Does Environmental Disclosure Relate to Environmental Performance? Reconciling Legitimacy Theory and Voluntary Disclosure Theory

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Abstract

This paper seeks to understand the relationship between corporate environmental disclosure and corporate environmental performance in a Pakistani context. Also, this paper aims to understand whether patterns of environmental disclosure varies between the different categories (good, bad and mixed) of environmental performance. The data were taken from the annual reports and sustainability reports of 78 sample firms listed on a Pakistan stock exchange for the year 2014 and 2015. The empirical results indicate that environmental disclosure is significantly associated with environmental performance. Both Good performers and Bad performers have increased their level of disclosure toward environmental concern as compared to mixed performers. The increase in the level of disclosure by good performers can be explained through the voluntary disclosure theory as an attempt to differentiate themselves from others. The increase in the level of disclosure by bad performers can be explained through legitimacy theory as an attempt to change the public perception. The findings of this paper are of practical importance to the investors and other regulatory authorities as they should be cautious while interpreting increase in disclosures related to environmental activities. This study provides empirical evidence that an increase in environmental disclosure may not be a valid signal to differentiate the Good and Bad environmental performers.

Keywords: environmental disclosure**,** environmental performance, environmental accounting, legitimacy theory, voluntary disclosure theory, Pakistan.

1. Introduction

Environmental issues are evolving very fast. The early concerns were with pollution, wilderness preservation, population growth and depletion of natural resources. Over time, these concerns have been joined by worries about energy supply, bio-diversity, species extinction, climate change and other disruption of the earth system (Dryzek, 2013). Business organisations (especially big national and multinational corporations) are considered as a major source of environmental problems because of their high energy usage as well as waste management practices and carbon emissions. Business organisations, these days are under ever increasing pressure from the governmental and non-governmental organisations to be environmentally sustainable (Bebbington et al., 2014). The increasing attention of stakeholders and the resultant demand for environmental responsibility makes it increasingly vital for companies to strengthen their environmental management and information disclosure practices (Hopwood, 2009).

Over the period of time, there has been an increase in the number of organisations that have initiated to measure their environmental impacts for a variety of reasons, including building stakeholder trust, enhancing their reputation, legitimizing their ongoing business activities, responding to stakeholders, decreasing risks and reducing costs (Carroll & Shabana, 2010). Various approaches have been used by organizations to control their environmental interactions and embed environmental management within organizational processes, practices and thinking. These include environmental accounting and reporting, environmental management systems and capital investment appraisal. These approaches help business organisations to increase their environmental performance and disclosure (Gray et al., 2014).

The agenda for sustainable development has so far been pursued through voluntary initiatives. In addition to the international agencies (such as the World Business Council for Sustainable Development) each country has its own voluntary bodies. During the last couple of decades, environmental issues have distressed the economic and social development in Pakistan (Malik, 2014). Several organizations (e.g. Responsible Business Initiative, Pakistan Center for Philanthropy, National Forum for the Environment and Health and Corporate Social Responsibility Center of Pakistan) regulations (e.g. National Environmental Quality Standards, Corporate Social Responsibility General Order 2009 and Corporate Social Responsibility Voluntary Guidelines 2012) and award schemes (e.g. Pakistan Environmental Reporting Awards, Environmental Excellence Awards, Best Sustainability Reporting award) are encouraging environmental reporting in Pakistan. At present some companies are starting to reveal their environmental information, but the consistency between the actual environmental performance and information disclosed by firms is still a problem that needs to be further studied.

Understanding, theoretically and empirically, the relationship between environmental performance and environmental disclosure is one of the widely researched topics in the accounting literature. (Al-Tuwaijri et al., 2004; Hughes et al., 2001). Extant research is inconclusive and controversial, both theoretically and empirically, as to the relationship between environmental performance and environmental disclosure (Al-Tuwaijri et al., 2004; Clarkson et al., 2011; Freedman & Wasley, 1990; Wang et al., 2004). This paper aims to investigate the underlying relationship between environmental disclosure and environmental performance. Another objective of this paper is to examine how

environmental performances affect the level of disclosure by comparing the disclosure content between different groups of environmental performer?

The study sets its theoretical grounds on the alternate context of voluntary disclosure theory and legitimacy theory. The voluntary disclosure theory used in our study describes that firms having good environmental performance will be more motivated to disclose environmental information in order to differentiate themselves from the poor ones (Liu et al., 2011; Verrecchia, 1983). On the other hand, the legitimacy theory describes that environmental disclosure by the company is an action of political and social pressure (Gray et al., 2001). So the firms that have worse environmental performance are pressurized to change the public perception by increasing the level of environmental disclosure.

