Is Triple Bottom Line Necessary? Evidence from Pakistan Stock Exchange

Ume Salma Akbar[1] and Niaz Ahmed Bhutto[2]

Abstract

This study aims to investigate triple-bottom-line (TBL) disclosures of the Pakistan Stock Exchange (PSX) 30-index by developing the twenty disclosure criteria for each area: economic, social, and environmental. All the required information for disclosures is collected through the company's websites and annual and stand-alone reports. Multiple regression analysis is used to analyze the determinants of TBL reporting empirically. This study adds broader implications of research, emphasizing the importance of TBL disclosures in today's global business environment and the specific relevance of our findings to corporate practices in Pakistan. TBL disclosures are further classified into five categories: economic, social and environmental, non-economic, and total exposures. According to the results, the degree of entire disclosures (financial, social, and environmental) and economic disclosures is higher for larger-size firms in the PSX-30 index. As the leverage level increases in the sample firms' revelations, the level of social, environmental, and non-economic disclosures significantly declines. Liquidity is reported as negative (against the sign of the proposed hypothesis) but significant under all five revelations that confirm that the current ratio of firms will be less. Finally, the relationship between profitability and the five disclosure classes is positive and insignificant. These results could be attributed to fewer environmental regulations, less socially responsible practices, weak economic positions, climate vulnerability, an increasing population, ever-increasing demand for industrial goods, an increasing concentration of greenhouse gases and CO2 in the atmosphere, and declining forests in developing economies like Pakistan. Therefore, listed firms on the Pakistan Stock Exchange must adopt a socially responsible, economically sound, and environmentally friendly practice and appropriately disclose all in the respective reporting resources.
Keywords: Triple Bottom Line, Economic Disclosure, Environmental Disclosure.

Introduction

The world has undergone significant transformation since the emergence of the manufacturing sector in the 1700s. On one hand, this period has witnessed advancements in human well-being and substantial economic progress. Conversely, it has also led to introduction of health-hazardous substances that have polluted the global environment (Ritter, 2009). Kuznets's hypothesis postulates that pollution levels increase more rapidly than company profits in the early phases of economic and industrial growth. Logically, the hypothesis is intuitively appealing; in the early stages of industrialization, people are more interested in income, and high priority is shown towards monetary and output goals than the clean environment (Dasgupta et al., 2002).

Moreover, in early industrialization, a high degree of utilization of natural resources occurred that resulted in the environment deterioration through hazardous emissions and pollutants.

---

[1] *Assistant Professor (Corresponding Author), Sukkur IBA University, Sindh, Pakistan. Email: u.salma@iba-suk.edu.pk*
[2] *Professor, Sukkur IBA University, Sindh, Pakistan. Email: niaz@iba-suk.edu.pk*

However, the worst thing was not the harmful substances but the peoples' (firm's governing bodies) attitude towards pollution abatement, which looks too expensive to dispose of (Dinda, 2004). Therefore, environmental degradation became a side effect of development, which embraces resource (air, water, and soil) depletion, ecosystem destruction, wildlife extinction, and pollution (Johnson et al., 1997).

Fewer environmentally friendly behaviors and more pollution-pushing investments cause greenhouse gas emissions, leading to climate change, which brings a series of adverse outcomes: extreme weather conditions, raised smog and haze, higher degrees of global temperatures, and higher sea levels (Outlook, 2008). Consequently, people from different walks of life were affected due to poor environmental management (Stern, 1992) i.e., the reason the United Nations has officially announced environmental degradation being ranked in the top 10 global threats (Osefoh, 2016).

Nations of the world have joined their hands through "The United Nations Framework Convention on Climate Change (UNFCCC)" by signing a treaty, Kyoto Protocol, in 1992 to save the globe from global warming by reducing and controlling the emissions of greenhouse gases (Grubb et al., 1997; Santilli et al., 2005; UN report, 1997). Hence, the seriousness of the matter cautioned both parts of the world community, humans and corporations, to ensure socially responsible actions (Wen & Chen, 2008). Nevertheless, extreme weather conditions damage productivity and affect the fiscal position through increased cost of climate change mitigation policies, tax collection, and spending programs (Keen & Jones, 2009). Besides increased policy development costs, significant investment is required at early development stages of low–carbon emission alternative energy sources, such as solar panels, as a substitution for wind energy (Johnson & Lybecker, 2009).

The enhancement of energy security and reduction in adverse effects of climate change and pollution will be significant targets (Cobourn, 2008). In response to stakeholder pressure, many companies have been adopting the concept of sustainability of business that is profitable and environmentally friendly (Dentchev, 2004; McWilliams & Siegel, 2001). Organizational commitment towards Corporate Social Responsibility (CSR) along with Corporate Social Performance (CSP) serve this purpose, and this ethical concept is increasingly getting valued by the community, corporations, and Government and mainly is adopted by investors (Margolis & Walsh, 2001; Porter & Kramer, 2002). Presently, around the world, businesses are threatened by illegal and unethical practices; the world financial crises in 2008 and the Euro debt crises back in 2011 are examples. Gone are the eras when Corporate Social Performance CSP and its impacts were considered irrelevant to firm financial performance. Instead, at present, it is believed that the firms engaged in CSP activities are most likely to experience less risk and earn higher investment returns (Robins, 2011).

The primary objective of this research is to assess TBL reporting in the context of Pakistan, focusing on economic, social, and environmental issues reported by listed firms in the "30 index." Pakistan was chosen for this study due to its vulnerability to climate change impacts (Sohu et al., 2023; Schilling et al., 2013). The region faces extreme weather events like droughts, heat waves, and floods, primarily due to the melting of glaciers in the Hindukush, Karakoram, and Himalayas (Rasul & Ahmad, 2012). Additionally, Pakistan's population growth has contributed to increased greenhouse gas emissions (Sohu et al., 2020) and a decline in forest cover. Pakistan's ranking of climate vulnerability as per the Global Vulnerability Index (CCVI) has risen with time; in 2009-2010, Pakistan was the 29th most vulnerable country, that went to 16th most vulnerable country in one year (Khan & Fee, 2014; Kreft et al., 2013).

