Sustainability Reporting and Firm Performance: The Demonstration of Pakistani Firms

Xie Hongming1,2, Bilal Ahmed2, Arif Hussain3, Alam Rehman4, Irfan Ullah5, and Farman Ullah Khan4

Abstract
The nexus between sustainability and firm performance is an area of debate among researchers and academicians. The objective of this study is to examine the level and extent of sustainable financial reporting for non-financial firms in Pakistan and to assess the level of the impact of sustainable financial reporting on firm performance in Pakistan. This study is a novel research work as the sustainability practices are not mandatory in many Pakistani firms. Rather kinds of mix sustainability reporting practices are being practiced. The dilemma still exists whether sustainability practices affect the performance of Pakistani firms positively or not. We collect data from the sustainability reports as well as annual reports of 50 non-financial public limited companies listed in Pakistan Stock Exchange for the period 2013 to 2017. We calculate sustainability reporting index using content analysis procedure based on 42 indicators. The index is based on three subindices, namely, environmental, health and safety, and social indicators. We apply two regression models with a view to ascertain the individual effect of each indicator of the sustainability as well as the composite effect of sustainability reporting index on firm performance. The results confirm positive effects of all three individual indicators as well as the composite form of sustainability reporting index on firm performance. The findings of the study clearly outline the economic relevance for introducing the corporate sustainability reporting practices in corporate strategy.

Keywords
sustainability reporting, non-financial firms, fixed effect, Pakistan

Introduction
Earning higher profit by a firm and ensuring higher value to firm shareholders is usually considered as the ultimate goal of a firm in a traditional spectrum. In the course of attaining these objectives, corporate sector often makes violations of company regulations, degrades environment and the ecological system, and also makes the employee safety at risk (Skouloudis et al., 2019). This is alarming for investors, customers, suppliers, governments, and employees. All these stakeholders compel company management to take additional measures and assume responsibility in becoming more ethical and socially responsible (Khan, 2019). These stakeholders are at risk, as corporations nowadays are criticized for the negative impact of their business operations on society, employees, and environment. Such mismanagement is a result of employees’ exploitation and accounting frauds, which ultimately affect company solvency, value deterioration, and public image and trust (Ehsan et al., 2018). The sole profit maximization motive by a firm is accompanied by various negative effects on the society as a whole, which has put the world on extremely dangerous path. Businesses have very little concerns, for environmental issues, especially in developing countries. Continuous emission of greenhouse gases causes global warming with a faster rate than ever before (Intergovernmental Panel on Climate Change, 2014). Consequently, the global warming further deteriorates the ecological system and causes extreme weather conditions too, causing cyclones and droughts. Emissions of greenhouse
gases are caused by high levels of energy use in our lifestyle and economic activities to improve our living standards and wealth.

The adverse effect of human beings on Earth has been doubled, during the past five decades, and still grows with a higher pace (Peattie & Collins, 2009). Evidence given by World Wide Fund for Nature (WWF, 2008) shows that on average humans are consuming 2.7 of earth global hectares/capita; it exceeds average estimated Earth’s bio capacity of 2.1 global hectares/capita. It shows that careless and excessive usage of natural resources gave rise to pollution, climate change, and extinction of habitats. To control this adverse effect of humans on Earth in general and the ecological system in particular, the Living Planet Report was introduced in 2008 by the WWF. The objective of this report was to formulate strategies and the implementation of plan for ensuring sustainable development. The initiatives of sustainable development with special focus were reducing emissions of pollutants and waste, and minimizing use of natural resources to conserve them for future generations. The Global Reporting Initiatives (GRIs, 2004) state that corporate sector plays an important role in the production and consumption of various products, the sustainable production, and consumptions, which will improve the environmental quality. Binding companies to make sustainable reporting on regular basis will further ensure the following:

1. Stakeholders will be well informed of the activities carried out by a firm.
2. Stakeholders will monitor the environmental effects of activities carried out in firm.
3. The adverse environmental effect of activities carried out in firm will be minimized in consultation with relevant stakeholders.

The willingness of firm to engage in sustainable reporting and to provide required information to entire stakeholders shows their concern for environment and also the social license to keep continue their operations, but the nature of information to be disclosed is still debatable (Overland, 2007). Markets nowadays are becoming more competitive to keep pace with ever changing requirements of consumers, suppliers, and regulatory bodies. All these put companies under immense pressure to succeed and sustain success in future. Sustainable financial reporting has gained immense attention in the last few years and its impact on firm financial performance is becoming a big point of attention in today’s corporate world. As companies are expected to move further than the short term and narrow financial focus, and want to stretch its focus in a broader sense toward social, economic, and environmental sustainability. Enhancing corporate strategies for doing good and transforming companies toward social responsibility that can care about social and environmental aspects are becoming important obligations to perform and lead in future markets. Limited studies have been carried out for this purpose in developing country like Pakistan. It results in ignorance of this more important issue of a socially responsible financial reporting and its impact on firm financial performance in Pakistan as a developing country. The objective of this study comprises of examining the level and extent of sustainable financial reporting in Pakistani non-financial firms and assessing the impact of sustainable financial reporting on firm performance in the context of Pakistan.