Our sample consists of 78 Pakistani listed firms from nineteen industry categories. We measured the environmental disclosure for the years 2014 and 2015 among three categories of environmental performance (25 Good, 26 Bad, 27 Mixed performers). Our findings indicate that environmental disclosure is significantly associated with environmental performance. Our results are consistent with the two theoretical lenses; voluntary disclosure theory and legitimacy theory. Our results indicate that disclosure pattern varies between good environmental performer and bad environmental performer. Our findings also show that both good performers (in an attempt to differentiate) and bad performers (to regain legitimacy) increased their level of disclosure toward environmental concern as compared to mixed performers (having minimum threat to their legitimacy).

This paper contributes to the literature, both empirically and theoretically. The major empirical contribution of this paper is the evidence of a significant relationship between environmental disclosure and performance in the context of developing countries. In addition to this, an explanation of the relationship is also provided in this paper. It also explains the variation in the pattern of disclosure between good and bad performers and reasons behind this variation. The major theoretical contribution of this paper is the reconciliation of the voluntary disclosure theory and legitimacy theory to explain the relationship between environmental performance and environmental disclosure. This paper extends the work of Hummel & Schlick (2016) which suggest that the two theories shall not be considered as mutually exclusive. Practically, empirical findings of this paper pose a challenge for stakeholders to differentiate good and bad performer as the disclosure behavior of good performer and bad performer is almost the same.

2. Literature Review and Hypothesis and Development

There is a lack of consistent understanding, both theoretically and empirically, regarding the relationship between environmental performance and environmental disclosure. Existing studies showed mixed results (Li et al., 2017) and remains inconclusive and controversial. Some of the studies posit positive relationships (see for example; Al-Tuwaijri et al., 2004; Clarkson et al., 2008; Clarkson et al., 2011; Giannarakis et al., 2017; Lu & Taylor, 2017) while others explained negative relationship (see for example; Bewley & Li, 2000; Cho et al., 2012; Cho & Patten, 2007; de Villiers & Van Staden, 2011; Deegan & Gordon, 1996; Hughes et al., 2001; Patten, 2002; Rockness, 1985) and no relationship (see for example; Freedman & Jaggi, 1982; Freedman & Wasley, 1990; Ingram & Frazier, 1980; Liu et al., 2011; Wiseman, 1982). This section reviews some of the existing studies, both empirical and theoretical, that examines the relationship between environmental performance and disclosure. The main focus of this literature review is on the context of

the research paper, proxy for environmental performance, method of measuring environmental disclosure and theoretical lens used.

In one of the earliest research study, Ingram and Frazier (1980) found no significant relationship between environmental disclosure and environmental performance. They used the corporate environmental performance (CEP) rating as a proxy for environmental performance and applied content analysis technique on the annual reports of 40 US companies in order to measure environmental disclosure. Patten (2002) suggested that firms with poor environmental performance reveal more environmental information then the firms with superior environmental performance. By examining the annual report of 151 US companies for disclosure content, and toxic release data for measuring the environmental performance, he found that there is negative relationship between environmental performance and environmental disclosure. Similarly Sutantoputra, Lindorff, and Johnson (2012) by using a sample of 200 Australian listed companies claimed that worst performer (firms with greater impact on the environment) involves in making more disclosure about their environmental activities.

On the contrary, Al-Tuwaijri et al. (2004) concluded that environmental performance is positively correlated with environmental disclosure. They measured the environmental performance based on four measures; Toxic Release Inventory (TRI) measures, environmental penalties and fines, toxic release and potential parties responsible and used a content analysis technique to measure environmental disclosure. Clarkson et al. (2008) used the Global Reporting Initiative (GRI) for environmental disclosure and TRI as a proxy for environmental performance. They concluded that there is positive relationship between environmental performance and disclosure. Clarkson et al. (2011) used the same measure for 51 Australian firms and suggested positive relation between performance and disclosure. More recently Meng et al. (2014) conducted a study on 533 listed firms in China for examining the relationship between environmental disclosure and performance. They used the content analysis method to measure environmental disclosure and evaluated environmental performance based through index based on five measures. They also divided the firms' performance in three categories (Good, Poor and mixed). They found a non-linear relationship between environmental disclosure and performance. They suggested that firms with superior and worst performance disclose more information about their environmental activities than average performers.

Among existing studies on the relationship between environmental performance and disclosure, the majority are from United States, Australian, European and Chinese context. There is paucity of work in developing countries in general and Pakistan in particular. The non-availability of environmental performance data in developing countries as compared to developed countries are among the main reasons for lack of research in developing countries like Pakistan. This paper is an attempt to fill this gap by examining the relationship between corporate environmental disclosure and environmental performance in a Pakistani context, especially analyzing that how environmental performance affect the level of disclosure by comparing the disclosure content between Good and Bad environmental performer?

