Available online at http://cusitjournals.com/index.php/CURJ (e-ISSN:2409-0441)
(ISSN-P: 2220-9174)

CITY UNIVERSITY RESEARCH JOURNAL
Vol (14), No. (1), June, 2024

The Impact of Environmental, Social and Governance on Firm Performance: Moderating Role of Financial Slacks and Research & Development Intensity

Shah Hassan

Ph.D. Scholar, Management Science Department

Qurtuba University, Peshawar

Email: shahhassan445@gmail.com

Dr. Naveed

Associate Professor, Management Sciences Department, Qurtuba University, Peshawar

Email: naveedtoru97@gmail.com

Usman Ali Jadoon

Assistant Manager Accreditation, National Business Education Accreditation Council,

Islamabad

Abstract

The purpose of this research is to investigate the moderating role of financial slacks and research & development intensity on the relationship between environmental, social, governance and firm performance in Pakistan. A secondary data quantity content analysis was employed for this research. The sample of this study involves data from 284 non-financial firms over 10 years (2012–2021), which contains 2840 observations. The findings demonstrate that a company's ESG reporting is statistically significant inverse impact on firm operational performance (ROA). While, when the elements of E, S, G are measured individually so it has favorably impact on corporates performance (ROA). Furthermore, the outcomes shows that the presence of financial slacks as moderator variable impact significantly positive association among ESG and corporate's operational performance (ROA). while, when the elements of E, S, G are measured individually, financial slacks also show a significant favorable impact on the association among E, S and G and firm's operational performance (ROA). Similarly, when tested the second moderating variable R&D intensity on the association among ESG as whole and separately the similar positive impact found on firm performance. This research contributes to the body of knowledge regarding ESG reporting and how it impacts company performance. The findings of this research have important implications for government officials, regulators, and policy makers, as they can recognize the role of financial slacks and R&D intensity on the association among ESG and firm operational performance (ROA). The study limitation is that the researcher used dummy variables for environmental and social and governance aspects in Pakistan rather than score or rate values because the score or rate values for these three variables was not available for Pakistan enterprises.

Keywords: ESG, Environmental, Social, Governance Reporting, R&D Intensity, Financial Slacks, Firm Performance, CSR

Introduction

Over the last few decade sustainability have important ESG effects for all internal and external stakeholders, involve individuals, consumer, society, personnel, environmental and the economy, have been under intense societal and regulatory pressure (Kanwal & Awaan, 2021; Zahid *et al.,* 2020; Zahid, Rehman, Ali, *et al.,* 2019), Climate change, carbon emissions, and other environmental challenges have received a lot of attention in academia and business during the previous few decades (Wu & Ullah, 2020). To solve ESG problems, corporations currently use the notion of corporate sustainability practices (CSP) (Van Marrewijk & Werre, 2003). Companies now operate in a volatile environment as a result of the world's rapid change and complexity, and their strategic management is in a position to adopt ESG to completely adapt them to the new circumstances demanded by the new market particular to a sustainable economy (Grigorescu, 2020). There are increasingly more ESG reports being released by businesses worldwide (Buallay, 2020).

Today's businesses and entrepreneurs are required to consider how their actions impact the environment in addition to conducting their operations efficiently. This is consistent with the three-part idea of sustainability: environmental, social and governance (Basuki, 2017). Nilsson *et al.,* (2016) define the sustainable development goals (SDGs) as a series of aim established by the United Nations (UN) to report global concerns. These goals are intended for all organizations and individuals worldwide and should be met by 2030. They compel businesses and firms to work with these 17 goals, which appear in certain corporations' and nations' ESG reports. Environmental, social and governance disclosure is viewed as an essential part to the economy. This is indicated by the expanding number of research on how environmental, social, governance performance impacts other areas, particularly corporate performance, with the goal of pushing corporations globally to begin reporting on sustainability (Nilsson *et al.,* 2017).

A number of steps have been launched to strategies for increasing transparency in ESG reporting. The Global Reporting Initiative (GRI), which covers social, environmental, and governance aspects of sustainability, is recent and wide program (Toppinen & Korhonen-Kurki, 2013). This program related to a ESG disclosure standard. The ESG disclosure and the Global Reporting Initiative declared the creation of International Integrated Reporting Council (IIRC) 4 Committee in response to the GRI initiative. The integrated reporting system combines information on the, environmental, social, and governance (IIRC Website, 2019). In response towards such activities, businesses made several attempts to disclose ESG information in order to interest in new stakeholders and return market trust that had been damaged through earlier in financial crisis (Perez-Batres *et al.,* 2010).

Recently, one of the major advances in financial markets has been the integration of ESG reporting by stakeholders and financial experts in investment choices (Adomako & Trian, 2022; Christensen *et al.,* 2022 Alshbili *et al.,* 2021). Now, businesses need regulations to improve the companies ESG performance (Javed *et al.,* 2020 & Meiar & Cassar, 2018). Although many growing ESG practices, there are some instances where corporations engage in green-washing. These considerations lead researchers to broaden their understanding regarding the effect of ESG on corporate performance by recognizing that simply investment in ESG initiatives is insufficient to enhance firms' performance (Hassan *et al.,* 2021).

Socially conscious businesses go above that what required by law to help the community and environment in which they operate. Organizations are now thinking beyond profit and are seeking to establish ESG practices. Companies provide stockholders with reports that involve non-financial data, covering numerous areas which has not been covered in standard companies reports (Bassen & Kovács, 2008). Several nations have passed legislation and make mandatory the publication of ESG information because they recognize how essential this information is to all parties involved. ESG disclosure is voluntary and uncontrolled in many nations, but it is

mandatory and controlled in others. This determines how the business world has initiated to place a great deal of emphasis on ESG disclosure (Junior *et al.*, 2014).

