Journal of Finance & Economics Research

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Affiliation:
Dr. Arshad Iqbal
Assistant Professor, Iqra National University Peshawar, Pakistan.
Email: arshadiqbal@inu.edu.pk
Dr. Farman Ali
Assistant Professor, King Faisal University, KSA.
Email: farman.dufe@gmail.com
Dr. Naveed
Associate Professor, City University of Science and Information Technology, Peshawar, Pakistan.
Email: Naveedtoru97@cusit.edu.pk

Manuscript Information
Submission Date: November 11, 2024
Reviews Completed: March 01, 2025
Acceptance Date: March 09, 2025
Publication Date: March 10, 2025

Citation in APA Style:
Iqbal, A., Ali, F., & Naveed (2024). Environmental, Social, Governance and Workplace Safety impact on firm financial performance in Pakistan: Pre & Post Compulsion Analysis, *Journal of Finance & Economics Research, 9*(2), 110-127.

DOI: https://doi.org/10.20547/jfer2409208

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Journal of Finance & Economics Research

Journal of Finance & Economics Research
Vol. 9(2): 110-127, 2024
DOI: 10.20547/jfer2409208

Environmental, Social, Governance and Workplace Safety impact on firm financial performance in Pakistan: Pre & Post Compulsion Analysis

Dr. Arshad Iqbal*, Dr. Farman Ali†, Dr. Naveed‡

Abstract: *This study investigates the impact of environmental, social, governance, and safety (ESGS) factors on the financial performance of firms listed on the Pakistan Stock Exchange (PSX). Adopting a post-positivist framework, the study formulates and empirically tests hypotheses derived through deductive reasoning. Focusing on both financial and non-financial firms, the study encompasses 551 companies across 37 sectors. The research uses secondary data extracted from yearly reports using pooled Ordinary Least Squares (OLS) regression analysis across two distinct periods: 2012–2016 and 2017–2021. The dummies used to codes (0,1) for ESGS items indicate whether or not they are present in the reports. Using a stratified proportional sampling approach, we can ensure a fair representation of every industry, resulting in a sample size of 384 firms that closely represent the entire population. Through pooled OLS regression analysis, the study explores the association between ESGS factors and financial performance indicators ROA and EPS. The control variables were the dividend yield, leverage, market to book, debt ratio, firm age, and firm size. The study shows that there is a positive correlation between ESGS factors and firms' performance over the entire regression period. Different from environmental factors that have substantial positive impacts on ROA and EPS, social, governance, and safety dimensions lag behind them. However, in this study, control variables are associated in a different way with financial performance measures. The insights highlight the need to integrate environmental, social, governance, and safety (ESGS) factors in a company's strategy to boost financial performance and build sustainable value. This report can be of great help to companies looking to tackle sustainability challenges and achieve better financial outcomes in the competitive landscape of Pakistan.*

Keywords: *Environmental, Social, Governance and Workplace safety; firm financial performance; stakeholder theory; ROA; EPS.*

Introduction

Environmental, social, governance, and workplace safety (ESGS) variables have a significant impact on stakeholder value, risk management, and business performance; they have received more attention in academic research and corporate practices. Over time, the consideration and integration of

*Assistant Professor, Iqra National University Peshawar. Email: arshadiqbal@inu.edu.pk
†Assistant Professor, King Faisal University S.A. Email: farman.dufe@gmail.com
‡Associate Professor, City University of Science and Information Technology, Peshawar. Email: Naveedtoru97@cusit.edu.pk

Received November 11 2024; Reviewed March 01, 2025; Accepted March 09, 2025; Available online March 10, 2025