Various explanations are available in the literature for the relationship between environmental performance and environmental disclosure. According to de Villiers and Van Staden (2011), companies with poor reputation about environmental activities disclose more information to their investors and stakeholders. Companies made a higher disclosure

for image management and to divert the focus away from environmental problems created by the company. Liu et al. (2011) used a sample of listed companies from the steel industry in Chinese context and concluded that environmental information disclosed by firms is far beyond their actual environmental performance. They used the content analysis method to measure the environmental disclosure and used index criteria to evaluate the environmental performance and found that firms' environmental disclosure is not a real reflection of true environmental performance.

Previously, many empirical studies on the association between environmental disclosure and environmental performance used two theoretical lenses, one is voluntary disclosure theory and other is a legitimacy theory (Al-Tuwaijri et al., 2004; Cho & Patten, 2007; Clarkson et al., 2008; Clarkson et al., 2011; De Villiers & Van Staden, 2006; Hummel & Schlick, 2016; Meng et al., 2014; Mukherjee et al., 2010; Patten, 2002). Voluntary disclosure theory suggests that firms having good environmental performance have incentives to provide a greater level of environmental disclosure (Dye, 1985; Lang & Lundholm, 1993; Verrecchia, 1983). In studies of environmental reporting, the voluntary disclosure theory proposes that a company whose performance is good will have more motivation to attract customers, investors and other stakeholders by providing the greatest level of environmental disclosure to gain market share and this will distinguish good performers from poor performers (Clarkson et al., 2008; Clarkson et al., 2011).

On the other hand, legitimacy theory (Deegan, 2002; Lindblom, 1994; Milne & Patten, 2002; O'Donovan, 2002) proposes that firm's environmental and social information disclosure is a function of social and political pressure. When firms face more social and political pressure they become more concerned about information disclosure. So the theory describes that firm with bad environmental performance face more public pressure. In such scenario bad performer would be inclined to make greater and more positive environmental information disclosure in order to compensate the threat of legitimacy.

The voluntary disclosure theory proposes a positive association between environmental disclosure and environmental performance; whereas legitimacy theory predicts that the relationship will be negative. Previous studies on the relationship between environmental disclosure and environmental performance by using different theoretical perspective show mixed results. Considering the theoretical propositions and inconclusive nature of the results, in this paper, we examine the association between environmental disclosure and environmental performance by stating the following hypothesis;

➢ **H_1a:** Environmental disclosure is positively associated with environmental performance as predicted by voluntary disclosure theory.

➢ **H_1b:** Environmental disclosure is negatively associated with environmental performance as predicted by legitimacy theory.

The two theories voluntary disclosure and legitimacy theories proposes that there is an association between environmental disclosure and environmental performance, but the motivations behind the disclosure made by two theoretical perspectives are different. The different motivations may also lead to differences in the disclosure content. The pattern of different items and forms of environmental disclosure may vary between the good and bad performer. According to the voluntary disclosure theory, the major motivation for the good performers is to differentiate themselves from the bad performers. Therefore, good performers provide hard and verifiable environmental disclosure (Clarkson et al., 2011).

From the standpoint of legitimacy theory, disclosure increases when the legitimacy of poor performer is endangered. Therefore, poor performers provide soft, unverifiable disclosures that are subjective and self-centered. The main emphasis of disclosure is to change the public opinion (Clarkson et al., 2008; Clarkson et al., 2011).Thus; the two theories indicate that there is a difference in the pattern of environmental disclosure. Hence, we propose the following hypothesis;

- ➢ **H₂:** The pattern of Environmental disclosure varies between Good and Bad environmental performers.

There are some companies which may fall between the two extremes of good and bad performers. These companies are labeled as mixed environmental performers. These are the group of firms that fulfill some basic needs of environmental performance. The disclosure behavior of mixed performers also needs to be studied. As mixed performers have little achievements and have minimum threat to their legitimacy therefore, according to both voluntary disclosure theory and legitimacy theory they should disclose less than both good and bad performers. This leads to following hypothesis;

- ➢ **H₃:** Both Good and Bad performers disclose more environmental information than mixed performers**.**

3. Methods and Data

Top 100 companies listed on the Pakistan stock exchange (PSE) were selected as the sample for this study because large companies are widely recognized in the literature as being among those having greatest environmental impacts. These companies represented nineteen industry categories (see table 1). To examine the relationship between corporate environmental disclosure and environmental performance, the selected companies were ranked in three categories (Good, Mixed and Bad) on the basis of their environmental performance. The final sample for this study comprises 78 companies as 22 companies were excluded because these do not have the necessary data to meet all of the selection criteria. 25 companies fall into the category of good performers. The company was identified as Good environmental performers if it meets all of the four conditions mentioned below.

- ➢ Having won an environmental excellence award by National forum for environment and health.

- ➢ Having introduced ISO 14001 or other environmental management system.

- ➢ Not listed as a polluting firm by the Pakistan environment protection agency.