In developing countries, mostly in Asia, there is a very little literature on firm sustainability (Zahid, *et al.*, 2019). The findings of previous studies, which largely absorbed on well-developed nations, and studies not extended to emerging economies due to different institutional and legal set-up of these economies and there for the ESG issue still not matured and the initial stage in Pakistan. Different initiatives have been made in Pakistan to encourage the business sector to provide ESG information. A corporate social responsibility (CSR) Order was released by the Securities and Exchange Commission of Pakistan (SECP) in 2009 and is applicable to all listed corporations. The "Corporate Social Responsibility Voluntary Guidelines" were released in 2013 as a result the procedures leave it up to the company to decide how and how deeply it wants to incorporate sustainability into its corporations. The Board of Directors must "follow environmental, social, governance practices, including a report on corporate social responsibility guidelines 2013 and any other regulatory framework and 2017 codes of corporate governance guidelines appropriately (SECP, 2019). Although both of these initiatives provide a direction, there is still a lack of direction over what should be disclosed. Different environmental and social concerns that Pakistan faces today have an industrial level impact on overall firm performance (Jamil E., 2020). At the business level, we must consider ESG-related concerns for better development (Ahmad, 2021).

Pakistan aims to evaluate ESG initiatives for different reason. To begin with, the country faces a number of challenges, including energy scarcity, economic and political instability, corruption and weak governance. These factors have an impact on the general economy, industry, and, most importantly, individual quality of life. Firms' activities also have an impact on people's lives through creating low-quality products, causing human rights abuses, and increasing child labor. Furthermore, because most businesses mishandle their waste products, water and environmental contamination are two of the most serious challenges on the list (Ahsan *et al.*, 2018; Shakil, Mahmood, Tasnia, & Munim, 2019). Pakistan is an emerging economy with an operational and managerial structure that varies from those found in advanced nations. Given that the Pakistani economy has historically been characterized by slow economic development, attention on ESG might be a possible element in boosting growth (Khan, M Rahman, H U Baloch, Q B Ahmad, A & Zahid, 2021). However, the country's level of ESG knowledge is low, and as a result, compliance with sustainable practices, particularly those connected to ESG, is not developed.

- To examine the impact of environmental, social and governance (ESG) on firms' performance in Pakistan.
- To investigate the moderating role of financial slacks between environmental, social, governance (ESG) and firms' performance in Pakistan.
- To investigate the moderating effect of research & development Intensity among environment, social, governance (ESG) and firms' performance in Pakistan.

Literature Review

The word ESG means sustainable development. The literature uses a variety of words to describe how a firm is sustainable (Signitzer & Prexl, 2007). Various researchers have suggested many broad interpretation/definitions of the word sustainability that encompass a wide range of sustainability related topics from various disciplines. The important well-known meaning is defined as "meeting present needs without cooperating capability of prospect peers to fulfil their individual requirements" (Brundtland, 1987). After the CSR boundaries, a large number of studies have concentrated on analyzing the correlation among using ESG rating score and corporate performance. Furthermore, ESG is a comparatively new idea, therefore academics, professionals, and investors have all shown an increasing interest in it. According

to Friede *et al.,* (2015) analyzed the results of more than 2000 studies and they investigated that majority of research support the notion that corporate performance and ESG are positively correlated.

According to Spellman, (2020) investigated a positive association among ESG and business performance. The researcher contended this association may exist due to a company needs to devote more resources to ESG-improving efforts the more profitable it is. Environmental, Social, Governance (ESG) disclosure is predicted to develop a procedure of social investment the purpose is to addressing the stakeholder's interest; this change is expected to have a positive effect on the whole performance of enterprises (Sarasmitha *et al.,* 2022). Moreover, evidence showed that current empirical research and stakeholder theory supports the idea that environmental, social, governance initiatives can improve the whole business performance, (Kalia & Aggarwal, 2023: Liu *et al.,* 2022), a favorable relationship among ESG variables and corporate financial performance. On the other hand, contradictory outcomes are investigated in another research showed by Pickwick & Sewelén (2021 & Junius *et al*., 2020), their study investigated that there is no significant association among ESG and firm performance. According to Gao's, (2022) in this regard, examine the association among ESG and corporate performance using panel data. Particularly, Gao's research differs from previous studies in that it uses Return on Assets (ROA) as a measure of financial performance, rather than z-score standardization. ROA is measured as a more accurate factor of corporate performance, as it reveals how well management makes use of its resources to produce revenue (Kasmir, 2012).

H_1: There is significant Relationship between ESG and firms Performance in Pakistan.

Financial slack refers to an organization's liquid assets, such as cash, that are not tied to any specific aim (Kraatz & Zajac 2001), it may be put to use in a variety of ways. An important issue of efficient management is to use an organization existing slack resource to reduce the effect of external pressures on corporations whereas make an effort to catch the corporations' opportunities. Therefore, the existence of idle slack resources is a major root of effective financial changes, as a facilitator of company's operating performance have gained lots of consideration in corporation's previous studies (De Jong *et al.*, 2012). The association among ESG indicators and financial performance, financial slack is employed as a moderating variable. According to Duque & Caracuel (2021), financial slack has a considerable impact on environmental, social, governance disclosure and firm financial performance. Mainly, it is discovered that financial slack come to be a positive moderation and strengthens the favorable correlation among ESG factors and firm financial performance, (*Chu et al.*, 2021: *Gao et al.,* 2020 & Rafailov, 2017).