Various sustainability indicators, including environmental indicators, social indicators, and health and safety indicators, have been taken into account to achieve the specific objectives of this study. This study is a novel research attempt, as it contributes in many ways. First, this study attempts to analyze non-financial firms in Pakistan, which have not been previously explored for the sustainability judgment. Second, this study portrays trend of individual factors of sustainability rather than merely depending on a composite one, as many previous studies used composite form of index for measuring sustainability practices. Third, the findings and outcomes of this study are relevant and useful for policy makers and regulatory institutions in Pakistan. Fourth, this study provides an insight to the top management of these firms, whereby the management can understand their weaknesses and strengths in terms of sustainability reporting and would draw course of action for implementation to further strengthen sustainability mechanism.

Countries like Denmark, South Africa, Brazil, and France started to advocate sustainability reporting after the United Nations Conference on Sustainable Development (Rio+20). These countries were supported by United Nations Environment Programme (UNEP) and GRI in their efforts for sustainable development. The GRI and UNEP have become the leading institutions for sustainable reporting framework. GRI includes guidelines and framework regarding sustainability reporting and measurements. While the UNEP (2012) stresses the need for coalition and coordination, among institutions and their governments to achieve the objectives of sustainable development, and to provide such relevant information by institutions to all stakeholders for conserving nature and to improve quality of life. On the contrary, the Corporate Sustainability Reporting Coalition (CSRC, 2012) made compulsory for all UN member countries to devise rules for addressing issues of sustainability and integrate them in the financial statements and annual reports of all corporate bodies, in their respective countries to achieve the objectives of green economy. The CSRC is a worldwide union of non-government organizations, financial institutions, investors, and professional bodies, having assets of US$2 trillion. According to the association of Certified Chartered Accountants (2004), South Africa is the leading country reporting on sustainability development since 1993.

The corporate sustainability reporting is an emerging phenomenon for corporate sector in Pakistan. But regulators are now recognizing the importance of sustainability reporting as
it ensures long-term capital flow and improves governance quality in every firm (Balkhi, 2010). The sustainability in Pakistan at present is a voluntary activity for a firm as there is no mandatory requirement by any regulator for its implementation. There are certain policy frameworks and laws that indirectly emphasize the need of sustainability reporting. These include the Code of Corporate Governance (2012), the National Climate Change Policy (2012), and the Corporate Social Responsibility Voluntary Guidelines (2013). Few companies in Pakistan are reporting on sustainability issues in their annual reports. According to Deloitte (2012), only 50 companies in Pakistan Stock Exchange are reporting on sustainability issues as a standalone report in 2011 and 2012. This lack of inclination toward sustainability reporting issues in Pakistan is due to the unique political and socioeconomic setup in the country, weak and unstable government structures, dependence on external aid, lack of enforcement abilities, and lack of education, which are few factors adding to this lower inclination toward sustainability reporting. All these factors add to lack of awareness and implementation of sustainability reporting in Pakistan. This study, therefore, attempts to examine the level of sustainable financial reporting in Pakistan and to assess the impact of sustainable financial reporting on firm performance in Pakistan. To further address this objective of the study, the remainder of the article is organized as follows. The “Literature Review” section includes literature review. The “Research Methodology” section includes research methodology, and the “Data Analysis” section includes results and discussion. On the basis of research findings, the “Conclusion” section includes conclusion, policy implications, recommendations for future research, and limitations of the study.

**Literature Review**

Businesses nowadays operate in a global dynamic environment. At the same time, today’s dynamic business environment encounters certain threats, which are needed to be addressed and controlled for the sake of stakeholders’ protection and future generations (Mahmood et al., 2019). These issues cannot be compromised as organizations are socially responsible for sustainability impact and environmental issues, because the entire corporate world depends on these resources to operate. Welbeck et al. (2017), in this respect, argue that the objectives of corporate environmental and social reporting are to gain social acceptance or legitimacy of organizational activities. Legitimacy theory is an important theoretical perspective for environmental and social reporting by firms (O’Donovan, 2002). According to legitimacy theory, firms have a social contract with society and its growth, and operations are based on certain socially desirable ends. Every firm has to ensure compatibility between their operating activities and the social expectations like ethical, legal, and economic bounds to improve their public opinion.

Various studies over the last few years examined the impact of corporate sustainability reporting on firm performance. Buys et al. (2011) asserted that the financial performance of firms reporting on GRI performs better than those not reporting voluntarily on GRI. Similarly, Clarkson et al. (2010) found that there is a positive association between share price and voluntary disclosure of firms. Gozali et al. (2002) further postulated the importance of environmental disclosure. Companies which report on environmental disclosure perform better than companies which do not do so. Eccles et al. (2012) compared the performance of highly sustainable and low sustainable firms. Companies with higher level of sustainability reporting assume higher stock returns and have competitive advantage over firms not practicing sustainability reporting. Marsat and Williams (2011) are of the view that investment in ethical actions like waste reduction and avoidance of environmental damage provide financial benefits in the long run. Gong et al. (2018) argued that higher level of corporate social responsibility (CSR) disclosure leads to decrease in cost of bond issues in China. Hussain (2015) studied the relationship between sustainability reporting and financial performance of 100 firms. The results show that social and environmental dimensions of sustainability have significantly positive impact on firm financial performance.