Graph 1 Population of Pakistan
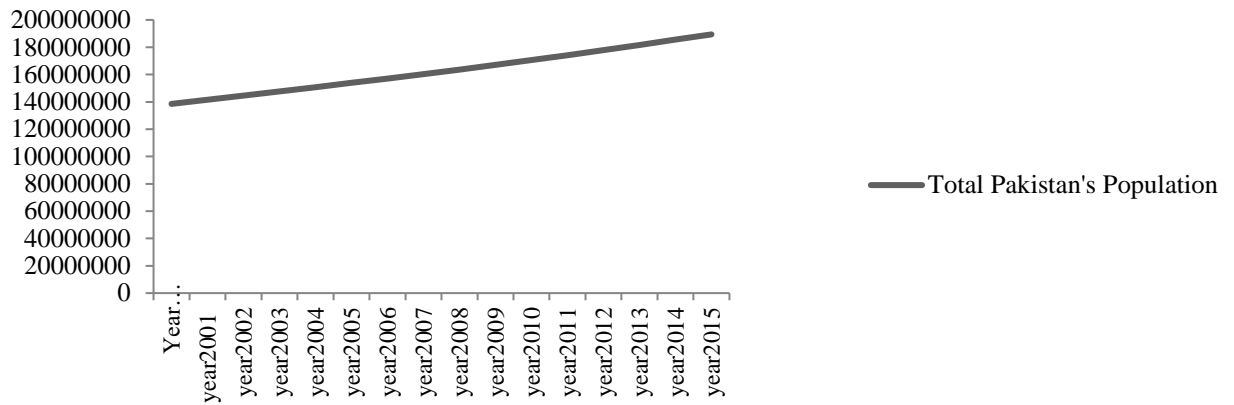
Pakistan's population is increasing at an alarming rate (see graph 1); hence, demand has increased, which pushes greenhouse gas emissions to the maximum (Sohu et al., 2020; Mallick & Masood, 2011). During the period of 15 years (1990-2005), emissions of CO_2 (see graph 2), methane and nitro oxide have raised by 97.4, 33.2 and 44.5%, respectively, required to be addressed and controlled at the earliest (Rasul & Ahmad, 2012; Solomon, 2007; Rasul et al., 2008; Berthier et al., 2010).

Graph 2 CO2 Emissions in Pakistan
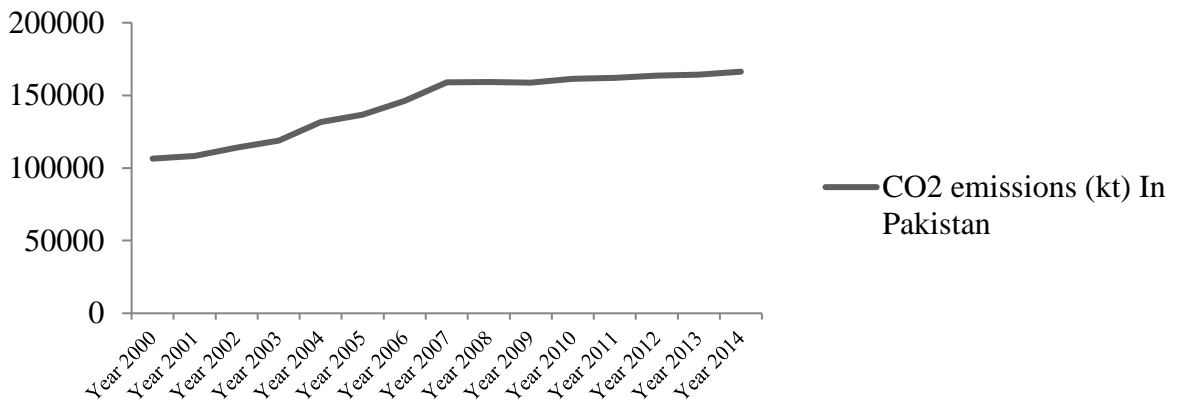
Less developed nations, like Pakistan, bear the brunt of climate change's negative consequences while contributing relatively little to global carbon dioxide emissions. (Sohu et al., 2019), (Dazé and CCN, 2011, Van Aalst, 2006). "The vast and destructive usage of wood has led to a decline in the country's forest cover from 4% to 3% in only a few decades" (Kharl & Xie, 2017) (see graph 3). At the same time, a country must have a 20 per cent area under forests.

Graph 3 Forest area (% of the land area) in Pakistan
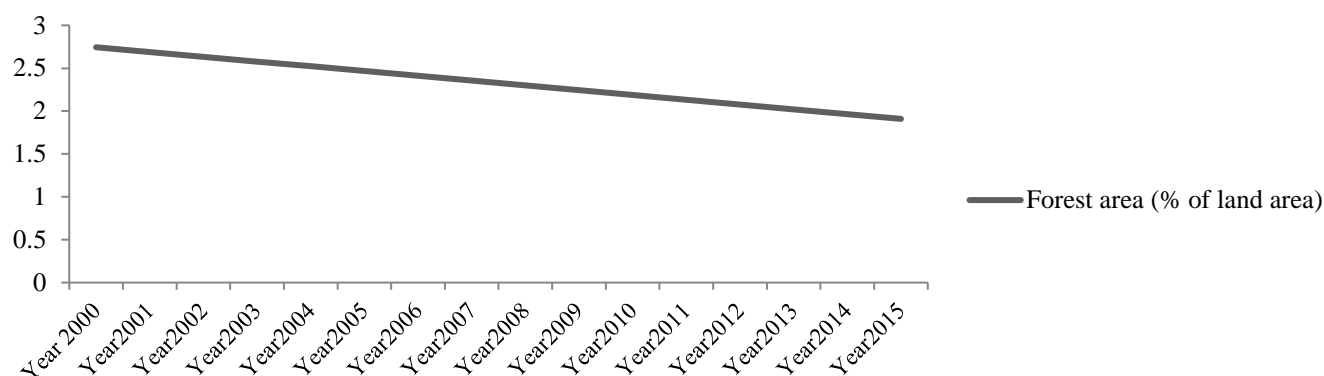
The TBL disclosure is being analyzed through annual reports, stand-alone reports and websites of the listed firms (Sohu et al., 2020). Further, the regression analysis is applied to test the hypotheses which associate the degree of variation in TBL reporting factors and their influence on corporate financial and non-financial disclosure.

The remaining sections of the paper are structured as follows: Section II presents a literature analysis, Section III describes the data and methodology used in the study, Section IV provides a detailed analysis of the research methods and empirical findings, and Section V concludes the paper.

Literature Review

The Triple Bottom Line (TBL) refers to an accounting framework comprised of three components: the social, environmental and financial (Slaper & Hall, 2011). John Elkington introduced the concept in 1997. TBL promotes concern about business matters not only with their economic profits but also with social and environmental benefits (Sohu et al., 2022; Elkington, 2013). The TBL concept addresses the sustainability-related construct, which dates back to the model of sustainable development introduced by Brundtland (1987), particularly "development that meets the needs of the present generations without compromising the ability of the future generations to meet their own needs". The exact description of sustainable development for improving the present generation's social and environmental conditions without costing future generations further endorsed by (Hart & Milstein, 2003).