- ➢ Having no publicly exposed bad news, fines or complaints.

The bad performers were identified on the basis of environmental violations and penalty imposed. Pakistan Environmental Tribunal, under the Ministry of Environment Pakistan, records the list of companies on a periodic basis that have failed to comply with national environmental laws and regulations. Out of top 100 listed companies, 26 were ranked as bad performers on the basis on information received from the environmental tribunal. Numbers of complaints were received by the environmental tribunal against these companies under Pakistan environmental tribunal rules 2012. The companies with poor environmental performance fall into twelve industries categories (see table 1). The remaining 27 firms could be classified as mixed performer. These are the companies with

some positive actions, but do not meet all four conditions to be classified as good performers.

Table 1: Sample Firms by Industries

Industry	Good	Mixed	Bad
Exploration and Marketing industry (Oil and Gas)	5	3	0
Power generation and Distribution, Refinery	4	1	2
Chemical and Fertilizers	2	2	7
Food and Personal Care Products, Sugar and Pharmaceuticals	4	5	2
Engineering, Automobile Assembler & parts and accessories	4	6	1
Cement, Paper and Board, Steel, Leather and Tanneries, Glass and Ceramics	2	3	7
Transport, Technology and communication, Cable and Electrical goods	4	4	0
Tobacco, Textile, Clothing and Fur	0	3	7
Total	**25**	**27**	**26**

Environmental Disclosure for the year 2014 and 2015 was obtained through content analysis of annual reports, environmental reports, social responsibility and sustainability reports. Content analysis is a technique based on the judgment of presence or absence of particular data in the specific report (Krippendorff, 2004). Initially, the environmental disclosure instrument was developed based on the GRI guidelines and later updated/contextualized based on environmental disclosure regulations by the Pakistan Environmental Protection Act (PEPA) 1997 and the National Environmental Quality Standards (NEQS). The same instrument was further updated based on the environmental disclosure information reported by 20 leading companies of Pakistan. Thus based on the contents, this instrument could be considered as valid to measure environmental disclosure score and the final instrument contains 22 items for measuring disclosure across eight categories. A complete list of each category and their items appeared in Appendix 1. To extract valid results, we ensured the reliability of the data collected for this research and used two coders to independently examine environmental disclosure score and environmental performance of a company. The calculated scores by the coders were later compared and found that the Krippendorff's α value of each item ranges from 0.80 to 1:00. Thus indicates perfect agreement between the coders. The few disagreements between the two coders were later resolved by discussion. We examined the reports for the presence and absence of the statement related to different environmental aspects. The total scores and score of each item of environmental disclosure for the year 2014 and 2015 of sample companies with their average scores is presented in Appendix 1.

Environmental performance was taken as an independent variable in this study, which is divided into three types such as Good, mixed and Bad. Mixed performers were set as base group. Two dummy variables were defined for Good (Bad) performer. 1 if the firm has Good (Bad) environmental performance and 0 otherwise. To describe the firm characteristics, additional independent variables were adopted as control variables such as firm size, ownership, return on assets and leverage (Gray et al., 2001; Meng et al., 2014; Patten, 2002). Firm size was measured by the natural logarithm of the year ended total assets (Gray et al., 2001; Meng et al., 2014). In order to describe the ownership of listed companies, a dummy variable was used (1 for a state owned 0 for otherwise). Return on assets was used to measure the financial performance that is measured by the ratio of firms net profit to total assets and leverage was measured by the ratio of firms' total debt to total assets (Meng et al., 2014).

4. Analysis and Discussion

Table 2 presents the descriptive statistics and the pairwise correlation of the all the variables. Panel B of Table 2 shows that good performer is positively correlated to environmental disclosure. The bad performer shows a positive association with environmental disclosure. Return on asset shows a negative relationship with environmental disclosure both for good and bad performer firms. Size is positively related to environmental disclosure both for good and bad performer firms, but shows a negative relationship with return on assets. Leverage shows a positive relationship with environmental disclosure, good performer firm and size. Leverage shows a negative relationship with bad performer and return on assets. Ownership is positively correlated with environmental disclosure, good performer, size and leverage. Ownership is negatively related with bad performer and return on assets. The reason to perform the correlation analysis is to test the possibility of multi-collinearity among the explanatory variables included in the study. There was no multi-collinearity among the explanatory variables as proved by the empirical results. The Panel B of Table 2 shows that cross-correlation terms among explanatory variables is fairly small.

