries disclose more environmental information than those from non- environmentally sensitive industries. This finding provides empirical support for the argument that environmentally sensitive companies face greater pressure and scrutiny from powerful stakeholders because of their significant impacts on the environment. (De Villiers and Van Staden, 2011: 514; Cho and Patten, 2007: 642; Pahuja, 2009: 232).

On the other hand, contrary to the expectations, the results of the analysis reveal a negative relationship between profitability and the extent of the environmental disclosure for Turkish firms. One possible explanation for this negative relationship could be that companies with high profitability may have better compliance with environmental regulations, thus these companies tend to have less environmental problems to report (Wu et al., 2010: 81).

The results of the regression analysis do not provide statistical support for the remaining hypotheses, relating to variables leverage and age. The coefficient for leverage is positive but not statistically significant, which means that there is no statistically significant relationship between leverage and the extent of environmental disclosure. This result is consistent with the findings of Sutantoputra et al. (2012), Clarkson et al. (2011), Liu and Anbumozhi (2009), Freedman and Jaggi (2005) and Neu et al. (1998). This insignificant relation may stem from the slight attention of the creditors to the environmental performance of Turkish firms (Liu and Anbumozhi, 2009: 599). Similarly, the coefficient for age is positive but again not statistically significant. This finding is in the same vein as the results of Zeng et al. (2012), Michelon and Parbonetti (2012) and Liu and Anbumozhi (2009).

This study is subject to several limitations. First, the period of the study covers only one year, hence the analyses are conducted with cross-sectional data. Second, only annual reports of companies are considered as the source of environmental disclosure, although companies can use a variety of communication channels for disclosing environmental information such as separate environmental, social responsibility or sustainability reports and web-pages. Third, the sample of the study consists of 62 non-financial firms listed on the

BIST-100 index and these firms are mostly large companies. In this sense, the results of the study may not be generalized for small companies.

Despite these limitations, it is considered that the study has contributed to the related literature because it has provided some insights from a developing country and represented the first attempt to analyze the relationship between company characteristics and the extent of environmental disclosures of Turkish companies.

Finally, future research could use longitudinal data in order to investigate the effects of company characteristics on the volume of environmental disclosures of Turkish companies. Furthermore, same analysis could be conducted by considering environmental disclosures in other communication channels.

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