Some organizations are going with the TBL Framework to evaluate their performance widely and to create superior business value (Hubbard, 2009; Dakhan et al., 2021). TBL's approach consists of three domains; "people, planet and profit." People, the first domain is related to the social benefits provided to society and employees of companies; the organization's involvement in sustainable and responsible environment-related business practices comes under the umbrella of the second domain of TBL the Planet, while the third domain, profit covers finance and economic health of the business (Dakhan et al., 2020; Bergmans, 2006; Henriques & Richardson, 2013; Brown et al., 2006; Elkington & Rowlands, 1999).

The relationship between sustainability and the three lines of TBL is elaborated differently by different authors. Yan et al. (2009) refers to sustainability with only one domain of TBL, the environment; however, according to Mohamed (2008) and (Iqbal et al., 2019), it refers to the social domain, while Alfred and Adam (2009) defined sustainability by referring to all three lines of TBL (Dwyer, 2009; Alhaddi, 2015; Epstein, 2018; Savitz, 2013; Iqbal et al., 2021). Moreover, Aras and Crowther (2009) mandate a similar balanced form of sustainability with TBL constructs for the continuous existence of the planet.

Elkington and Rowlands (1999) report the TBL as an amalgamation platform of environmental, social and economic lines. As well as, that very framework provides a scale for practical sustainability to measure economic, environmental and social performance (Goel, 2010; Junejo et al., 2020; Rogers & Hudson; 2011). The three branches of the TBL framework impact the organizational performance through their respective business practices; the economic line fastens the organizational growth with the growth of the economy in a way that must contribute economic value to the surrounding system as well as to the future generations (Elkington & Rowlands, 1999; Spangenberg, 2005).

Under the second fraction of TBL- the social line conduct of business practices transfers into the community-oriented beneficial and fair or non-profitable business practices to the labor force, human capital and society (Elkington & Rowlands, 1999; Junejo et al., 2022; Gimenez et al., 2012). The theme behind providing these sorts of values and benefits is "giving back" to society, merely to promote a healthy relationship between community and businesses in the form of fair wages and availability of better health care services by disregarding the moral aspects and social responsibility which may be counted as financial value adding activity for the organization (Collins et al., 2007; Goel, 2010).

The third sphere of TBL- the environmental line for the welfare of future generations practices a no-compromise strategy for environmental resources. They were promoting energy efficiency, reducing greenhouse gas emissions and adopting other environmentally friendly practices (Dhiman, 2008; Raar, 2002; Naveed et al., 2023; Goel, 2010). Furthermore, Kearney (2009) and Qalati et al. (2021) conducted an inter-industrial analytical study to evaluate the impact of environment-related activities on organizational performance by taking a sample of 18 industries and came up with a conclusion that during the period of economic downturn, those organizations outperformed which were involved into practices like; environmental protection, social well- being and good cause-based conducts. Those organizations earned financial advantages through increased revenue due to the green products and reduced operating costs related to efficient usage of energy and water.

Therefore, the review of TBL literature poses a positive relation between the three lines of TBL and organizational performance that very relation may bring a start to a green revolution in a country like Pakistan where not only poverty prevails but also the environment; social areas are demanding attention that must be noticed and rectified. Additionally, none of the studies have been done in Pakistan that address TBL disclosure under the umbrella of sustainability, economic, social and environmental factors and issues.

Hypothesis Development

Literature holds several potential determinants of corporate disclosure, which forecast a potential relation between TBL disclosure and multiple firm characteristics. Here in this study, the following variables for financial and non-financial disclosure are utilized, and specific hypotheses are developed to determine the TBL reporting.

Firm Size

As per previous research, disclosure is significantly positively related to business size. By Lang and Lundholm (1993), there is a positive correlation between business size and corporate transparency since economies of scale grow with larger firms. Further, larger firms bear lower costs for disseminating the corporate disclosure. Jensen and Meckling (1976) and Shah et al. (2021) claim that the positive correlation between business size and corporate transparency has been attributed to the presence of agency costs., The higher the agency cost, the more the disclosure will be intended. Figure 1 shows the gender-based inequality ratio of actual and perceived views of males and females regarding the triple bottom line based on their knowledge of the PSX index.

Based on the preceding discussion, the first hypothesis of the study is as follows.
H1: There is a positive relationship between firm size and the extent of TBL reporting.

Figure 1 Gender-based Inequality Ratio
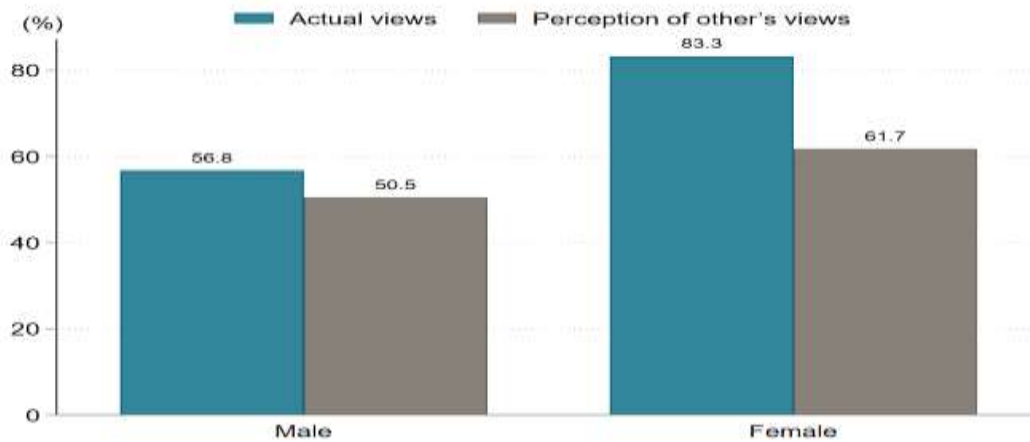
Corporate Profitability
The literature about corporate disclosure and corporate profitability embraces mixed evidence, as indicated by (Verrecchia 1990; Dye 1985), Lang and Lundholm (1993) the managers of more profitable firms are intended to disclose more due to the signaling effect. On the other side, managers are anticipated to have incentives for disclosing a company's unfavorable earning information to reduce the legal liability of the firm (Skinner, 1994; Lang & Lundholm, 1993; Singhvi & Desai, 1971). Likewise, Wallace and Naser (1995) and Baginski et al. (1992) also supported a negative relationship between firm financial performance and disclosure. Based on this research, we also expect a mixed relationship between corporate disclosure and profitability, so the suggested second hypothesis of the study is;
H2: There is a relationship between corporate profitability and the extent of TBL reporting.