base ESG factors with firm strategic goals have become a crucial component of sustainable development and responsible corporate citizenship in recent times (Ajayi, 2024). The future sustainability and competitiveness of most organizations depend on their ability to understand how ESG practices impact financial returns as they work to navigate complex socioeconomic and environmental challenges (Noel, 2024). Climate change mitigation, resource efficiency, and environmental stewardship are only a few of the topics covered by the environmental dimension of ESG (Ronalter, Bernardo, & Romaní, 2023). (ESGS) role is significant for firms' research and development with business performance and risk management practices, especially with social factors including human rights, labor practices, and community practices (Ferrero-Ferrero, Fernández-Izquierdo, & Muñoz-Torres, 2020). Governance represents the control and mechanisms in organizations that influence decision-making in the forms of CEO pay scale structure, board transparency, and composition (Jonsdottir, Arnardottir, Sigurjonsson, & Poulsen, 2023). Workplace safety is a crucial part of sustainable business operations which primarily focuses on employee occupational health and protection with assets security of the organization (Haque, Chandio, & Riaz, 2020). The literature study highlights the importance of ESG relationship with business performances and risk involved in operations over the years (Anderson, 2023) and results show that firms with strong ESG positively linked with strong financial outcomes in the market (E. Li, Yao, Sun, & Zhang, 2021; Ioannou & Serafeim, 2017). Further, evidence reports that companies with strong and developed ESG strategies can mitigate systematic risk and control market stock price volatility (Bassen, Kovács, & Leibfried, 2019; Eccles, Ioannou, & Serafeim, 2012). Despite all this evidence about growing literature study on ESG impact, the gap remains unfilled regarding the mechanisms that how ESG factors could affect the firm performances in Pakistan's emerging market. for finding the conclusion in across different regulatory and economic conditions, more research is required to fulfill this gap. Because sector-wise analysis regarding ESG factors and firm performance could vary across regions and industries and need to identify and analyze the dynamics situation of the firms (M. A. Khan & Khan, 2020). For long-term sustainability and business success, modern business sectors acknowledge the importance of ESGS factors but in Pakistan's Non-financial sectors, there is a lack of awareness regarding the empirical data and their impact on financial performance (Rane, Choudhary, & Rane, 2024). Research conducted by Siddiqui, Ahmed, and Khan (2018) and Haq, Ashraf, and Haq (2019) emphasizes the ESG and its importance in decision-making relevance to market perceptions but insufficient information regarding ESG as variables that how affect financial output at the firm level. For significant ESGS practices with strong strategies, an empirical study is needed to investigate the factors and implications in Pakistan industry and this study can be helpful to fulfill this gap and lead to strong support for understanding the phenomena regarding the ESGS strategies boost the investor's confidence and firm long term financial prosperity and business resilience.

Research objectives

The composite objectives of this study are to investigate the impact of ESGS factors on financial performance. To achieve this specific objective the following individual objectives are needed.

- To investigate the environmental factors' impact on a firm financial performance.
- To investigate the social factor's impact on a firm financial performance.
- To investigate the governance factor's impact on a firm financial performance
- To investigate the workplace factors' impact on a firm financial performance

Problem Statement

Global Report Initiative (GRI) report showing a strong commitment to ESG practices considered a key element for overall firm reputation by business sectors in Pakistan (Naheed, Waqas, Ahmad, Iqbal, & Ismail, 2024). Now emerging economies like Pakistan face many environmental and social challenges that affect overall firm financial performance in industry sectors and still, many of these ESG measurements are not fully aligned with company policies because of the early stage for ESG which makes low the confidence level of investors, and creating uncertainties among investors and other stakeholders and also know to how these practices can affect the firm financial performance (K. I. Khan, Rashid, Mahmood, Qadeer, & Sheeraz, 2023). Firms today face increasing pressure to integrate Environmental, Social, Governance, and Safety (ESGS) factors into their strategic decision-making. While ESGS practices have been extensively examined in developed economies (Ioannou & Serafeim, 2017; M. S. Khan, Serafeim, & Yoon, 2020a), but still impact on firm financial performance in emerging markets like Pakistan remains unclear (Ahmad, Mobarek, & Roni, 2021; Naheed et al., 2024). Businesses in these economies struggle to balance profitability with sustainability due to weak regulatory frameworks, limited investor awareness, and inconsistent governance standards (K. I. Khan et al., 2023; Rooh, El-Gohary, Khan, Alam, & Shah, 2023). Workplace safety, yet often overlooked ESGS component, also lacks empirical examination in Pakistan. The main aim of this study is to highlight the relationship between ESG and safety practices and its impact on financial performance and also contribute as guideline regarding sustainable goals for achieving the investor's confidence and attractiveness and also target to support and motivate companies' policymakers, and executives to make better decision-making for enhancing long-term sustainable performance in both financial and non-financial sectors of Pakistan.