H_2: Financial slacks significantly moderate the association among ESG and firm performance in Pakistan?

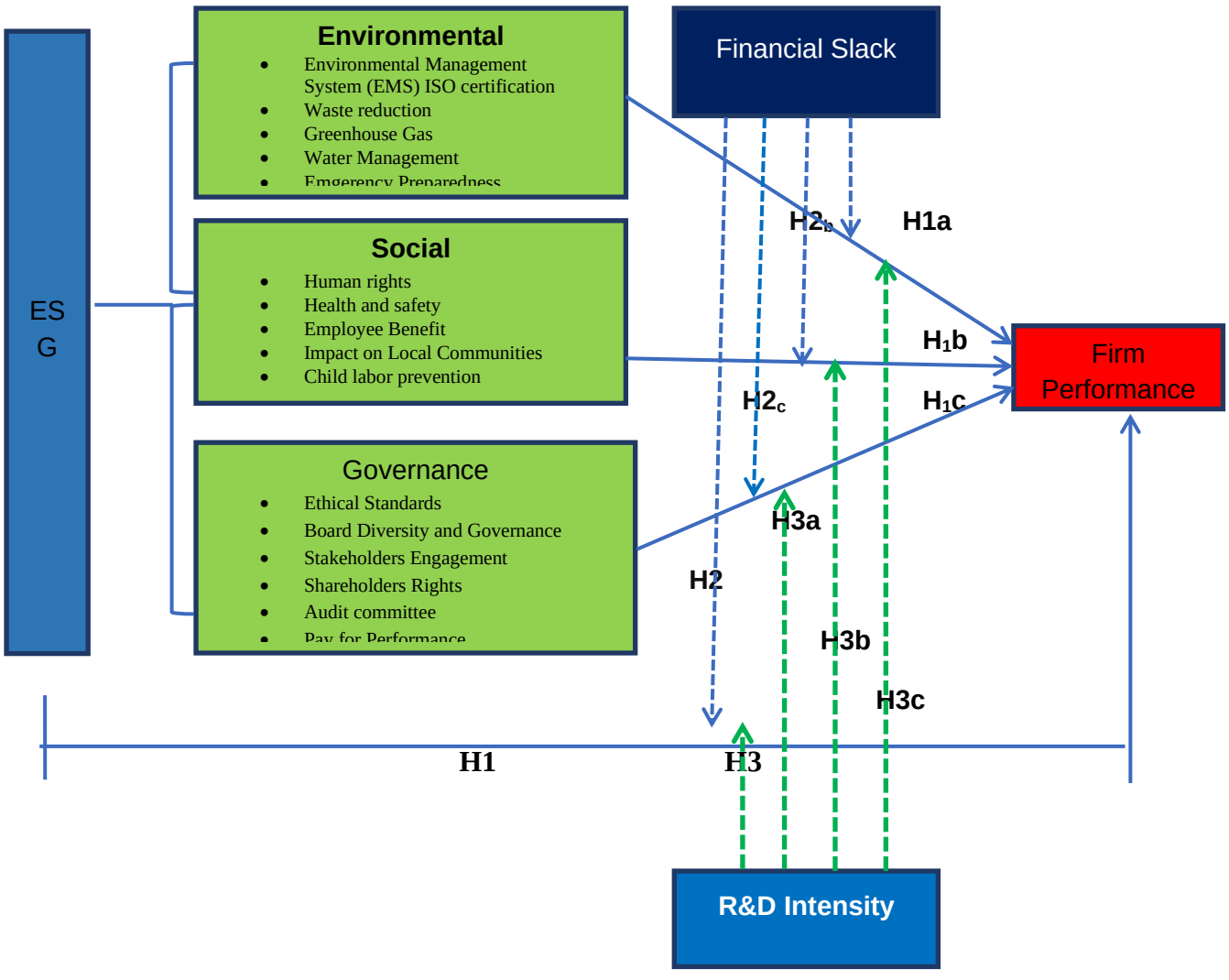
R&D intensity is a valuable instrument to support corporations (De Santis & Presti, 2018). It is undeniable that attempts to attain sustainability goals, such as resource conservation and energy efficiency, are closely related to technology advancement. There will be no chance for growth, let alone industrialization, without technology and innovation, and there will be no economic progress and no well-being for individuals without industrialization. (Carayannis *et al.*, 2015), In order to learn more and find new applications for what we currently know, people involve in research and experimental development, or R&D (Ahmad & Wu, 2021). Study conducted by Ghisetti and Pontoni (2015), it is broadly recognized as an important feature which is boosting economic growth and enhancing the value of organization. The main aim of research & development intensity is to encourage innovations, which will lead to boost organization revenue. This research & developments are commonly showed expansion of innovative goods, allowing organization to sustain its effectiveness and benefit from market opportunities.

H_3: Research & development Intensity significantly moderate the association among environmental, social, governance and firm performance in Pakistan?

Stakeholder Theory

Stakeholder theory, formed by Ed Freeman in the 1980s, contends that organizations responsible to all parties who are directly affected by their actions, not just shareholders (Freeman, 1984; Harrison & Wicks, 2013). An organization should not individually consider its shareholders, but all parties that are directly or indirectly involved in an organizational activity in order to build long-term value (sun *et al.,* 2023). Corporations have responsible to work in the best interests of all stakeholders, and frustration among any stakeholder group can have an inverse effect on financial results and even harm corporate survival. The corporation's economic and social goal is to produce and share more capital and importance to all of its key stakeholder groups, without preferring one group over another. If the Stakeholder Theory emphases on the association among the firm and its stakeholders, everyone must be equally considered and satisfied in order to build long-term value (Taliento *et al.,* 2019; He & Jiang, 2019).