Leverage
The higher the level of leverage incurred by a firm, the higher the monitoring cost and the higher the financial disclosure (Jensen & Meckling, 1976). To address the reservations of debt holders, companies disclose their financial positions more frequently (Myers, 1977). Based on these studies, it is hypothesized here that the more leverage, the more chances for corporate disclosure; hence, our third 33 suggested hypothesis is;
H3: There is a positive relationship between financial leverage and the extent of TBL reporting.

Liquidity
Liquidity is one of the most essential factors to pave the way for corporate disclosure. According to the studies of Wallace and Naser (1995), Owusu-Ansah (1998) and Oyelere et al. (2003), the stakeholders and stockholders of the firm, including investors, creditors, and suppliers, along with other users of corporate reports, want to know about the going concern status of the firm. The highly liquid firms have a high incentive to meet their short-term obligation, which is why they disclose more than less liquid firms, according to signaling theory. So, our fourth hypothesis of study is as follows;
H4: There is a positive relationship between firm liquidity and the extent of TBL reporting.

Research Design
Development of criteria
The design of this study is in line with Jennifer Ho and Taylor (2007), where sixty disclosure items for measuring and reporting economic, social and environmental performance are selected for the 30 indexes of the Pakistan Stock Exchange (PSX). The basic foundation for the 60-item disclosure checklist in the Appendix is the GRI (Global Reporting Initiative) Reporting Guidelines 2002. The stated purpose of the Worldwide Reporting Initiative (GRI), an independent organization, is to create and distribute Sustainability Reporting Guidelines that have worldwide applicability (GRI, 2002). The Global Reporting Initiative (GRI), established in 1997 as a subsidiary of the Centre for Environmental Research and Education (CERE), has played a crucial role in the advancement and endorsement of Triple Bottom Line (TBL) reporting since its inception. Since 2002, the United Nations Environment Programme (UNEP) has collaborated with the autonomous Global Reporting Initiative (GRI).

Methodology
This paper investigates the practice of Triple Bottom Line (TBL) reporting in Pakistan, specifically focusing on the 30 Index PSX, via analyzing annual reports, Internet homepages, and other relevant publications that emphasize social and environmental disclosures. The standard methods of reporting include several elements such as the "company objective/profile/highlights," "chairman's reports," "letters to shareholders," "management discussion and analysis," "review of operations," "financial statements," and "footnote discussion." There is an increasing trend among firms to provide separate reports on their environmental and social effects (Holland & Foo, 2003)". The following multiple regression equation is estimated to calculate the determinates of TBL disclosure in Pakistan.

$$Index = B_0 + B_1 \times Size + B_2 \times LEV + B_3 \times Liquid + B_4 \times Profit + \varepsilon \qquad (1)$$

Here, Index shows the TBL disclosures index for each firm in the sample that is made up of five disclosure categories: "There are five distinct kinds of disclosures, namely economic, social, environmental, non-economic (which encompasses both social and environmental aspects), and comprehensive (which encompasses economic, social, and environmental dimensions). The overall ranking of a firm on this index is determined by the cumulative count of disclosure items provided by the company in each respective category. The variable "Size" represents the logarithm of a company's market capitalization. The debt-to-equity ratio (LEV) is widely used to assess the degree to which debt is financing equity. A corporate entity is said to possess "liquidity" when it has sufficient readily available resources to fulfil its immediate financial commitments. The return on assets ratio, often known as profit, is calculated by dividing the entire operating revenue by the total assets."

Sample, Data and Descriptive Statistics
The data under consideration was obtained from the 30 indices on the Pakistan Stock Exchange. The benchmark index reflects the proportion of shares available for trading rather than being based on the entire amount of money invested. In contrast, the other indices indicate the overall performance of the top 30 businesses in the market, considering both capital gains and dividends." TBL disclosure analysis is done based on balance sheet analysis issued by the State Bank of Pakistan, financial statements, stand-alone reports and data available at the particular website of the sample firm at the end of last year, 2017-2018, for the required variable of study "Indicators of a company's health include its market capitalization, debt-to-equity ratio, current ratio, liquidity, return on assets, and profitability. Table 1 data indicates the industry composition of sample firms, where seven firms are from the chemical industry, two from

durable goods, one from the service industry, two from non-durable, ten from energy and six from the money and finance industry.

Table 1 Industry Classification of Sample Firms

Industry	Number of firms	Percentage
Chemical	7	23.3
Durable goods	2	6.7
Service	1	3.3
Non-Durable goods	2	6.7
Energy	10	33.3
Money and Finance	6	20.0
Manufacturing	2	6.7
Total	30	100%

Table 2 reports the descriptive statistics of TBL reporting determinants, including dependent and explanatory variables collected from different sources: financial statements, stand-alone reports and website resources where financial statements disclose economic items while stand-alone reports and website resources provide information about social and environmental items. The mean and (median) scores for economic items are 10.06 and (10.50) out of 20, which indicates on average, exactly half of designed economic disclosure items are reported by sample firms in the 30 indices of the Pakistan Stock Exchange (PSX).

The mean and (median) scores for social disclosure items are 9.86 and (5.00) out of 20 for a selected sample, which indicates that 50% of social items are reported/disclosed on average and 25% as per median. At the same time, the environmental disclosure items' mean and (median) scores are 5.63 and (5.00), which shows that only 25% of environmental items are disclosed by sample firms in the 30 indices of the Pakistan Stock Exchange (PSX). Finally, the mean and (median) score for the total disclosure index is 25.56 and (27.00) out of 60, so on average and as per median, less than 50% of firms are disclosing the economic, social and environmental items in their different reporting sources.

While considering explanatory variables, Table 2 demonstrates an average score of the firm size (logarithm market value of Equity) of Rs 15.82. The average debt-to-equity ratio for the sample firms is 4.63, and the average liquidity ratio is 1.62 at the end of 2017. furthermore, the profitability on average is 0.09%, which is relatively low for the thirty-index listed firm.