Table 2: Panel A: Descriptive Statistics

Variable	Mean	S.D.	Minimum	Maximum
ENV Disc	0.503455	0.248361	0.050000	0.82
Good Performer	0.320513	0.468177	0	1
Bad Performer	0.333333	0.472923	0	1
ROA	0.124700	0.101435	0.010600	0.515910
Size	10.18264	0.741369	7.096110	11.74335
Leverage	1.570157	3.166280	0.007270	25.78000
Ownership	0.128205	0.335395	0	1

Panel B: Correlation Matrix

Variable	1	2	3	4	5	6	7
1. ENV Disc	1						
2.Good performer	0.423752	1					
3.Bad performer	0.056045	-0.485643	1				
4.ROA	-0.184946	-0.128271	-0.054392	1			
5.Size	0.428907	0.308514	0.128680	-0.157169	1		
6.Leverage	0.018236	0.121017	-0.113809	-0.199601	0.094708	1	
7.Ownership	0.167132	0.311838	-0.189814	-0.125541	0.429054	0.304240	1

Note: ENV DISC (Corporate environmental disclosure measured by using eight index criteria), Good performer (1 if the firm having good environmental performance and 0 otherwise), Bad performer (1 if the firm having Bad environmental performance and 0 otherwise), ROA (Net profit to total assets), Size (natural logarithm of total assets), Leverage (total debt to total equity), Ownership (1 if the firm is a state owned 0 otherwise).

In the table 3, we run two regressions for both years 2014 and 2015 and then compare the results of both regressions. Where good and bad performer are independent variables and control variable include return on assets (net profit to total assets), size (natural logarithm of total assets), leverage (total debt to total equity) and ownership (1 if the firm is a state owned 0 otherwise). In the first regression for the year 2014 (sample A), good performers and bad performers are significantly associated with environmental disclosure at the level of 1%. Control variables like return on assets and leverage have an insignificant and negative relationship with environmental disclosure. While other control variable like ownership is positively and significantly related to environmental disclosure at 10% and size has a positive and significant relationship at 1%. The R-Squared of this model is 34.63%.

In the second regression model for the year 2015 (sample B), the results shows that good performer is significantly associated with environmental disclosure at 1% with increasing their environmental disclosure level. The relationship between bad performer and environmental disclosure is significant and positive at 1% showing as the emission level (bad performers) increase they started to make higher level of disclosure. Control variables like return on assets and leverage have an insignificant and negative relationship with environmental disclosure. While other control variable like ownership is positively and significantly related to environmental disclosure at 10% and size have a positive and significant relationship at 10%. The R- Squared of this model is 55.09%.

To the greatest interest, the coefficient of good and bad performers is significantly associated for both years. The coefficient of good performers (firms with low emission level) is 0.23 for the year 2014 and 0.28 for the year 2015 respectively significant at the level of 1%. Hence, the results indicate that firms with good environmental performance disclose more environmental information for the year 2014 and 2015. These results support H_1a as predicted by the voluntary disclosure theory. The coefficient of bad performer (the firms with higher emission level) for the year 2014 is 0.12 and 0.22 for the year 2015 respectively significant at the level of 1%. Thus, the results show that environmental disclosure is significantly associated with the proxy (bad performer) of environmental performance of our sample indicating that the bad performer (with higher levels of

emission) discloses more environmental information for the year 2014 and 2015. These results support H_1b as implied by the legitimacy theory.

Table 3: Regression Results

Variable	Sample A-2014 Coefficient Estimate (Std. Error)	Sample B-2015 Coefficient Estimate (Std. Error)
Dependent Variable; Environmental Disclosure		
Good performer	0.228677*** (0.044837)	0.275020 *** (0.042591)
Bad performer	0.123282*** (0.046437)	0.223976*** (0.043113)
ROA	-0.327842 (0.219225)	-0.160000 (0.276920)
Leverage	-0.002030 (0.006516)	-0.004981 (0.008464)
Ownership	0.087359* (0.084442)	0.005089* (0.087143)
Size	0.108123*** (0.038557)	0.072444* (0.038321)
Constant	-0.601574 (0.377589)	-0.380782 (0.373701)
R-Squared	0.346297	0.550972
F-statistics	10.52237***	14.51986 ***
Observations	78	78

*,**,*** indicates significance level at 0.10,0.05,0.01 respectively.

(Value in parenthesis indicates Standard error). Environmental disclosure is dependent variable, Ordinary least squares (OLS) regression run with a robust white test for the year 2014 and 2015. The significance level is based on p-value of the regression results.

Table 4 represents the average scores of all eight categories of environmental disclosure among bad, mixed and good performers used in the study for the year 2014 and 2015 with their pairwise differences. This table helps us to test the pattern of environmental disclosure varies between good and bad environmental performer (Hypothesis 2). Table 4 shows that good performer and bad performer reveal significantly more environmental information in each category of 2015 than mixed performers. The point of interest here is the structural analysis, the difference in scores of good to bad, good to mixed and bad to mixed is calculated. In sample A for the year 2015, for category 1 information relating to environment shows the average scores for good and bad performer is 0.98 and 0.9 respectively. The difference of the scores is 0.08 which is significant at the level of 0.10 showing that good environmental performer made higher level of disclosure to differentiate themselves from the bad ones (Clarkson, Overell et al. 2011). For category 2, information on company related to their environmental system and initiative taken by firm for the implementation of green environment shows the average scores for good and bad performer is 0.9 and 0.69 respectively. The difference between the two is 0.21 that is

significant at the level of 5%. For category 3, 4 and 5 the difference in average scores 0.09, 0.08 and 0.22 indicate that Good performer made more the environmental disclosure than bad ones.