Conceptual Framework Development



Research Methodology

Population Sample and Sample Technique:

The population of this study were Pakistani's Non-financial listed firms used as a unit of analysis. The total population for this study were Pakistani's non-financial listed companies registered on PSX (Pakistan Stock Exchange, 2021). As of 31December 2021, a total of 423 non-financial listed firms were registered in 28 various sectors on the Pakistan Stock Exchange (PSX) Pakistan. So, for this purpose, the current study used purposive sampling technique, particularly pointing non-financial firms that regularly disclosed ESG elements in their companies' annual reports from 2012-2021, moreover the reason for selecting the purposive sampling technique for this study because there was no data available in Pakistan so the current study taken all those firms which disclosed ESG information in their annual reports (Alatawi *et al.,* 2023; Gendro, 2011). As a result, the content analysis approach used to collect data from the annual reports of the sample businesses /sustainability, CSR, as well as yearly reports from 2012 until 2021. For this research study panel data were used. The most often used method for research on quantitative data acquired from annual reports is content analysis (Zahid & Ghazali, 2015). The data for ESG was mentioned by giving a rate of 1 if revealed and 0 for not mentioned on an index established from numerous prior research (Zahid, *et al.,* 2019).

Variables

Variables	Labels	Measurement
Outcome Variable		
Firm Performance/ Operational performance	**ROA**	Net profit/ Total Assets
Predictor Variables		
Environmental, Social, Governance Reporting	ESG	For measuring the ESG will make an index of E, S, G components
Firm Environmental Reporting	E	Index which determines the elements of environmental reporting are Pollution control, Waste reduction policies, Water & Energy consumption, Carbon dioxide (CO2) emission / Greenhouse Gas, Production innovation and Environmental Management System (EMS) ISO certification
Firm Social Disclosure	S	Index which measures the components of social disclosure are Human rights, Health and safety, Training and development / Employee Benefit, Community development, Child labor prevention and Drinking water on workplace
Firm Governance Disclosure	G	Index which determines the elements of corporate governance reporting are Ethical Standard, Board diversity and Governance, Stakeholder Engagement, Shareholder Right, Audit committee and Pay for Performance
Moderating Variables		
Financial Slack	FS	Financial Slack =current assets⁄current liabilities (Kraatz & Zajac 2001)
R&D Intensity	R&D I	The ratio of a company's R&D expenditures to total sales (RD/TS) is used to quantify R&D intensity (Knott, 2003). Dummy also used for the measurement of R&D Intensity on the bases of OECD 2011 classification which was coded "1" for R&D-intensive firms and "0" for the others Fu, L., Boehe, D., & Orlitzky, M. (2020)
Firm Control Variables:		
Firm Age	**FA**	The age of a company is determined as "the number of years since its commencement (Ilaboya, 2016).
Firm Size	**FS**	Firm size, is calculated by log of total assets, is an indicator that influences ESG and corporate performance (Hillman & Keim, 2001).

Sales Growth	**SG**	The formula for calculating the sales growth is (Current year EBIT - previous year EBIT)/Last year EBIT (Deng et al., 2019).
Financial Leverage	**FL**	Financial leverage is a measured of total debt divided by total assets (Fischer & Sawczyn, 2013)

Data Analysis and Findings

Summary Statistics

Table 1

Variables	N	Mean	Median	Std. Dev.	Min	Max	Skewness	Kurtosis
Log ROA	2840	.44	0.35	.57	-2	4.98	.31	2.37
ESG	2839	.37	0.33	.24	0	1.06	.37	2.4
Environmental	2839	.21	0.00	.32	0	1	1.31	3.03
Social	2840	.42	0.50	.27	0	1	-.01	2.1
Governance	2840	.47	0.50	.34	0	2.17	-.18	1.88
Sales growth	2840	2.7	0.00	5.34	17.41	60.13	1.39	45.32
Firm size	2840	6.49	6.67	1.49	0	10.58	-1.75	2.99
Firm age	2840	46.55	42.00	18.4	9	140	.83	3.69
LOG Financial Leverage	2840	-.27	-0.24	.35	-2.17	3.68	1.27	3.46
R&D Intensity	2840	.31	0.00	.46	0	1	.85	1.72
LOG Financial Slacks	2840	.05	0.06	.42	-2.58	2.3	-.88	3.1

Summary description of variables or statistics are used in research studies to provide a quick summary of data and to assist researchers in understanding the data's whole pattern. Summary description of variables can be used to quickly find outliers, which can help discover potential sources of bias or error. Summary description of variables can also be used to link various groups or variables. The current study contains in table 1 the detailed results of the summary statistics.

Correlations Matrix

Table 2

Variables	ROA	ESG	ENV	SOC	GOV	AGE	SIZE	GRO	FL	FS	R&D
(1) ROA	1.000										
(2) ESG	0.227	1.000									
(3) Environmental	0.201	0.573	1.000								
(4) Social	0.195	0.600	0.478	1.000							
(5) Governance	0.146	0.596	0.349	0.487	1.000						
(6) firm age	0.052	0.126	0.079	0.148	0.081	1.000					
(7) firm size	0.202	0.293	0.211	0.272	0.218	0.066	1.000				
(8) sales growth	0.021	-0.014	-0.020	-0.014	0.000	0.000	0.007	1.000			
(9) Financial Leverage	-0.212	-0.121	-0.108	-0.124	-0.062	-0.051	-0.196	0.016	1.000		
(10) Financial Slacks	0.264	0.129	0.113	0.121	0.076	0.055	0.019	0.002	-0.347	1.000	
(11) R&D Intensity	0.143	0.434	0.302	0.376	0.354	0.164	0.188	-0.022	-0.089	0.128	1.000

*The table shows the Pearson correlation coefficients between dependent, independent, control and moderating variables, along with their significance levels. These various variable summaries are provided in Table 1. ***, **, and * indicate statistically significant values at 1%, 5%, and 10%, respectively.*

To start the study analysis, the study looks at the correlation matrix of all variables. A correlation matrix can help us to know the association and interconnections among various variables. It helps to select the most significant and least significant variables for the study analysis. Moreover, correlation matrices can also help us to find probable outliers or groups of data that have strong connections. Table 2 shows the association between the various variables.