Table 2 Descriptive Statistics for Regression Variable

Variable	Mean	Standard Deviation	Median	25th Percentile	75th Percentile
INDEX (economic)	10.06667	2.193535	10.50000	10.5	11
INDEX (social)	9.866667	4.315976	5.000000	10.5	10
INDEX (environmental)	5.633333	7.373232	5.00000	2	8
INDEX (non-economic)	15.50000	3.655146	10.50000	11	20
INDEX (total)	25.56667	8.909367	27.00000	19	31
SIZE	15.82341	3.953896	16.86398	15.63637	17.48393
LEV	4.634703	6.846834	2.041821	.5800549	6.278186
LIQUID	1.621491	2.638281	1.102412	.8563862	1.884179
PROFIT (%)	0.095583	0.164702	0.050963	.0168535	.1618485

"The INDEX shows example TBL disclosures by firm. Economic, social, environmental, non-economic (social, environmental), and aggregate (economic, social, environmental) disclosures

are all considered. The total number of disclosure items supplied by a company in each category is used to establish its overall place on this index.

SIZE represents the logarithm of the stock market value.

Debt to equity is measured using the debt-to-equity ratio (LEV).

The term "liquid" refers to a company's ability to pay off its short-term debts.

Divide entire operating income by total assets to get the return on assets ratio, which is Profit.

Empirical Results

Table 3 represents the results of multiple regressions based on five columns titled with dependent variables total disclosure index, economic disclosure index, Social Disclosure index, Environmental disclosure index and non-economic disclosure (social + environmental), respectively, and every column comprises the results for each explanatory variable including firm size, leverage, liquidity and profitability. Column (1) of Total TBL disclosure (economic, social and environmental) shows the positive coefficient of Firm size as hypothesized and significant at a 10 % level, which confirms that in 30 indexes of PSX, total TBL disclosure is higher for the firms with larger size. For the leverage explanatory variable, column (1) reports against the hypothesis of a negative and insignificant relation between total disclosures and leverage ratio, which specifies that the firms with higher leverage ratios do not disclose all items in the respective reporting sources. The liquidity variable, column (1) reveals in opposition to the hypothesis a negative but significant at 1 % level results, which verifies there is a relation between total and firm liquidity level; however, it is negative, so as the current ratio of firms increases, the total disclosure level will decrease. For the last explanatory variable, the profitability column (1) discloses a positive and insignificant coefficient.

It is unique and exciting to see the results for the same four explanatory variables vary across the columns. The (2) column of regression tables accounts for the economic disclosure. It shows the positive coefficient of firm size as hypothesized and significant at a 5 % level, which confirms the 30 indexes of PSX economic disclosure is higher for the firms with larger size. For the leverage explanatory variable, column (2) reports against the hypothesis of a negative and insignificant relation between economic disclosures and leverage ratio, which specifies that the firms that have higher leverage ratios do not have the disclosure of economic items in the respective reporting sources. The liquidity variable column (2) reveals, contrary to the hypothesis, a negative but significant at 10 % level results, which verifies there is a relation between economic disclosures and firm liquidity level; however, it is negative, so as the current ratio of firms increases, the economic disclosure level will decrease. The relation between the profitability variable and economic disclosure is positive but insignificant; hence, we reject our null hypothesis, which states a significant relationship between profitability and TBL disclosures.

Column (3) represents the social disclosure category of total TBL disclosure, where the results about the firm size and its relation with social disclosure are positive but insignificant. The leverage explanatory variable column (3) reports a negative and significant relation between social disclosures and leverage ratio, which significantly specifies that the firms that have higher leverage ratios do not disclose all social items in the respective reporting sources. The liquidity variable, column (3) reveals in opposition to the hypothesis a negative but significant at 5 % level results, which verifies there is a relation between social disclosure and firm liquidity level; however, it is negative, so as the current ratio of firms increases, the social disclosure level will decrease. For the last explanatory variable, the profitability column (3) again discloses a positive and insignificant coefficient.

The (4) column of the regression table, titled the environmental disclosures, encloses again the results for the four explanatory variables. Here, results show a positive and insignificant relation between firm size and environmental disclosure. For the leverage explanatory variable,

column (4) reports a negative and significant 1 % level relation between environmental disclosures and leverage ratio, which specifies that the firms that have higher leverage ratios have lower disclosure of environmental items in the respective reporting sources. The liquidity variable column (4) reveals, contrary to the hypothesis, a negative but significant at 1% level results, which verifies there is a relation between environmental disclosures and firm liquidity level; however, it is negative, so as the current ratio of firms increases, the environmental disclosure level will decrease. The relation between the profitability variable and environmental disclosure is positive but insignificant; hence, we reject our null hypothesis, which states a significant relationship between profitability and environmental disclosures.

The (5) column of Table 3 is all about the non-economic disclosures enclosing comprising results of the same four explanatory variables. According to column (5), the results show a positive and insignificant relation between firm size and non-economic disclosure. For the leverage explanatory variable, column (5) reports a negative and significant 1 % level relation between non-economic disclosure and leverage ratio, which specifies that the firms that have higher leverage ratio have lower non-economic disclosure. The liquidity variable column (5) reveals, contrary to the hypothesis, a negative but significant at 1% level results, which verifies there is a relation between non-economic disclosure and firm liquidity level; however, it is negative, so as the current ratio of firms increases, the non-economic disclosure level will decrease. The relation between the profitability variable and environmental disclosure is positive but insignificant; hence, we reject our null hypothesis, which states a significant relationship between profitability and non-economic disclosures.

Table 3 Results on Multiple Regression Analysis for the Determinants of TBL Reporting Model

$$Index = B_0 + B_1 \times Size + B_2 \times LEV + B_3 \times Liquid + B_4 \times Profit$$

Variable	Predicted sign	Total disclosure (economic +social +environmental)	Economic disclosure	Social Disclosure	Environmental disclosure	Non-economic disclosure (social + environmental)
Intercept	+	24.035*** (11.86)	8.850*** (17.16)	9.210*** (10.85)	5.974*** (6.26)	15.184*** (9.15)
Size	+	0.257* (1.87)	0.081** (2.32)	0.081 (1.40)	0.095 (1.47)	0.176 (1.56)
Lev	+	-0.392 (-4.89)	-0.015 (-0.73)	-0.117*** (-3.48)	-0.260*** (-6.90)	-0.378*** (-5.75)
Liquid	+	-0.539*** (-2.64)	- 0.083680* (-1.61)	-0.149** (-1.74)	-0.307*** (-3.19)	-0.456*** (-2.72)
Profit	+	1.660 (0.47)	1.399 (1.55)	1.720 (1.16)	-1.46 (-0.87)	0.262 (0.090)
Adjusted R2		0.101	0.041090	0.064400	0.151214	0.121

T-statistics are denoted by the figures in brackets. Statistical significance at the 10% level is indicated by a *, at the 5% level by a **, and at the 1% level by a ***.