The study of Isabel et al. (2012) explored a sample of U.S. firms and found that firms with higher level of sustainability reporting and the respective strategies are highly appreciated and valued by investors. Their study also concluded that there is a positive association between sustainability reporting and market value of firms listed in the United States. Laskar and Maji (2016) studied the level and trends of sustainability reporting in corporate sector of India. The results show that there is increasing trend in corporate sustainability reporting by firms in India. The study confirms a significant positive relationship between firm performance and corporate sustainability reporting. Dobbs and Staden (2016) studied the motivating factors for corporate sustainability reporting of 122 firms incorporated in New Zealand. The content analysis applied in the study reveals that shareholder’s rights and community service are the important motivating factors of corporate sustainability reporting in New Zealand, and corporate sustainability is used to legitimize activities carried out in a firm. The study of Ortas et al. (2015) used the GRI framework for measurement of corporate sustainability reporting in 59 countries using content analysis. They also studied the relationship between corporate sustainability reporting and firm financial factors. The results show that relationship of sustainability reporting and financial performance of firm is positive for those firms which are active in disclosing information on sustainability practices. An exploratory study was carried out by Zhao and Patten (2016) for the assessment of managerial perceptions of corporate sustainability in Chinese firms. The study revealed that corporate social reporting is considered an
effective tool for the enhancement of firm image. Chen et al. (2015) studied the relationship between social performance and firm financial performance in manufacturing companies. The results show that product responsibility, society, and human rights are positively related with firm financial performance. Extending the current literature of sustainability and firm performance, Abd Rahman et al. (2013) examined the association between environmental reporting and firm performance in Malaysia. An environmental reporting was developed using content analysis. They reported that 68% firms in Malaysia do perform the environmental practices by including separate section in their annual reports. A positive relationship was concluded between environmental reporting and firm performance in Malaysia. Kolk (2003) evaluated trends and patterns of sustainability reporting for various firms and found that sustainability reporting practice is more common in non-financial firms as compared with financial firms. As non-financial firm operations are more exposed to high-risk activities like toxic emissions, waste disposal, and workplace safety. These sort of employee’s safety, human rights violation, and environmental deregulation make a firm a high risker, and the disclosure regarding these indicators is important in the better interest of entire stakeholders and further to document a long-term sustainable development.

According to Amran and Haniffa (2011), the focus of sustainability reporting and financial performance is on developed economies, instead scanty research is available in developing countries. In case of Pakistan, very few studies to our knowledge have been carried out to address the issue of sustainable financial reporting and firm financial performance. Khan (2019) examined the impact of corporate sustainability practices on financial performance of firms in banking sector in Pakistan using content analysis technique for data collection. The study indicated a positive impact of sustainable financial reporting on firm financial performance and concluded that enhanced financial performance of banks in Pakistan is connected with increase in sustainable financial reporting. A qualitative study was carried out by Mahmood et al. (2019) to identify actors involved in sustainable financial reporting in Pakistan. Results suggested that local and international regulatory agencies, standards, foreign buyers, and sustainable reporting awards are important actors in the development and emergence of sustainable financial reporting in Pakistan. The barriers to sustainable financial reporting include lack of awareness, weak government structures, lack of regulations and interest in the affairs of sustainable financial reporting, lack of political will, and lack of enforcement ability by regulatory bodies. The study of Ehsan et al. (2018) reported the impact of CSR disclosure patterns in Pakistan. CSR disclosure index was formulated using content analysis and comprised of subindices, including health and education, community welfare, energy and environments, workforce, customer, and product. Results suggest that firms in Pakistan disclose more information on stakeholder-related CSR activities, product, and customers, while less importance is given to health and education activities.

Evangelinos and Skouloudis (2014) conducted a study to examine the level of non-financial disclosure in Greece using content analysis procedure. Findings of the study suggested that unsystematic patterns and variability in non-financial disclosure are very much evident in Greek firms and only fulfill minimum requirements of regulatory framework. Skouloudis et al. (2014) examined firms in Greece on account of environmental and social responsibility in terms of non-financial reporting. Results suggested that only a handful of Greek firms communicate information to public and make them accountable, while majority of firms do not follow the regulatory patterns of disclosure in Greece. Halkos and Skouloudis (2016) studied the environmental responsibility of Greek firms that how much their financial reporting patterns cater the need for climatic changes due to company operations. It was found that very few firms in Greece adhere to the cause of climatic change in their financial reporting disclosure. Halkos and Skouloudis (2017) conducted a study to examine the relationship between CSR disclosure patterns and national culture in 20 countries. Results of the study indicated that cultural perspectives of “long-term versus short-term orientation” and “indulgence versus restraint” have positive impact on CSR index, while masculinity, individualism, and power distance have insignificant effect on CSR index. Skouloudis et al. (2019) studied the determinants and patterns of sustainability reporting with respect to management and conservation of biodiversity by firms. A comprehensive disclosure index was formed on disclosing information related to biodiversity conservation. Firms in Malaysia, Bolivia, and Brazil disclose more information on biodiversity sustainability indicators, while firms listed in Philippines show lower level.

**Research Methodology**

**Data and Sampling Procedure**

Data for this research study were collected from 50 non-financial public limited companies listed in Pakistan Stock Exchange, based on the availability of their sustainability reports and annual reports. Moreover, to state that the data were collected from those firms included in KSE 100 index on January 1, 2013. These annual reports were collected for a period 2013 to 2017. Content analysis approach has been used to determine sustainability reporting index and its various components, including environmental sustainability, health and safety sustainability, and social sustainability.