Category 6, about the statement of environmental issue shows significant results at the level of 5% in the difference between the two categories of environmental performance (good and bad). For category 7 of environmental disclosure index "the concern of firm for following the some specific environmental regulations" indicates the average scores are 0.7 and 0.57 respectively, for good and bad performer and the difference of the scores is significant at the level of 1%. Category 8 of the structural analysis relates to environmental activities adopted by firm for public welfare shows the average scores 0.88 and 0.73 for good and bad performer and the difference of scores is significant at the level of 1%. The structural analysis of differences in scores among good and bad performer shows overall significant results. Sample B for the year 2014 in this table shows similar results. Hence, the detailed structure analysis for bad and good performers indicates that good performers increases their level of disclosures to differentiate themselves from the bad ones, on the other hand Bad performers increase their level of disclosure of environmental activities to change the public perception. So this supports the hypothesis 2.

As Table 4 represents the average scores of all eight categories of environmental disclosure among bad, mixed and good performers used in the study for the year 2014 and 2015 with their pairwise differences. The pairwise differences of bad to mixed performers and good to mixed performers are also present. This table also helps us to test both good and bad performers disclose more environmental information than mixed performers (Hypothesis 3).

In sample A for the year 2015, category 1 discussion of companies relating to the environment shows the average score for Bad and mixed performers 0.9 and 0.76 respectively. Difference of score between Bad and mixed performer is 0.1 showing that bad environmental performer reveals more environmental information than mixed performer (who has low threat to their legitimacy) (Meng, Zeng et al. 2014). The difference between the average scores of bad to mixed performers for the category 2, 3, 7 and 8 is 0.31, 0.17, 0.3 and 0.1 respectively showing significance level at 10% and 1%. The difference of average scores among bad to the mixed performer for category 4 (Initiative taken by firm to control pollution), 5 (The concern of firm for following the some specific environmental regulations) and 6 (The statement about environmental issues) shows no significant results. Sample B for the year 2014 in this table shows similar results. Empirical results of the structural analysis with pairwise differences among Bad environmental performer and mixed performer shows significant results among all eight categories. The pairwise differences show that bad performers disclose more information than mixed performers for the year 2015 and 2014.

Empirical results of the structural analysis and pairwise differences between good and mixed performer show overall significant results among all eight categories. The pairwise difference shows that good environmental performer reveals more information about environmental activities than mixed performers for the year 2014 and 2015. Although the comprehensive structural analysis for bad, good and mixed environmental performer shows that good performer and bad performer reveal significantly more environmental information in each category of 2014 and 2015 than mixed performers.

Table 4: Structural Analysis of Differences in Scores of Eight Categories among Good, Mixed and Bad Performer

	Average scores			Difference in scores		
	Bad N=26	Mixed N=27	Good N=25	Bad-mixed	Good-mixed	Good-Bad
Sample A-Year 2015						
1. Statement and Discussion of Companies concern for Environment	0.9	0.76	0.98	0.14	0.22**	0.08*
2. Environment Management system and initiative	0.69	0.38	0.9	0.31*	0.52***	0.21**
3. Technology, Investment and Expenditure related to Environment	0.42	0.25	0.51	0.17***	0.26**	0.09
4. Environmental performance improvement	0.64	0.38	0.72	0.26	0.34**	0.08
5. Resource consumption and pollutant control	0.58	0.33	0.8	0.25	0.47*	0.22
6. Environmental impact and important environmental issue	0.01	0	0	0.01	0	-0.01**
7. Compliance with environmental regulations	0.57	0.27	0.7	0.3***	0.43***	0.13***
8. Environmental public welfare activities and other	0.73	0.63	0.88	0.1***	0.25**	0.15***
Total	**4.54**	**3.00**	**5.49**	**1.54**	**2.49**	**0.95**
Sample B- Year 2014						
1. Statement and Discussion of Companies concern for Environment	0.8	0.77	0.88	0.03	0.11**	0.08***
2. Environment Management system and initiative	0.55	0.33	0.82	0.22*	0.49***	0.27***
3. Technology, Investment and Expenditure related to Environment	0.34	0.16	0.41	0.18	0.25	0.07
4. Environmental performance improvement	0.53	0.33	0.61	0.2***	0.28**	0.08
5. Resource consumption and pollutant control	0.5	0.3	0.76	0.2	0.46	0.26***
6. Environmental impact and important environmental issue	0.01	0	0	0.01**	0	-0.01**
7. Compliance with environmental regulations	0.45	0.22	0.61	0.23***	0.39	0.16
8. Environmental public welfare activities and other	0.52	0.49	0.65	0.03***	0.16***	0.13
Total	**3.7**	**2.6**	**4.74**	**1.1**	**2.14**	**1.04**

*,**,*** indicates the significance level at 0.10,0.05,0.01 respectively.