Variance Inflation Factor

Table 3

	VIF	1/VIF
Environmental	1.336	.748
Social	1.582	.632
Governance	1.352	.74
Firm size	1.109	.901
Firm age	1.023	.977
Financial leverage	1.013	.988
Sales growth	1.001	.999
Mean VIF	1.202	.

Variables are defined in summary description table 1. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The Variance Inflation Factor (VIF) is a useful tool in the correlation matrix in order to find any possible multicollinearity problem in the data. VIF can help to find the situation in which two or more variables are highly associated and determine which variables should be employed in a model. The VIF values of all the variables lies in above table 3, showing that there is no serious problem of multicollinearity between the predictor variables.

Regression Analysis Results.

Regression analysis is used to determine whether Environmental, Social, Governance reporting has an impact on financial performance. There are three main regression models and nine sub regression models which are consisted of one dependent variable ROA and three independent variables are ESG as a whole and separate also four control variables and two moderating variables financial slacks and R&D Intensity.

Impact of ESG on Firm Performance

Table 4

LOG ROA	**Coefficient**	**t-Statistic**	**Prob.**
ESG	-.2906673	-4.53	0.000***
Environmental	.1384045	3.19	0.001***
Social	.1305765	2.19	0.028***
Governance	.1133847	3.36	0.001***
Firm age	-.0009652	-0.22	0.822
Firm Size	.0633655	7.62	0.000***
Sale Growth	.1062412	12.72	0.000***
Financial Leverage	-.1609538	-3.95	0.000***
Constant	.0598098	0.29	0.773
R^2- within	0.495		
R^2 Adj.	0.495		
F-Statistics		52.94	
Sig			0.000***
Observations	2840		

Variables are defined in summary description table 1. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The result of table 4 shows that ROA, regression model has a highly statistically significant and highly explanatory power, as the of the F-test is (52.94) and the p-value is less than 5% (0.00). The beta coefficients of ESG for firms' performance (Return on Assets) showed that ESG reporting an inverse significantly impact on firm performance, as the coefficient value showing that (-.2906673) and the p-value is less than 5% (0.000). While measuring the E, S, G components separately it has positive significant impact on firm performance which the coefficient values are positive and the t-values are significant. Thus, the study accepts the Alternative hypothesis: H1: Finally, after testing the impact of ESG, control variables, with firm performance, the study found that ESG as a whole negatively affects the ROA, while the

firm age insignificant relationship found with ROA. Similarly, sales growth, firm size found positive significant relationship while financial leverage found negative significant relationship.

The moderating effect of financial slacks between ESG and firm performance

Table 5

LOG ROA	Coefficient	t-Statistic	Prob.
ESG	-.2817456	-4.39	0.000***
Environmental	-.1369354	-3.18	0.001***
Social	-.1150283	-1.96	0.051***
Governance	-.1101968	-3.27	0.001***
Financial Slacks	-.214548	6.27	0.000***
Firm age	-.001073	-0.25	0.801
Firm Size	.0629182	7.62	0.000***
Sale Growth	.1039206	12.52	0.000***
Financial Leverage	-.1195636	-2.92	0.000***
M* Financial Slacks	.054281	2.54	0.023***
Constant	.0708696	0.34	0.730
R^2-within	0.496		
R^2 Adj.	0.496		
F-Statistics		44.76	
Sig	0.000***		
Observations	2840		

Variables are defined in summary description table 1. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results of table 5 indicates the fixed effect regression model involving the impact of moderating variable financial slacks on the association among ESG factors and firm performance. Model 5 shows the association among ESG factors and firm performance are moderated by financial slacks. It's interesting to see that, regardless the presence of moderation impact, the observed relationship among ESG factors and Firm Performance become positive significant (β = .054281; p-value; 0.023). Thus, the study accepts the alternative hypothesis H_2. While measuring the individual components of E, S, G and firm performance towards moderating variable financial slacks, it is also observed the relationship among environmental factors and Firm Performance become also positive we observed that the presence of Financial Slacks not only reduce the association among environmental factors and firm performance but also converses its sign (β = .006604; p-value; 0.052), meaning that making a reducing inverse effect on Firm Performance. The results of social factors same with the previous meaning that when the management of organization have access to the financial slacks' resources, they could manage in a batter way to finance in social creativities that are further effective and perceptible to the public. Financial slacks also moderate the governance factors positively on firm performance.