**Estimation Techniques**

We applied panel data analysis techniques to obtain results, as panel data help to deal with the heterogeneity characterized by unobservable nature, which usually exists in different firms (Himmelberg et al., 1999). Yasser (2011) highlighted
the importance of panel models as it combines time-series and cross-section observations and helps in providing data with less collinearity. In line with previous studies, such as Ntim and Osei (2011) and Ntim and Soobaroyen (2013), the study employs three-panel data techniques, which are the simple pooled ordinary least squares (OLS), fixed-effect model, and the random effect model, to control for possible unobserved firm-level heterogeneities. We follow Li et al. (2017) and applied panel fixed-effect regression to capture for the heterogeneity among the firms listed in an industry. Given the nature of the data for this study and to allow for time-series and cross-sectional data observations, the study employed a balanced panel data analysis. The random effect model is based on the assumption that there exists no correlation between independent variables and individual effects. In random effect, the intercepts of regressors and their slopes are similar for every individual (Han & Brooks, 2014). We applied all the above-mentioned techniques to give robustness to the statistical analysis and to determine which model better predicts the results. Furthermore, the Hausman test has been applied to predict whether fixed or random is the right choice among the two models.

Description and Measurement of Variables

**Sustainability reporting index.** There are various inconsistencies in the literature about measurement of sustainability and performance (Salzmann et al., 2005), and to date there is no consensus about sustainability measurement in corporations (Montiel & Delgado-Ceballos, 2014). A literature review was performed by Montiel and Delgado-Ceballos (2014), about various methods used to measure corporate sustainability, and asserted that till date two basic methods are used for this purpose. First, various sustainability indices based on secondary sources are used for measurement of corporate sustainability. Most commonly used indices in this respect are ASSET 4 ESG Index, Dow Jones Sustainability Index, and Kinder, Lydenberg, and Domini (KLD) Index. Third-party observers evaluate company disclosure material on the basis of sustainability indicators and criteria using content analysis, interviews, or surveys (Soana, 2011). Using such secondary sources has various drawbacks, including lack of transparency, as the types of indicators used by these agencies are not publicly available. Rating agencies also use different methodologies on account of weighting system and amount of quantitative and qualitative indicators used for measurement of firm sustainability. Montiel and Delgado-Ceballos (2014) further asserted that second method used to measure corporate sustainability is the construction of new scales and indices or the adoption of an existing scale for the measurement of corporate sustainability, thereby collecting own primary data using surveys or content analysis procedures.

A sustainability reporting index was constructed based on GRI. Details of the index are given in Table A1 of the appendix. It includes disclosure of information on account of environmental, health and safety, and social sustainability indicators. The total number of indicators in the index is 42. To quantify data as measured by various items, including environmental, health and safety, and social indicators, scoring methodology based on content analysis procedure is used. It is based on unweighted approach where no group is awarded any preference. A code of “1” is allocated for disclosing information and “0” for not disclosing the relevant information. Similar procedures were also used by Malik and Kanwal (2018) and Ehsan et al. (2018). The sustainability reporting index was then calculated as

$$\text{SRI} = \frac{\text{ENI} + \text{HSI} + \text{SOI}}{\text{ESRI}},$$

where SRI is sustainability reporting index; ENI, environmental indicators; HSI, health and safety indicators; SOI, social indicators; and ESRI, expected sustainability reporting indicators.

The following two statistical models will be used to estimate the impact of sustainability reporting on firm performance.

**Model 1:**

$$\text{ROA} = \beta_0 + \beta_1 \text{ENI} + \beta_2 \text{HSI} + \beta_3 \text{SOI} + \beta_4 \text{FS} + \beta_5 \text{FL} + e.$$

**Model 2:**

$$\text{ROA} = \beta_0 + \beta_1 \text{SRI} + \beta_2 \text{FS} + \beta_3 \text{FL} + e.$$

Description and measurement of variables are given in Table 1.

**Table 1.** Description and Measurement of Variables.

| Variables | Description | Measurement |
|-----------|-------------|-------------|
| ROA       | Return on assets | Net profit/total assets |
| ENI       | Environmental indicators | GRI environmental indicators given in Table A1 |
| HSI       | Health and safety indicators | GRI health and safety indicators given in Table A1 |
| SOI       | Social indicators | GRI social indicators given in Table A1 |
| SRI       | Sustainability reporting index | Sustainability reporting index given in Table A1 |
| FS        | Firm size | Log of assets |
| FL        | Financial leverage | Total debts/total equity |

*Note. GRI = Global Reporting Initiative.*
Table 2. Sustainability Reporting Level.

|          | 2013 | 2014 | 2015 | 2016 | 2017 |
|----------|------|------|------|------|------|
| ENI      | 0.42 | 0.44 | 0.45 | 0.46 | 0.49 |
| HSI      | 0.31 | 0.37 | 0.39 | 0.41 | 0.46 |
| SOI      | 0.38 | 0.41 | 0.43 | 0.44 | 0.47 |
| SRI      | 0.37 | 0.40 | 0.40 | 0.43 | 0.47 |

Note. ENI = environmental indicators; HSI = health and safety indicators; SOI = social indicators; SRI = sustainability reporting index.