Sample A and Sample B for the year 2014 and 2015 respectively taken with a sample of 156 firms, including 50 Good, 52 Bad and 54 mixed performers. The scores of each eight categories are calculated according to the item present in environmental disclosure scoring index (see for example Appendix 2). The average scores of each eight categories are calculated for Bad, mixed and Good performer for both years 2014 and 2015separately. After, pairwise differences among Bad-mixed, Good-mixed and Good-Bad are reported in last columns. The independent sample test was used to test the significance level of pairwise differences by using SPSS.

For testing the hypotheses 3, Table 5 presents the results of ordinary least squares (OLS) regression analysis by using a Huber white test. Model 1 in the table 5 presents the results for Good performers. The coefficient value of 0.21 is significant at the level of 1% that describes that good performers significantly increase their corporate environmental disclosure from 2014 to 2015. Model 2 of the table presents the results for mixed performers with a value of 0.05 which is insignificant. It shows that mixed performers tend to increase their information about environmental activities, but this increase is very low. Model 3 of the table presents the regression results for Bad performers showing the level of disclosure about the environmental activities increase with the value 0.16 that is significant at the level of 1% for the year 2014 to 2015. It shows that good performers and bad performers heightened their level of disclosure toward environmental concern as compared to mixed performers (i.e. 0.21-0.04) and (i.e. 0.16-0.04) respectively. Further, all of the three models show significant F-statistics at the level of 1%. So the results find support for hypothesis 3 that both good and bad performers disclose significantly more environmental information than mixed performers.

Table 5: Regression Results for the Difference in Scores for the Year 2014 and 2015

Variables	Model 1	Model 2	Model 3
	Good Performer Coefficient (Std. Error)	Mixed Performer Coefficient (Std. Error)	Bad performer Coefficient (Std. Error)
T2015	0.209520*** (0.043899)	0.042722 (0.031962)	0.159948*** (0.029755)
ROA	-0.211858 (0.169040)	-0.244468* (0.164308)	-0.235835* (0.100172)
Leverage	-0.002409 (0.003984)	-0.000967 (0.004787)	-0.000529 (0.004641)
Size	0.110029*** (0.025680)	0.130724*** (0.025991)	0.111223*** (0.025148)
Ownership	-0.050264 (0.058798)	-0.026088 (0.061345)	0.006137 (0.059405)
Constant	-0.647856** (0.264098)	-0.833699** (0.271149)	-0.656344** (0.259087)
R-Squared	0.263188	0.167398	0.231864
F statistics	10.71593***	6.031601***	9.055604***
Observations	50	54	52

*,**,*** indicates the significance level at 0.10,0.05,0.01 respectively. (Value in parenthesis indicates Standard error).

The level of environmental disclosure is dependent variable, T2015 is a dummy variable equal to 1 if the year 2015, and 0 if the year 2014. The significance level is based on OLS Regression with robust (White test). Model 1,2 and 3 stated that Good and Poor performer significantly increase their level of environmental disclosure than mixed performer from 2014 to 2015 respectively.

5. Conclusion

In this study, we examined how the level of voluntary disclosed environmental information by the sample firms relates to its underlying environmental performance in a Pakistani context. This paper has also studied the variation in the pattern of environmental disclosure between the different categories of environmental performance. Environmental performance was divided into three categories: good, bad and mixed environmental performer. The level of environmental disclosure was measured through annual reports and sustainability reports by using an index based on 22 categories of environmental information for the years 2014 and 2015. Our sample consists of 78 firms listed on the Pakistan Stock Exchange from nineteen industry categories.

Firstly, we conclude that environmental disclosure is significantly associated with environmental performance as measured by our sample companies. Our results are consistent with the two theoretical lenses voluntary disclosure theory and legitimacy theory. According to the voluntary disclosure theory, we found that good performers (firms with better environmental performance and low emission level) disclose more environmental information for 2014 and 2015 respectively. Consistent with the prediction of legitimacy theory, we found that bad performers (firms with worst environmental performance and higher emission level) reveal a greater level of environmental disclosure for the year 2014 to 2015 respectively even with their worst performance level.