The moderating role of R&D intensity between ESG and firm performance

Table 6

LOG ROA	Coefficient	t-Statistic	Prob.
ESG	-.2022465	-2.67	0.008***
Environmental	-.0643436	-1.96	0.017***
Social	.0620812	2.00	0.037***
Governance	-.0790227	-2.17	0.030***
R&D Intensity	-.2115967	3.33	0.001***

Firm age	-.0006126	-0.14	0.887
Firm Size	.0636332	7.65	0.000***
Log Sale Growth	.1055492	12.66	0.000***
Log Financial Leverage	-.1560197	-3.83	0.000***
M* R&D Intensity	.3266343	3.00	0.003***
Constant	-.0009356	-0.00	0.996
R^2-within	0.328		
R^2 Adj.	0.328		
F-Statistics		40.26	
Sig	0.000***		
Observations	2840		

Variables are defined in summary description table 1. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The empirical findings of fixed regression model as the impact of ESG on firm performance as the moderating role of R&D Intensity are shown in Table 6. shows that the regression coefficient of ESG is negative significant the coefficient vale is (-.2022465) and the observe association among R&D intensity and ROA is also negative significant the coefficient value is (-.2115967), but the presence of R&D intensity as a interaction term significantly positively moderates the relationship between Environmental, social, governance and firm performance evidence from the coefficient which is (.3266343) and the p-value is (0.003***).

While measuring the individual components of E, S, G the R&D intensity significantly positively moderates the relationship between environmental elements and firm performance. However, the regression coefficient among environmental factors and ROA is insignificant. Similarly, the same results showed the social components but the observe association among social elements and ROA are significantly positively moderate by R&D intensity. Finally, the governance factors positively moderate but the relationship among ROA and environmental factors observed again negative significant.

Analysis Discussion

The study analysis and discussion of findings are essential parts of any research thesis because they provide deep understanding about the data that was gathered and highlight trends, patterns, and associations between various variables. The current study first hypothesis examined that ESG has an inverse significantly impact on firm performance. This result is consistent with a previous research by which examined data from Peru, Mexico, Brazil, Chile, Colombia, and Mexico between 2011 and 2018. They found that there was a statistically significant inverse association among ROA and ESG (Deng & Cheng, 2019; Zhao *et al.*, 2018 & Lins *et al.*, 2017). While tested the environmental, social and governance factors individually it shows a significantly favorable effect on firm operational performance (ROA). Similar studies were conducted by the previous researchers and found the same results that E, S, G factors have a significant positive impact on firm performance (Ahlklo & Lind, 2019; Dahlberg & Wiklund, 2018 & H. J. Kim *et al.*, 2016). It is clearly showed that providing the separate elements of Environmental (E), Social (S), and Governance (G) reporting generates a higher return on assets than the cost of disclosure. Research indicating a favorable association among separate E, S, G reporting and firms operational performance suggests that meeting the needs of internal stakeholders (such as owners and managears) can enhance a company's performance (ROA) through strengthened associations and improved managers loyalty and integrity (Perrini *et al.*, 2009).

The association among ESG as a whole and individual factors on firm performance are moderated by financial slacks. Besides of the moderation impact, the observed relationship among ESG as a whole and individual factors on firm performance become positive significant

but in the presence of financial slacks both ESG as a whole and E, S, G individual factors weaken the association with the form performance ROA. Therefore, the study accepts the second main and sub hypothesis. When managers have additional financial resources, they might invest in social activities that have a greater impact and visibility in the society. This increased access to financial resources, in addition to operational needs, prompts organizational managers to understand investing in improved governance practices, such as hiring external auditors and improving organization laws and rules, in order to improve prospect organization performance by increasing legitimacy among stakeholders. Prior studies have also found that the ESG and firm performance have a greater impact in the existence of available financial slacks resources (Daniel *et al.,* 2004 & Miller *et al.,* 1996). Finally, R&D intensity significantly positively moderates the relationship between Environmental, social, governance and firm performance. This outcome proposes that high R&D intensive organizations can improve their managerial capacity through R&D operations, allowing them to handle ESG concerns more effectively and, consequently, solve ESG problems at a lower cost. The current study findings were compared in the support of previous researches the similar studies were performed by the previous researcher (Bhaskran *et al.,* 2020 & Ting *et al.,* 2020).

Conclusion and Future Direction

The outcome of this research shows that ESG disclosure statistically significantly inversely impact on a corporate's performance (ROA). But, when the elements of environmental, social, governance are measured individually it shows favorable impact on firm performance (ROA). Besides, outcome indicates that the presence of financial slacks as moderator variable positively impacts the association among environmental, social, governance and a corporate's performance ROA. similarly, when the elements of environmental, social, governance are measured individually financial slacks has a same favorable impact on the relationship among environmental, social, governance and firm's performance (ROA). Furthermore, the presence of R&D intensity as moderator variable positively impacts the association among environmental, social, governance and a corporate's performance ROA. similarly, when the elements of environmental, social, governance are measured individually R&D intensity has a same favorable impact on the association among ESG and corporate's performance (ROA). The findings have important implications and will be beneficial for the government of Pakistan researchers, academia, policymakers, regulators, as they can identify the impact of financial slacks and R&D intensity on the relationship between ESG and firm performance measures of all registered firms for their corporate practices and disclosure related to ESG reporting in Pakistan.

The first contribution towards the current research used the individual E, S, G impact on firm operational performance ROA.

The second important practical contribution in this research is to develop ESG index. This ESG index covered three components involving environmental, social, governance practices using a quantity content analysis of all non-financial firms in Pakistan. This ESG index is useful for Pakistani public-listed ccorporations to adopt and improve ESG policies in their annual reports.

The third practical contribution in this research two important moderating variables were used as financial slacks and R&D intensity on the association among ESG and firm performance.

The fourth important contribution is previous studies showed within the environmental, social and governance area has observed limited by both a PSX 100 index companies or only taken by a few sectors and found the effect of environmental, social and governance on companies' performance but the current thesis considered all non-financial companies in Pakistan which more generalizability of the thesis.