Table 2 shows the component-wise and overall sustainability disclosure pattern of public limited companies in Pakistan. It shows that environmental disclosure is more prominent among the entire sustainability indicators. All the companies included in the sample make higher disclosure and show more compliance for environmental disclosure patterns. The graph shows that environmental disclosure is increasing steadily from 2013 to 2017. Disclosure on social indicators also shows an increasing pattern but relatively lower than environmental indicators. On the contrary, disclosure on health and safety indicators is lowest as compared with environmental and social disclosure, but it also shows an increasing trend from 2013 to 2017. Accordingly, the sustainability reporting index is also an increasing trend, as in 2013; sustainability reporting indices are 0.37 and 0.47 in 2017. The data given in Table 2, and in its graphical representation, show the compliance level of public limited companies to the GRI guidelines on sustainability reporting. All the disclosure indicators of environmental, social, and health and safety are showing an increasing trend, but the compliance level of all the indicators is still less than 50% as evident from Table 2. Furthermore, improvements are needed for ensuring higher compliance on various components of sustainability reporting index to achieve the objectives of sustainability reporting in Pakistan as delineated by Global Reporting Index (GRI; see Figure 1).

Descriptive Statistics

Table 3 shows descriptive statistics. It shows that return on assets has a mean of 0.017 and standard deviation of 0.019. The mean of environmental indicators is 0.213 and standard deviation of 0.291. The mean value of health and safety indicators is 0.347, and its standard deviation is 0.351. Social indicators have a mean value of 0.298 and standard deviation of 0.247. The mean value of sustainability reporting index is 0.321, and its standard deviation is 0.153. Firm size has a mean value of 2.465 and its standard deviation is 0.785. Financial leverage has a mean value of 0.764 and its standard deviation is 0.571.

Correlation Analysis

Table 4 shows correlation analysis of the study. It shows that environmental indicators and social indicators have strong positive correlation with return on assets. On the contrary, health and safety indicators have weak positive correlation with return on assets. Sustainability reporting index has positive correlation with return on assets. Firm size and financial leverage as control variables have positive correlation with return on assets.

Model 1

Diagnostic statistics

Breusch–Pagan Lagrange multiplier (LM) test. Table 5 explains the appropriate estimation for the analysis of this study. The recurring value of the test confirms the fixed effect and random effect being the right choice for the data analysis as the chi-square value is significant at 5% level of probability.

Test result for autocorrelation. Table 6 indicates that the data have no autocorrelation, as the null hypothesis developed was no autocorrelation in the data. The results exactly demonstrated the nonexistence of autocorrelation problem, as the reported probability value (.0667) signifies that data are free from such problem.

Heteroscedasticity statistics. Table 7 exhibits that whether the data have the heteroscedasticity problem or not. The results exhibit that data are free from the heteroscedasticity problem, as the p value is less than 5%, confirming the homoscedastic nature of the data. Therefore, the data can be further analyzed due to the equal variance assumed.

Regression analysis. Table 8 shows regression results for Model 1. It shows that individual indicators of sustainability, that is, environmental indicators, health and safety indicators, and social indicators have positive effect on firm performance. The Breusch–Pagan LM test confirmed fixed-effect model as the best estimation model for the data analysis. The explanatory power of the model ($R^2$) for
fixed-effect model is 31.39. It shows that 31.39 variations in return on assets are due to the sustainability components of environmental, health and safety, and social indicators for public limited companies in Pakistan. Results show that environmental indicators and social indicators have significant positive impact on firm performance, while health and safety indicators have weak positive impact on firm performance. Firm size has positive significant impact on return on assets, and financial leverage has positive insignificant impact on return on assets. The assessment for each component of sustainability practice, that is, environmental indicators, social indicators, and health and safety indicators, shows what are the driving forces for the positive relationship within sustainability practices and firm performance in Pakistan. According to the results, social and environmental indicators, including emissions of greenhouse gases, water consumption, waste management, energy consumption, community involvement, grievance mechanism for community complaints, and welfare and charitable activities, are the important driving forces of firm’s profitability and performance. Therefore, focus on social and environmental indicators of sustainability is an important strategy approach of stakeholder’s engagement and thereby improvement can be made in firm profitability and reputation as suggested by Cornell and Shapiro (1987) and Orlitzky et al. (2003). It is also essential for stakeholder’s engagement to improve the competitive advantage of a firm (Barnett & Salomon, 2006).

**Table 3.** Descriptive Statistics.

| Variables | Minimum | Maximum | M   | SD  |
|-----------|---------|---------|-----|-----|
| ROA       | 0.001   | 0.064   | 0.017 | 0.019 |
| ENI       | 0       | 1       | 0.213 | 0.291 |
| HSI       | 0       | 1       | 0.347 | 0.351 |
| SOI       | 0       | 1       | 0.298 | 0.247 |
| SRI       | 0.105   | 0.821   | 0.321 | 0.153 |
| FS        | 22.817  | 26.195  | 2.465 | 0.785 |
| FL        | 0.082   | 0.923   | 0.764 | 0.571 |

Note. ROA = return on assets; ENI = environmental indicators; HSI = health and safety indicators; SOI = social indicators; SRI = sustainability reporting index; FS = firm size; FL = financial leverage.