Conclusion

The objective of this study is to explore the existence of Triple Bottom Line (TBL) disclosures in the 30 indices of the Pakistan Stock Exchange. Pakistan is chosen for this study because Pakistan is among the countries highly exposed to climate change vulnerability (Schilling et al., 2013). Secondly, Pakistan lies in a region that is exposed to extreme weather events, which include droughts, heat waves and floods (Rasul & Ahmad, 2012). Thirdly, Pakistan's population is increasing at an alarming rate. Fourthly, industrial goods demand has increased in Pakistan, pushing greenhouse gas emissions to maximum levels (Mallick & Masood, 2011). Fifthly, Pakistan is a developing country which contributes less to global carbon dioxide emissions; however, it suffers most from its adverse effects (Dazé, 2011; Van, 2006). Lastly, country's forest cover has decreased from 4% to 3% in just a few decades due to the widespread and destructive use of wood (Kharl & Xie, 2017). At the same time, a country must have a 20 per cent area under forests.

So, what is the role of listed firms of the Pakistan Stock Exchange in caring for the country in terms of a better economy, more socially responsible behaviors and environmentally friendly practices done or disclosed by firms listed in the 30 indexes of (PSX)? In this regard, previous researchers have identified three disclosure areas for corporate public disclosures, including economic disclosure, social disclosure and environmental disclosures. Each comprises 20 items (listed in Appendix A) explored and analyzed through financial statements, stand-alone reports and website resources for each listed firm in the PSX – 30 indexes for 2017- 2018. The multiple regression analysis is applied to examine the TBL reporting practices in Pakistan. The results of the study reveal that total disclosures (economic+ social+ environmental) and economic disclosures of more prominent size firm is higher in the PSX- 30 index. While against the proposed hypothesis, there is a negative relationship between leverage level and all five categories of disclosures, and that is significant for three categories: social, environmental and non-economic disclosures. For total and economic disclosure, this is negative as well as insignificant. The relationship between the third variable of the study, liquidity and all five sorts of disclosures is negative (against the proposed hypothesis). If the current ratio of companies becomes significant, the number of TBL disclosures will drop. In conclusion, profits have a positive link with the five categories of revealed information. However, this correlation is not statistically significant.

The urgency of addressing the current challenges faced by Pakistan, including its deteriorating economic condition, vulnerability to climate change, population growth, rising demand for manufactured goods, escalating levels of greenhouse gases and carbon dioxide in the atmosphere, and diminishing forest area, has become increasingly evident, listed firms in Pakistan Stock exchange must adopt a socially responsible, economically sound and environmentally friendly practice along with appropriate disclosure of all in the respective reporting resources.

References

- Alfred, A. M. & Adam, R. F. (2009). Green management matters regardless. *Academy of Management Perspectives, 23,* 17-26.
- Aras, G. & Crowther, D. (2009). The durable corporation in a time of financial and economic crisis. *Economics and Manageme*nt, 24, 210-216.
- Baginski, S., Hassell, J. & Waymire, G. (1992). The nature of news communicated in preliminary earnings estimates. Working Paper. Emory University.
- Berthier, E., Schiefer, E., Clarke, G. K., Menoundos, B. & Remy, F. (2010). Contribution of Alaskan glaciers to sea-level rise derived from satellite imagery. *Nature Geoscience, 3*, 92.

- Bibri, M. (2008). Corporate Sustainability/CSR Communications and Value Creation: A Marketing Approach. School of Management Blekinge Institute of Technology.
- Brown, D., Dillard, J. F. & Marshall, S. (2006). *Triple bottom line: a business metaphor for a social construct.* department Economia Impresa.
- Brundtland, G. (1987). Our common future: Report of the 1987 World Commission on Environment and Development. United Nations, *Oslo, 1*, 59.
- Chaudhary, Q., Rasul, G., Kamal, A., Ahmad, M. & Mahmood, S. (2015). *Technical report on Karachi heat wave June 2015*. Government of Pakistan Ministry of Climate Change, Ministry of Climate Change, Pakistan.
- Collins, C. M., Steg, L. & Koning, M. A. (2007). Customers' values, beliefs on sustainable corporate performance, and buying behavior. *Psychology & Marketing, 24,* 555-577.
- Dakhan, S. A., Sohu, J. M., Jabeen, A., Mirani, M. A., Shaikh, J. A., & Iqbal, S. (2020). Impact of Green HRM on Employees Pro-Environmental Behavior: Mediating Role of Women Environmental Knowledge at Higher Education Institutions. *IJCSNS International Journal of Computer Science and Network Security, 20*(12), 202–208. https://doi.org/10.22937/IJCSNS.2020.20.12.22
- Dakhan, S. A., Sohu, J. M., Mustafa, S., & Sohu, S. A. (2021). Factors Influencing Political Orientation: Mediating Role of Women Empowerment. *International Journal of Management (IJM), 12*(1), 786–795. https://doi.org/10.34218/IJM.12.1.2021.069
- Dasgupta, S., Laplante, B., Wang, H. & Wheeler, D. (2002). Confronting the environmental Kuznets curve. *Journal of economic perspectives, 16,* 147-168.
- Daze, A. (2011). *Understanding vulnerability to climate change: insights from application of CARE's climate vulnerability and capacity analysis (CVCA) methodology.* Care poverty.
- Dhiman, S. (2008). Products, people, and planet: the triple bottom-line sustainability imperative. *Journal of Global Business Issues, 2,* 51-57.
- Dinda, S. (2004). Environmental Kuznets curve hypothesis: a survey. *Ecological economics, 49,* 431-455.
- Elkington, J. & Rowlands, I. H. (1999). Cannibals with forks: the triple bottom line of 21st century business. *Alternatives Journal, 25,* 42.
- Epstein, M. J. (2018). *Making sustainability work: Best practices in managing and measuring corporate social, environmental and economic impacts,* Routledge.
- Gimenez, C., Sierra, V. & Rodon, J. (2012). Sustainable operations: Their impact on the triple bottom line. *International Journal of Production Economics, 140,* 149-159.
- Goel, P. (2010). Triple Bottom Line Reporting: An Analytical Approach for Corporate Sustainability. *Journal of Finance, Accounting & Management, 1.*
- Grubb, M., Vrolijk, C. & Brack, D. (1997). *The Kyoto Protocol: a guide and assessment.* Royal Institute of International Affairs Energy and Environmental Programme.
- Hart, S. L. & Milstein, M. B. (2003). Creating sustainable value. *Academy of Management Perspectives, 17,* 56-67.
- Holland, L. & Foo, Y. B. (2003). Differences in environmental reporting practices in the UK and the US: the legal and regulatory context. *The British Accounting Review, 35,* 1-18.
- Hubbard, G. (2009). Measuring organizational performance: beyond the triple bottom line. *Business strategy and the environment, 18,* 177-191.
- Iqbal, S., Akhtar, S., Anwar, F., Kayani, A. J., Sohu, J. M., & Khan, A. S. (2021). Linking green innovation performance and green innovative human resource practices in SMEs; a moderation and mediation analysis using PLS-SEM. *Current Psychology, 42.* 0123456789. https://doi.org/10.1007/s12144-021-02403-1
- Iqbal, S., Hong Yun, T., Akhtar, S., & Sohu, J. M. (2019). Impacts of Performance-based Pay on Employee Productivity; Mediated by Employee Training. *International Journal of*