Secondly, by using structural analysis techniques, we conclude that pattern of disclosure varies between good, bad and mixed performers and that these variations are statistically significant. We explained the structural differences between the disclosure content of good and bad performer through the lens of voluntary disclosure theory and legitimacy theory. Both good and bad performers increase their level of disclosure but with different motivations. Good performer increases their level of disclosures to differentiate themselves from the bad ones (Dye, 1985; Lang & Lundholm, 1993; Verrecchia, 1983), while bad performers increase their level of disclosures to change the public perception (Deegan, 2002; Lindblom, 1994; Milne & Patten, 2002; O'Donovan, 2002; Aragón-Correa et al., 2016; Hassan et al., 2017). Our findings show that the two theoretical lenses voluntary disclosure theory and legitimacy theory can be reconciled to explain the environmental disclosure behavior of Pakistani corporations.

Thirdly, by comparing the disclosure scores of all three categories of environmental performance, we conclude that good performers and bad performers increased their level of environmental disclosure between 2014 and 2015 as compared to mixed performers. The mixed performer reveals very little information about environmental activities in each category of environmental disclosure than those having good and bad performance. This suggests that the firms with mixed performance just fulfill the basic requirements. Since their legitimacy is not in danger because of poor performance, they do not make efforts toward revealing environmental information.

This research performed analysis at three different levels: (1) year wise, (2) category wise, (3) and at performance categories (good, bad, and mixed). This research concludes that good performers, consistent with the voluntary disclosure theory, increase their level of disclosures to differentiate themselves from the bad ones and bad performers, consistent with legitimacy theory, increase their level of disclosure of environmental activities to

change the public perceptions. Thus the results of this study could be considered as robust and valid.

The findings of our study have certain practical implications. Both good and bad performers were found to increase environmental disclosure with different motivations. Although the pattern of disclosure varies between good and bad performers, their disclosure behavior is common. Thus, in a situation when both types of performers provide environmental information it may seem difficult for stakeholders to differentiate between good and bad environmental performer (Meng et al., 2014). This paper also recognized that the mixed performer reveals very little information toward environmental activity. Therefore, investors and stakeholders should be cautious while interpreting increase in disclosures related to environmental activities. Also corporate executives should take steps for enhancing the corporate responsibility regarding environmental performance as well as reporting. The regulatory authorities of Pakistan should promote mandatory guidelines for sustainability reporting by defining disclosure items, so that the companies can avoid for masking of environmental data and selective environmental disclosure. Other (environment related) regulators should advance their enforcements by increasing the penalty charges for environmental violators and provide incentives for environmental friendliness.

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Appendix 1: Environmental Disclosure Scoring Index for Content Analysis

ITEM	Average score	
	2014	**2015**
1. **Statement and Discussion of Companies' concern for Environment**	**0.88**	**0.94**
1A.Top executive's statement of principles related to environment protection	0.96	0.97
1B.Firms environmental protection policy, goals and plan	0.79	0.90
2. **Environment Management system and initiative**	**0.6**	**0.66**
2A.Information related to ISO 14001 environmental system	0.92	0.92
2B.Employee training in Environment Management and Operation	0.58	0.69
2C.External environmental Honors or rewards	0.44	0.47
2D.Independent assurance of environmental information disclosed in the annual reports	0.47	0.54
2E.Implementation of environmental management Accounting	0.59	0.69
3. **Technology, Investment and Expenditure related to Environment**	**0.34**	**0.38**
3A.Firms investment expenditure for environment friendly products	0.53	0.59
3B.Technological innovation related to treatment of generated waste recycle	0.49	0.56
3C.Government funds, subsidies related to environment	0	0
4. **Environmental performance improvement**	**0.52**	**0.60**
4A.Reduce pollutant discharge such as waste water, Gas per unit of product	0.25	0.33
4B.Statement on other environmental benefit of energy conservation and pollutant control	0.79	0.86
5. **Resource consumption and pollutant control**	**0.51**	**0.58**
5A.Reduse in quantity and level of gas emission, solid waste and toxic substance disposal	0.51	0.58
6. **Environmental impact and important environmental issue**	**0.01**	**0.01**
6A.Violation of environmental regulations and punishment	0	0
	0	0

6B.Statement whether firm is listed as severely polluting enterprise by PEPA	0.02	0.02
6C.Complaints of local community or cases of collective environmental petition	**0.45**	**0.53**
	0.65	0.77
7. Compliance with environmental regulations		
7A.Statement about pollutant of Gas emission reach on specific environmental standard	0.62	0.72
7B.Statement about the treatment of solid waste and other affluent accordance with law	0.15	0.22
7C.The progress schedule of total emission reduction at the plant or firm level	0.37	0.40
7D.Environmental assessment of construction project is accordance with law	**0.58**	**0.76**
	0.82	0.95
8 Environmental public welfare activities and other		
8A.An overview of environmental public welfare activities such as tree plantation and Biodiversity conservation	0.33	0.56
8B.An overview of potential environmental influences on global warming, Ozone layer and acid rain		