**Table 4.** Correlation Analysis.

| Variables | ROA | ENI | HSI | SOI | SRI | FS | FL |
|-----------|-----|-----|-----|-----|-----|----|----|
| ROA       | 1   | .534| .275| .619| .498| .319| .664|
| ENI       |     | 1   | .186| .384| .384| .298| .379|
| HSI       |     |     | 1   | .635| .482| .332| .513|
| SOI       |     |     |     | 1   | .271| .198| .208|
| SRI       |     |     |     |     | 1   | .475| .531|
| FS        |     |     |     |     |     | 1   | .245|
| FL        |     |     |     |     |     |     | 1   |

Note. ROA = return on assets; ENI = environmental indicators; HSI = health and safety indicators; SOI = social indicators; SRI = sustainability reporting index; FS = firm size; FL = financial leverage.

**Table 5.** Breusch-Pagan Lagrange Multiplier (LM) Test.

| Statistic   | p    |
|-------------|------|
| Cross-section $F$ | 22.655 | .001 |
| Cross-section $\chi^2$ | 379.546 | .001 |

**Table 6.** Test Result for Autocorrelation.

Wooldridge test for autocorrelation

$H_0$: No first-order autocorrelation

$F(9) = 58.45$

Prob $> F = .0667$

and safety indicators, shows what are the driving forces for the positive relationship within sustainability practices and firm performance in Pakistan. According to the results, social and environmental indicators, including emissions of greenhouse gases, water consumption, waste management, energy consumption, community involvement, grievance mechanism for community complaints, and welfare and charitable activities, are the important driving forces of firm’s profitability and performance. Therefore, focus on social and environmental indicators of sustainability is an important strategy approach of stakeholder’s engagement and thereby improvement can be made in firm profitability and reputation as suggested by Cornell and Shapiro (1987) and Orlitzky et al. (2003). It is also essential for stakeholder’s engagement to improve the competitive advantage of a firm (Barnett & Salomon, 2006).

**Hausman test.** Table 9 explains the mechanism of whether fixed or random effect is chosen as the right estimating
The results portray a clear message of fixed effect as the appropriate estimator as compared with random effect model. The housemates reported that probability value is statistically significant, confirming the suitability of fixed-effect model as a best-suited model for predicting the results of the study.

Model 2

Regression analysis. Table 10, shows regression results of Model 2. It shows the impact of sustainability reporting index on firm performance. The Breusch–Pagan LM test confirmed fixed-effect model. The coefficient of determination ($R^2$) of the fixed-effect model is 32.38%. The results show that corporate sustainability reporting index has positive and significant impact on firm performance in Pakistan. Most of the studies in this respect have documented a positive relationship while investigating firm financial performance and corporate sustainability as suggested by Hillman and Keim (2001) and Al-Tuwaijri et al. (2004). These previous studies support the results given in the univariate and multivariate regression analysis for the positive association between corporate sustainability and firm performance. These results are also in accordance with instrumental stakeholders’ theory stating that a firm can effectively benefit financially if it deals the entire stakeholder’s relationship in an effective manner (Donaldson & Preston, 1995). Jones (1995), in this respect, also states that sustainability practices lead to competitive advantage by minimizing the transaction costs and agency costs as well.
Conclusion

This study is an attempt to explore the relationship between corporate sustainability practices and financial performance in Pakistan. Data for this study were collected from sustainability reports of 50 non-financial public limited companies, listed in Pakistan Stock Exchange from 2013 to 2017. Sustainability reporting index was calculated using content analysis procedure based on 42 indicators. This index was based on three subindices, namely, environmental indicators, social indicators, and health and safety indicators. All these subindices are extracted from GRI framework for sustainability reporting. The graphical representation of environmental reporting index, social reporting index, health and safety reporting index, and sustainability reporting index, all show an increasing trend from 2013 to 2017. Among all the individual components of sustainability reporting index, the sample companies of this study were found, revealing and disclosing the environmental sustainability indicators to a greater extent as compared with social and health and safety indicators.

Two regression models were used to assess the impact of sustainability reporting on firm performance. In the first regression model, the individual effect of environmental indicators, social indicators, and health and safety indicators were regressed upon firm performance. The results show that social and environmental indicators have significant positive impact on firm performance, while health and safety indicators show significant but week impact on firm performance in Pakistan. Laskar and Maji (2016) also confirm similar results in the context of India, thereby verifying the positive effect of the individual indicators of sustainability on the financial performance. The second regression model was used to assess the impact of composite sustainability reporting index on firm performance. The results in second regression model also confirmed a significant positive impact of sustainability reporting index on firm performance. Ortas et al. (2015) also confirm positive relationship between sustainability reporting index and financial performance. In a very similar study, Eccles et al. (2012) confirm the importance of sustainability reporting in enhancing the firm’s financial performance. The results clearly outline economic relevance for introducing the corporate sustainability reporting in corporate strategy. Inculcating culture of sustainability reporting is a step toward sustainable development, conservation of resources, and legitimizing firm operations by providing benefits to their stakeholders, rather to harm them and make them partners in their business. The findings and outcomes of this study are relevant and useful for policy makers and regulatory institutions in Pakistan. This study shows that non-economic disclosure of information based on GRI framework has significant impact on firm performance. The findings show that environmental disclosure indicators and social disclosure indicators are the influencing factors for explaining firm performance. Therefore, environmental and social disclosure leads to stakeholders trust building. Companies in Pakistan may use findings of this study to attract ethical investors and to legitimize their activities in society. This study also shows that traditional indicators for financial reporting may not accurately assess firm value. Stakeholders should also take into account corporate sustainability reports for the accurate assessment of firm’s value; it also helps to achieve the larger goal of sustainable development. The integration of sustainability reporting in a firm corporate strategy helps it to attain a sustainable competitive advantage. Government needs to be belligerent and efficient in coping with the corruption, being faced in the process of sustainability reporting in Pakistan, to ensure the trust of all stakeholders and make the sustainability reporting system of firms more adequate and reliable. The same kind of practices is also advised for other country cases having similar background and problems.