Research & Review 6(10), 235–241. https://www.ijrrjournal.com/IJRR_Vol.6_Issue.10_Oct2019/IJRR0032.pdf

- Junejo, I., Sohu, J. M., Aijaz, A., Ghumro, T. H., Shaikh, S. H., & Seelro, A. D. (2022). The Mediating Role of Brand Attitude for Purchase Intention: Empirical Evidence from Fast Food Industry in Pakistan. *ETIKONOMI,* 21(1), 103–112. https://doi.org/10.15408/etk.v21i1.22302

- Junejo, I., Sohu, J. M., Ali, S. H., Qureshi, S., & Shaikh, S. A. (2020). A Study of Consumer Attitude Towards Counterfeit Fashion Luxurious Products: The Mediating role of Purchase Intension. *Sukkur IBA Journal of Management and Business,* 7(1), 1. https://doi.org/10.30537/sijmb.v7i1.472

- Jennifer, H, L. C. & Taylor, M. E. (2007). An empirical analysis of triple bottom-line reporting and its determinants: evidence from the United States and Japan. *Journal of International Financial Management & Accounting, 18,* 123-150.

- Johnson, D. & Lybecker, K. (2009). *Challenges to technology transfer: A literature review of the constraints on environmental technology dissemination. Colorado College Working Paper No. 2009-07*

- Johnson, D. L., Ambrose, S. H., Bassett, T. J., Bowen , N, M. L., Crummey, D. E., Isaacson, J. S., Johnson, D. N., Lamb, P., Saul, M. & Nelson, A. E. (1997). Meanings of environmental terms. *Journal of environmental quality, 26,* 581-589.

- Kearney, A. (2009). *"Green" Winners. The performance of sustainability-focused companies during the financial crisis* [URL: http://www. atkearney. de/content/misc/wrapper. php/id/50538/name/pdf_green_winners_1234433736434a. pdf], zuletzt eingesehen am, 21, 2010.

- Khan, J. & Fee, L. (2014). *Cities and climate change initiative-abridged report: Islamabad Pakistan, climate change vulnerability assessment.* United Nations Human Settlements Programme (UN-Habitat)(Available at: http://www. fukuoka. unhabitat. org/programmes/ccci/pdf/Islamabad (Pakistan) _23_February_2015_FINAL (5th_ revision). pdf (Last access: 07.10. 2015)).

- Kharl, S. & Xie, X. (2017). Green growth initiatives will lead towards sustainable development of natural resources in Pakistan: an investigation of billion tree tsunami afforestation project. *Sciint. 29*(4), pp. 841-843.

- Kreft, S., Eckstein, D., Junghans, L., Kerestan, C. & Hagen, U. (2013). *Global climate risk index 2014. Who suffers most from extreme weather events,* 1Á31. OCHA services.

- Lang, M. & Lundholm, R. (1993). Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of accounting research, 50,* 246-271.

- Line, T. B. (2009). *Triple Bottom Line.* Retrieved, 4, 2015.

- Naveed, H. M., Hongyun, T., Memon, B. A., Ali, S., Alhussam, M. I., & Sohu, J. M. (2023). Artificial neural network (ANN)-based estimation of the influence of COVID-19 pandemic on dynamic and emerging financial markets. *Technological Forecasting and Social Change, 190.* https://doi.org/10.1016/j.techfore.2023.122470

- Qalati, S. A., Ostic, D., Fan, M., Dakhan, S. A., Vela, E. G., Zufar, Z., Sohu, J. M., Mei, J., & Thuy, T. T. H. (2021). The General Public Knowledge, Attitude, and Practices Regarding COVID-19 During the Lockdown in Asian Developing Countries. *International Quarterly of Community Health Education,* 41(3), 0272684X2110049. https://doi.org/10.1177/0272684X211004945

- Mallick, S. & Masood, A. (2011). *Environment, energy and climate change in Pakistan: challenges, implications and required responses. Mahbub ul Haq Human Development Centre.* Working Paper Series January, 2011 Google Scholar.