The results of the current research would be showed in view of any possible limitations which may serve to recommend prospect study. In this research first limitation is that content analysis focuses on quantitative data collection rather than qualitative data of ESG reporting. As a result, the findings of this research could not accurately reflect the "true" reason for corporations to report ESG efforts. consequently, primary sources, like interview with corporate managers, could be employed to support the quality of environmental, social and governance reporting and get insight into the motives driving ESG efforts. The current study used only non-financial firms. Furthermore, the research can be expanded by include both financial and non-financial corporations in longitudinal analysis. There can also be an extension of variables by include the corporations' industrial nature (sensitive and non-sensitive enterprises), which can provide different outcomes among ESG and firm performance.

For future research the researchers could include combined methodologies (qualitative and quantitative). To examine second-hand sources with primary data like conducting interview with corporate employees, may provide more good knowledge and motivations to improve sustainable efforts. Another direction for future study might execute same testing by dividing the model into country vise to analyzed the differences and comparations among nations. To include Global Reporting (GRI) Iinitiative as a control variable in the similar model may provide more understanding into how this GRI standard impacts the association among ESG reporting and company performance.

References

Adomako, S., & Tran, M. D. (2022). Sustainable environmental strategy, firm competitiveness, and financial performance: Evidence from the mining industry. Resources Policy, 75, 102515.

Ahmad, M., Muslija, A., & Satrovic, E. (2021). Does economic prosperity lead to environmental sustainability in developing economies? Environmental Kuznets curve theory. Environmental Science and Pollution Research, 28(18), 22588-22601.

Ahsan, M. A., Katla, S. K., Islam, M. T., Hernandez-Viezcas, J. A., Martinez, L. M., Díaz-Moreno, C. A., ... & Noveron, J. C. (2018). Adsorptive removal of methylene blue, tetracycline and Cr (VI) from water using sulfonated tea waste. Environmental Technology & Innovation, 11, 23-40.

Alshbili, I., Elamer, A. A., & Moustafa, M. W. (2021). Social and environmental reporting, sustainable development and institutional voids: Evidence from a developing country. Corporate Social Responsibility and Environmental Management, 28(2), 881-895.

Bassen, A., & Kovacs, A. M. M. (2008). Environmental, social and governance key performance indicators from a capital market perspective. Zeitschrift für Wirtschafts-und Unternehmensethik, (9/2), 182-192.

Brundtland, G., Khalid, M., Agnelli, S., Al-Athel, S., Chidzero, B., Fadika, L., & Singh, M. Our Common Future ('Brundtland report'). 1987: Oxford University Press.

Buallay, A. (2020). Sustainability reporting and firm's performance: Comparative study between manufacturing and banking sectors. International Journal of Productivity and Performance Management, 69(3), 431-445.

Caesaria, A. F., & Basuki, B. (2017). The study of sustainability report disclosure aspects and their impact on the companies' performance. In SHS Web of Conferences (Vol. 34, p. 08001). EDP Sciences.

Carayannis, E. G., Campbell, D. F., & Rehman, S. S. (2015). “Happy accidents”: innovation-driven opportunities and perspectives for development in the knowledge economy. Journal of Innovation and Entrepreneurship, 4(1), 1-16.

Cassar, L., & Meier, S. (2018). Nonmonetary incentives and the implications of work as a source of meaning. Journal of Economic Perspectives, 32(3), 215-238.

Christensen, D. M., Serafeim, G., & Sikochi, A. (2022). Why is corporate virtue in the eye of the beholder? The case of ESG ratings. The Accounting Review, 97(1), 147-175.

Chu, S. H., Ren, Y., Cai, H., Xu, Y., & Bao, S. (2021, February). Financial slack, operational slack and firm performance during episodes of financial crises: a panel data analysis. In 2021 International Conference on Public Management and Intelligent Society (PMIS) (pp. 144-148). IEEE.

Dahlberg, L., & Wiklund, F. (2018). ESG Investing In Nordic Countries: An analysis of the Shareholder view of creating value.

Daniel F, Lohrke FT, Fornaciari CJ, Turner RA (2004) Slack resources and firm performance: a meta-analysis. Journal of Business Research 57: 565-574.

De Jong A, Verbeek M, Verwijmeren P (2012) does financial flexibility reduce investment distortions? The Journal of Financial Research XXXV: 243-259.

De Santis, F., & Presti, C. (2018). The relationship between intellectual capital and big data: a review. Meditari Accountancy Research, 26(3), 361-380.

Deng, X., & Cheng, X. (2019). Can ESG Indices Improve the Enterprises’ Stock Market Performance?—an Empirical Study from China. Sustainability, 11(17), 4765.

Duque-Grisales, E., & Aguilera-Caracuel, J. (2021). Environmental, social and governance (ESG) scores and financial performance of multilatinas: Moderating effects of geographic international diversification and financial slack. Journal of Business Ethics, 168(2), 315-334.

Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. Journal of sustainable finance & investment, 5(4), 210-233.

Gao, P., Wang, X., Wang, H., & Cheng, C. (2020). A correction to the entropy weight coefficient method by Shen et al. for accessing urban sustainability [Cities 42 (2015) 186–194]. Cities, 103, 102742.

Gao, S., Yang, L., & Jiao, H. (2022). Changes in and patterns of the tradeoffs and synergies of production-living-ecological space: a case study of Longli County, Guizhou Province, China. Sustainability, 14(14), 8910.

Gendro Wiyono, (2011). Merancang Penelitian Bisnis. Unit Penerbit dan Percetakan STIM YKPN Yogyakarta.

Ghisetti, C., & Pontoni, F. (2015). Investigating policy and R&D effects on environmental innovation: A meta-analysis. Ecological Economics, 118, 57–66.