Furthermore, the firms in Pakistan may develop efficient and effective channels of communication such as print media, electronic media, and the use of simple local languages, for the disclosure of reports, as a second approach, so that the targeted customers and stakeholders understand the message clearly in no time. The industry may also follow a comprehensive CSR policy that could counter the false propaganda and increase goodwill of Pakistani firms in terms of disclosure practices; the study has certain limitations, that is, in Pakistan the disclosure practices are not as old as in other emerging countries. Due to this reason, we could not consider data for longer period. Otherwise, we would have used data from year 2000. To enhance and streamline the disclosure practices, government should show very stringent gesture, in view of the compliance of the disclosure guidelines by firms, framed by the Securities and Exchange Commission of Pakistan. Further studies can be carried out for an extended sample of companies in Pakistan. Comparative analysis of sustainability reporting can be made with other countries in the region. The GRI is based on the practices in developed countries, which can be exactly adopted in developing countries like Pakistan. Other policy and regulatory requirements in the context of Pakistan like the Code of Corporate Governance (2012), the National Climate Change Policy (2012), and the Corporate Social Responsibility Voluntary Guidelines (2013), along with GRI framework, can be taken into account for the assessment of sustainability reporting on firm performance.
## Appendix

### Table A1. Sustainability Reporting Index.

| Environmental indicators | Health and safety indicators | Social indicators |
|--------------------------|-----------------------------|-------------------|
| 1. Materials used by weight or volume | 1. New employee hires and employee turnover | 1. Operations with local community engagement, impact assessments, and development programs |
| 2. Recycled input materials used | 2. Benefits provided to full-time employees that are not provided to temporary or part-time employees | 2. Operations with significant actual and potential negative impacts on local communities |
| 3. Energy consumption within the organization | 3. Minimum notice periods regarding operational changes | 3. Operations assessed for risks related to corruption |
| 4. Energy intensity | 4. Workers representation in formal joint management—worker health and safety committees | 4. Confirmed incidents of corruption and actions taken |
| 5. Reduction of energy consumption | 5. Types of injury and rates of injury, occupational diseases, lost days, absenteeism, and number of work-related fatalities | 5. Political contributions |
| 6. Water withdrawal by source | 6. Workers with high incidence or high risk of diseases related to their occupation | 6. Legal actions for anti-competitive behavior, anti-trust, and monopoly practices |
| 7. Water sources significantly affected by withdrawal of water | 7. Average hours of training per year per employee | 7. Non-compliance with laws and regulations in the social and economic area |
| 8. Water recycled and reused | 8. Programs for upgrading employee skills and transition assistance programs | 8. New suppliers that were screened using social criteria |
| 9. Direct greenhouse gas (GHG) emissions | 9. Percentage of employees receiving regular performance and career development reviews | 9. Grievances about impacts on society filed, addressed, and resolved through formal grievance mechanisms |
| 10. Energy indirect GHG emissions | 10. Diversity of governance bodies and employees |  |
Declaration of Conflicting Interests
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding
The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research is supported by National Natural Science Foundation of China (71772163 and 71673240), Zhejiang Provincial Natural Science Foundation of China (LY16G020009), Guangzhou Philosophy and Social Science Foundation (2020GZYB94).

ORCID iDs
Bilal Ahmed https://orcid.org/0000-0002-0397-5319
Irfan Ullah https://orcid.org/0000-0003-3961-888X