- Margolis, J. D. & Walsh, J. P. (2001). *People and profits? The search for a link between a company's social and financial performance.* Psychology Press.
- McWilliam, A. & Siegel, D. (2001). Corporate social responsibility: A theory of the firm perspective. *Academy of management review, 26*, 117-127.
- O'Dwyer, B. (2009). Making sustainability work: Best practices in managing and measuring corporate social, environmental, and economic impacts. *The Accounting Review, 84*, 1001.
- Osefoh, F. (2016)a. Nature conservation for eco-tourism : The case of Cercopan, Calabar, Nigeria. *TechnoScience Review, 3.*
- Owusu A. S. (1998). The impact of corporate attributes on the extent of mandatory disclosure and reporting by listed companies in Zimbabwe. *The International Journal of Accounting, 33,* 605-631.
- Oyelere, P., Laswad, F. & Fisher, R. (2003). Determinants of internet financial reporting by New Zealand companies. *Journal of International Financial Management & Accounting, 14,* 26-63.
- Porter, M. E. & Kramer, M. R. (2002). The competitive advantage of corporate philanthropy. *Harvard business review, 80*, 56-68.
- *United Nations framework convention on climate change.* (1997). UNFCC. Kyoto Protocol, Kyoto, 19.
- Raar, J. (2002). Environmental initiatives: towards triple-bottom line reporting. *Corporate communications: An international journal, 7,* 169-183.
- Rasul, G., Dahe, Q. & Chuadhary, Q. (2008). Global warming and melting glaciers along southern slopes of HKH ranges. *Pakistan journal of meteorology, 5.*
- Ritter, S. K. (2009). *Global warming and climate change*. Chem. Eng. News, 12, 11-21.
- Santilli, M., Moutinho, P., Schwartzman, S., Nepstad, D., Curran, L. & Nobre, C. (2005). Tropical deforestation and the Kyoto Protocol. *Climatic Change, 71*, 267-276.
- Savitz, A. (2013). *The triple bottom line: how today's best-run companies are achieving economic, social and environmental success-and how you can too.* John Wiley & Sons.
- Schilling, J., Viverkananda, J., Khan, M. A. & Pandey, N. (2013). Vulnerability to environmental risks and effects on community resilience in mid-west Nepal and south-east Pakistan. *Environment and Natural Resources Research, 3*, 27.
- Shah, S. M. M., Sohu, J. M., Dakhan, S. A., Ali, R. S., Junejo, I., & Chouhan, I. M. (2021). The Reinvesting Impact of Promotional Activity and Store Atmosphere on Impulse Buying Behavior: The Mediating Role of Payment Facility. *TEM Journal, 10*(1), 221–225. https://doi.org/10.18421/TEM101-28
- Skinner, D. J. (1994). Why firms voluntarily disclose bad news. *Journal of accounting research, 32*, 38-60.
- Slapter, T. F. & Hall, T. J. (2011). The triple bottom line: What is it and how does it work. *Indiana business review, 86,* 4-8.
- Sohu, J. M., Hongyun, T., Akbar, U. S., & Hussain, F. (2023). Digital Innovation, Digital Transformation, and Digital Platform Capability: Detrimental Impact of Big Data Analytics Capability on Innovation Performance. *International Research Journal of Management and Social Sciences, 4*(3), Article 3.
- Sohu, J. M., Hongyun, T., Rahoo, L. A., Dakhan, S. A., Soomro, H. A., & Naveed, H. M. (2020). Feasibility Study of Knowledge Management Establishment in Private Degree Awarding Institute of Pakistan. *IJCSNS International Journal of Computer Science and Network Security, 20*(12), 177–183. https://doi.org/10.22937/IJCSNS.2020.20.12.19

- Sohu, J. M., Junejo, I., & Hussain, F. (2019). The Impact of Corruption on Exchange Rate: Empirical Evidence from Panel Data. *Sukkur IBA Journal of Management and Business, 6*(1), 34. https://doi.org/10.30537/sijmb.v6i1.264
- Sohu, J. M., Junejo, I., Khuwaja, F. M., Qureshi, N. A., & Dakhan, S. A. (2022). The Impact of Entrepreneurial Education on Entrepreneurial Intention During the COVID-19 Pandemic: An Empirical Study from Pakistan. Sarfraz Ahmed Dakhan. *Journal of Asian Finance, 9*(3), 95–0103.
- Sohu, J. M., Mirani, M. A., Dakhan, S. A., & Junejo, I. (2020). Factors Influencing on Succession Planning: Evidence from Service Sector of Pakistan. *International Journal of Management IJM, 11*(12), 2629–2636. https://doi.org/10.34218/IJM.11.12.2020.247
- Solomon, S. (2007). *The physical science basis: Contribution of Working Group I to the fourth assessment report of the Intergovernmental Panel on Climate Change. Intergovernmental Panel on Climate Change (IPCC).* Climate change 2007, 996.
- Spangenberg, J. H. (2005). Economic sustainability of the economy: concepts and indicators. *International journal of sustainable development, 8*, 47-64.
- Stern, P. C. (1992). Psychological dimensions of global environmental change. *Annual review of psychology, 43,* 269-302.
- Van, A M. K. (2006). The impacts of climate change on the risk of natural disasters. *Disasters, 30*, 5-18.
- Verrecchia, R. E. (1990). Information quality and discretionary disclosure. *Journal of accounting and Economics, 12,* 365-380.
- Wen, Z. & Chen, J. (2008). A cost-benefit analysis for the economic growth in China. *a,* 356-366.
- Yan, W., Chen, C.-H. & Chang, W. (2009). An investigation into sustainable product conceptualization using a design knowledge hierarchy and Hopfield network. *Computers & Industrial Engineering, 56*, 1617-1626.

Appendix A

"**Table A1 List of items for Evaluating the Extent of TBL Reporting**

20 items (Economic Index)

1) Information about size and profitability

2) Identification of a contact person for providing additional information

3) Products or services breakdown

4) Market shares by regions

5) Information on backlog orders

6) Information on major suppliers

7) Payroll information by countries or regions

8) Fringe benefits information by countries or regions

9) Employee stock options or bonus programs

10) Information on major creditors

11) Dividend distributions

12) Taxes

13) Discussion of social capital formation, e.g., through activities such as charitable donations

14) Size and types of major tangible investments

15) Economic performance of major tangible investments

16) R&D investments

17) Investments in information technology

18) Other intangible investments (e.g., human capital, brand value, and reputation)

19) Earnings or sales forecasts

20) Any mention of other forward-looking information

20 items (Social Index)

1) Company's statement of a corporate commitment to its shareholders and for society as a whole

2) Awards or recognition received relevant to social performance

3) Identification of a contact person for providing additional information

4) Number of employees and their geographic distribution

5) Turnover of workforce

6) Levels of employee education

7) Employee benefits concerning health care, disability, or retirement

8) Employee job satisfaction

9) Employee health and safety information such as number of lost workdays, accidents or deaths

10) Employee training and education

11) Any mention of policies or programs addressing workplace harassment and discrimination

12) Number or percentage of women and minorities in the organization

13) Policies or procedures dealing with human rights issues

14) Any mention of policies for preserving customer health and safety

15) Company's involvement in community philanthropy activities

16) Policies for prioritizing local employment

17) Policies for compliance mechanisms for bribery and corruption

18) Policies for preventing anti-competitive behavior

19) Policies for consumer privacy

20)Provision of business code

20 items (Environmental Index)
1)Company's statement of a corporate commitment to environmental protection
2)Any mention of environmental regulation
3) Involvement of environmental experts in business operations
4)Environmental audit
5)Environmental awards
6)Incorporation of environmental concerns into business decisions (e.g., green purchasing)
7)Identification of a contact person for providing additional information
8)Energy usage information
9)Encouragement of renewable energy consumption
10)Water usage information
11) Information concerning the materials that are re-cycled or re-used
12) Any mention of strategies for the use of recycling product
13) Information about the sources, types and remedy procedures of emissions
14) Pollution impacts of transportation equipment used for logistical purposes
15)Environmental impacts of principal products and services
16)Discussion on the amount, types of wastes and methods of waste management
17) Any mention of environmental accounting policies
18)Environmental expenditures
19)Fines/lawsuits/non-compliance incidents
20)Environmental contingent liabilities"