Grigorescu, I., Popovici, E. A., Dumitrașcu, M., Mitrică, B., Sima, M., & Damian, N. (2020). Sustainability challenges in metropolitan farming: from multi-functionality to organic. A showcase of Bucharest Metropolitan Area. In Proceedings of the GEOLINKS Conference Vision for new horizons, Plovdiv, Bulgaria (pp. 5-7).

International Integrated Reporting Committee. IIRC (2019). Retrieved from: Perez-Batres, L. A., Miller, V. V., & Pisani, M. J. (2010). CSR, sustainability and the meaning of global reporting for Latin American corporations. Journal of Business Ethics, 91(2), 193-209.

Javed, R., Zia, M., Naz, S., Aisida, S. O., Ain, N. U., & Ao, Q. (2020). Role of capping agents in the application of nanoparticles in biomedicine and environmental remediation: recent trends and future prospects. Journal of Nanobiotechnology, 18, 1-15.

Junior, R. M., Best, P. J., & Cotter, J. (2014). Sustainability reporting and assurance: a historical analysis on a world-wide phenomenon. Journal of Business Ethics, 120(1), 1-11.

Junius, D., Adisurjo, A., Rijanto, Y. A., & Adelina, Y. E. (2020). The impact of ESG performance to firm performance and market value. Jurnal Aplikasi Akuntansi, 5(1), 21-41.

Kalia, D., & Aggarwal, D. (2023). Examining impact of ESG score on financial performance of healthcare companies. Journal of Global Responsibility, 14(1), 155-176.

Kanwal, N., & Awan, U. (2021). Role of design thinking and biomimicry in leveraging sustainable innovation. In L. Filho W., A. M. Azul, L. Brandli, A. Lange Salvia, & T. Wall (Eds.), Industry, innovation, and infrastructure. Encyclopedia of the UN ustainable evelopment oals. Springer.

Kraatz, M. S., & Zajac, E. J. (2001). How organizational resources affect strategic change and performance in turbulent environments: Theory and evidence. Organization science, 12(5), 632-657.

Liu, J., Kitamura, Y., & Savelyeva, T. (2022). Building an 'Ecosystem'for transforming higher education teaching and learning for sustainability. Asia Pacific Education Review, 23(4), 539-542.Pickwick, A., & Sewelén, J. (2021). The Impact of ESG Scores on Firm Performance: A Comparison of the European Market before and After the 2008 Financial Crisis.

Miller KD, Leiblein MJ (1996) Corporate risk-return relations: Returns variability versus downside risk. Academy of Management Journal 39: 91-122

Nilsson, M., Griggs, D., & Visbeck, M. (2016). Policy: map the interactions between Sustainable Development Goals. Nature, 534(7607), 320-322.

Nilsson, M., Griggs, D., & Visbeck, M. (2016). Policy: map the interactions between Sustainable Development Goals. Nature, 534(7607), 320-322

Perrini, F., Russo, A., Tencati, A., & Vurro, C. (2009). Going beyond a long-lasting debate: What is behind the relationship between corporate social and financial performance. EABIS Research ProjectWorking paper.

Rafailov, D. (2017). Financial slack and performance of Bulgarian firms. Journal of Finance and Bank Management, 5(2), 1-13.

Roberts, L., Hassan, A., Elamer, A., & Nandy, M. (2021). Biodiversity and extinction accounting for sustainable development: A systematic literature review and future research directions. Business Strategy and the Environment, 30(1), 705-720.

Signitzer, B., & Prexl, A. (2007). Corporate sustainability communications: Aspects of theory and professionalization. Journal of Public Relations Research, 20(1), 1-19.

Spellman, F. R. (2020). The science of water: concepts and applications. CRC press.

Ting, I.W.K., Azizan, N.A., Bhaskaran, R.K. & Sukumaran, S.K. (2020). Corporate social performance and firm performance: comparative study among developed and emerging market firms. Sustainability, 12 (1), 1-21.

Toppinen, A., & Korhonen-Kurki, K. (2013). Global Reporting Initiative and social impact in managing corporate responsibility: a case study of three multinationals in the forest industry. Business ethics: A European review, 22(2), 202-217.

Van Marrewijk, M. (2003). Concepts and definitions of CSR and corporate sustainability: Between agency and communion. Journal of business ethics, 44(2-3), 95-105.

Wu, W., Ullah, R., & Shah, S. J. (2020). Linking corporate environmental performance to financial performance of Pakistani firms: The roles of technological capability and public awareness. Sustainability, 12(4), 1446.

Zahid, M., & Ghazali, Z. (2015). Corporate sustainability practices among Malaysian REITs and property listed companies. World Journal of Science, Technology and Sustainable Development, 12(2), 100-118.

Zahid, M., Rahman, H. U., Ali, W., Khan, M., Alharthi, M., Qureshi, M. I., & Jan, A. (2019). Boardroom gender diversity: Implications for corporate sustainability disclosures in Malaysia. Journal of Cleaner Production, 244, 118683.

Zahid, M., Rahman, H. U., Khan, M., Ali, W., & Shad, F. (2020). Addressing endogeneity by proposing novel instrumental variables in the nexus of sustainability reporting and firm financial performance: A step-by-step procedure for non- experts. Business Strategy and the Environment, 29, 1–18.

Zhao, C., Guo, Y., Yuan, J., Wu, M., Li, D., Zhou, Y., & Kang, J. (2018). ESG and corporate financial performance: Empirical evidence from China's listed power generation companies. Sustainability, 10(8), 2607. https://doi.org/10.3390/su10082607