References
Abd Rahman, N. R., Jauhari, H. H. M., & Roslan, N. F. (2013). An empirical examination of the relationship between environmental disclosure and financial performance in Malaysia. Journal of Contemporary Issues and Thought, 3, 77–92.
Al-Tuwaijri, S. A., Christensen, T. E., & Hughes Ii, K. E. (2004). The relations among environmental disclosure, environmental performance, and economic performance: A simultaneous equations approach. Accounting, Organizations and Society, 29(5–6), 447–471.
Amran, A., & Hanifia, R. (2011). Evidence in development of sustainability reporting: A case of a developing country. Business Strategy and the Environment, 20(3), 141–156.
Balkhi, K. (2010). The world guide to CSR: A country-by-country analysis of corporate sustainability and responsibility. Greenleaf.
Barnett, M. L., & Salomon, R. M. (2006). Beyond dichotomy: The curvilinear relationship between social responsibility and financial performance. Strategic Management Journal, 27(11), 1101–1122.
Buys, P., Oberholzer, M., & Andrikopoulos, P. (2011). An investigation of the economic performance of sustainability reporting companies versus non-reporting companies: A South African perspective. Journal of Social Sciences, 29(2), 151–158.
Certified Chartered Accountants (CCA). (2004). Going concern? A sustainability agenda for action. London: ACCA.
Chen, L., Feldmann, A., & Tang, O. (2015). The relationship between disclosures of corporate social performance and financial performance: Evidences from GRI reports in manufacturing industry. International Journal of Production Economics, 170, 445–456.
Clarkson, P., Fang, X., Li, Y., & Richardson, G. D. (2010). The relevance of environmental disclosures for investors and other stakeholder groups: Are such disclosures incrementally informative? http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1687475.
Code of Corporate Governance (Revised) (2012). Securities exchange commission of Pakistan. Islamabad: SECP.
Cornell, B., & Shapiro, A. C. (1987). Corporate stakeholders and corporate finance. Financial Management, 16, 5–14.
Corporate Sustainability Reporting Coalition. (2012, June 19). Convention on corporate sustainability reporting: A Policy proposal for corporate sustainability reporting to be mandated for the advancement of a green economy [Conference session]. The UN Conference on Sustainable Development (Rio+20), de Janeiro, State of Rio de Janeiro, Brazil. Deloitte. (2012). Sustainability reporting in Pakistan. https://www2.deloitte.com/content/dam/Deloitte/pk/Documents/governance-risk-compliance/survey-report-Deloitte-Pakistan-noexp.pdf.
Dobbs, S., & Van Staden, C. (2016). Motivations for corporate social and environmental reporting: New Zealand evidence. In Sustainability accounting, management and policy journal (Vol. 7, pp. 449–472). Emerald Group Publishing Limited.
Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. Academy of Management Review, 20(1), 65–91.
Eccles, R. G., Ioannou, I., & Serafeim, G. (2012). The impact of a corporate culture of sustainability on corporate behavior and performance (No. W17950). National Bureau of Economic Research.
Ehsan, S., Nazir, M. S., Nurunnabi, M., Raza Khan, Q., Tahir, S., & Ahmed, I. (2018). A multimethod approach to assess and measure corporate social responsibility disclosure and practices in a developing economy. Sustainability, 10(8), Article 2955.
Evangelinos, K. I., & Skouloudis, A. (2014). European perspectives on corporate non-financial disclosure: Evidence from the Southeast. International Journal of Disclosure and Governance, 11(1), 33–53.
Global Reporting Initiative. (2004). Sustainability reporting guidelines. Boston: GRI.
Gong, G., Xu, S., & Gong, X. (2018). On the value of corporate social responsibility disclosure: An empirical investigation of corporate bond issues in China. Journal of Business Ethics, 150(1), 227–258.
Gozali, N. O., How, J. C., & Verhoeven, P. (2002, June). The economic consequences of voluntary environmental information disclosure [Conference session]. 1st International Congress on Environmental Modelling and Software, Lugano, Switzerland.
Halkos, G., & Skouloudis, A. (2016). Exploring the current status and key determinants of corporate disclosure on climate change: Evidence from the Greek business sector. Environmental Science & Policy, 56, 22–31.
Halkos, G., & Skouloudis, A. (2017). Revisiting the relationship between corporate social responsibility and national culture: A quantitative assessment. Management Decision, 55, 595–613.
Han, C. S., & Brooks, R. C. (2014). Long-term effect of social interactions on behavioral plasticity and lifetime mating success. The American Naturalist, 183(3), 431–444.
Hillman, A. J., & Keim, G. D. (2001). Shareholder value, stakeholder management, and social issues: What’s the bottom line? Strategic Management Journal, 22(2), 125–139.
Himmelberg, C. P., Hubbard, R. G., & Palia, D. (1999). Understanding the determinants of managerial ownership and the link between ownership and performance. Journal of Financial Economics, 53(3), 353–384.
Hussain, N. (2015). Impact of sustainability performance on financial performance: An empirical study of Global Fortune (N100) firms (Working Paper No. 2015/01). Department of Management, Università Ca’ Foscari Venezia.
Intergovernmental Panel on Climate Change. (2014). Climate Change 2014: Synthesis Report. Contribution of Working
Ntim, C. G., & Soobaroyen, T. (2013). Corporate governance
Ntim, C. G., & Osei, K. A. (2011). The impact of corporate board
National Climate Change Policy. (2012).
Montiel, I., & Delgado-Ceballos, J. (2014). Defining and measur-
Malik, M. S., & Kanwal, L. (2018). Impact of corporate social
Li, D., Cao, C., Zhang, L., Chen, X., Ren, S., & Zhao, Y. (2017).
Laskar, N., & Maji, S. G. (2016). Corporate sustainability report-
Kolk, A. (2003). Trends in sustainability reporting by the Fortune
Khan, M. (2019). Corporate sustainability practices impact on firm
Jones, T. M. (1995). Instrumental stakeholder theory: A synthesis
Isabel, C. L., Castelo, M. B., Curto, D. J., & Teresa, E. (2012). How
effects and economics. Academy of Management Review,
Khan, M. (2019). Corporate sustainability practices impact on firm
Khan, M. (2019). Corporate sustainability practices impact on firm
Khan, M. (2019). Corporate sustainability practices impact on firm
Khan, M. (2019). Corporate sustainability practices impact on firm