Literature Review

Environmental Factors and Firm Financial Performance

Environmental sustainability has become significant and crucial for organizational throughout the world (Di Vaio, Zaffar, Chhabra, & Balsalobre-Lorente, 2024). Literature evidence suggest that environmental contribution by the firms can enhance overall firms' performances and corporate reputation in sectors (Sadri & Ranjbar, 2024). Porter et al., (2019) examined the firm's operations process of coal energy into renewable source energy for the development of ESGS and sustainable activities that can enhance the firm performance for a long period. T. Li, Trinh, and Elnahass (2023) ESGS activities show positive effects of firms on social capital and confidence and the evidence provided by authors shows that during the global financial crisis such as (2008-2009), stock returns were greater for non-financial companies in the US higher social capital in CSR than for those with lower social capital, which was 4% to 7% higher (Trinh, Cao, Li, & Elnahass, 2023). Those higher corporate social responsibility companies also experienced growth, high profit, and sales per employee. Yoon, Lee, and Byun (2018) employ ESGS scores to evaluate corporate social responsibility performance and the impact on a firm's evaluation in the Korean financial market. The results found that corporate social responsibility practices have a positive impact on market performance but result in share prices significantly differently related to firm level (Jung & Yoo, 2023).

H1a: Environmental factors positively affect firm performance.

Social Factors and Firm Financial Performance

Ethical labor standards, community involvement, and diversity in the workforce are just a few of the aspects that make up social responsibility. Research indicates that companies that practice social responsibility experience increased customer loyalty, better brand image, and higher employee morale (Ferrero-Ferrero et al., 2020). Alareeni and Hamdan (2020) found that corporate social responsibility and firms' market performance have a significant and positive relationship. This represents that firms are well conscious about corporate social responsibility and consider the important steps for high market performance by corporate social responsibility positive disclosure policy. Cannon, Ling, Wang, and Watanabe (2020) emphasize that social disclosure can help increase industry profitability and better margins in operation. The same positive effects have been found in the United States, and trade member countries (Buallay, 2019; Handoyo & Anas, 2024). In contrast, Kyambade, Mugambwa, Namuddu, and Namatovu (2024) found positive effects of Employees' enthusiasm for financial performance, but the negative impact of community participation with the responsibility of product and the negative impact of product responsibility is attributed to the negative views of stakeholders who overemphasize social performance.

H1b: Social factors positively affect firm performance.

Governance Factors and Firm Financial Performance

Governance factors are the third important pillar of ESG for a company. It describes the management of the company's rights and obligations (Yoon et al., 2018). Its main use is to convey how a business operates and to eliminate the bribery and corruption that may occur on its behalf, as well as how it upholds the independence of the board of directors and protects its shareholders (Rooh et al., 2023). It must be in line with the company's policy and strategy according to ESG goals. It must address all relevant issues in the areas stated above. Nike, for instance, committed to creating a pair of running shoes with zero waste. Fortunately, the cost of making this shoe was lower, and it was lighter and more permeable. This creative strategy produced value on multiple levels for various stakeholders (Porter, 2019). Organizations must have strong governance systems in place to provide accountability, ethics, and openness (Sarma, Choudhury, Bharadwaj, & Sarma, 2024). Research shows that good governance procedures and company success are positively correlated with well-governed companies receiving more trust from investors and seeing improved financial results (Kovacs, Neszveda, Baranyai, & Zaremba, 2024).

H1c: Governance factors positively affect firm performance.

Safety factors and Firm financial performance

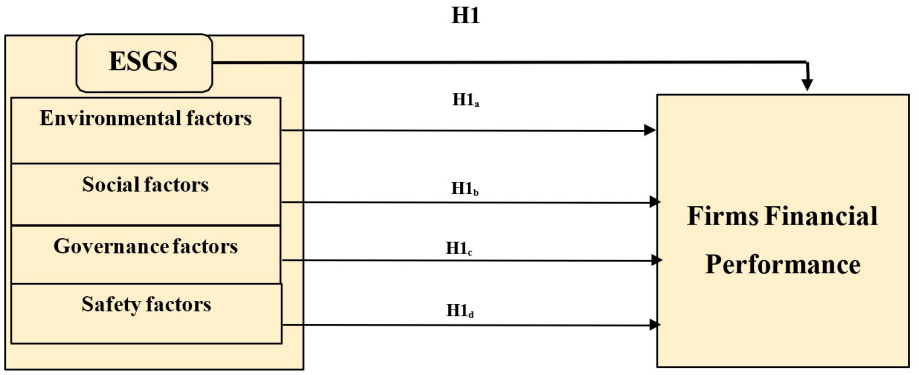
Workplace safety affects employee well-being, productivity, and operational efficiency, making it a crucial component of organizational management (Haque et al., 2020). According to research, companies that prioritize safety efforts report lower accident rates, decreased absenteeism, and increased productivity, all of which boost their bottom line (Haque et al., 2020). According to Afolabi, Ram, Hussainey, Nandy, and Lodh (2023), small and medium-sized businesses (SMEs) that adhered to strong workplace sustainability practices had better economic performance. It argues that businesses that have a good reputation for having a lot of workplace sustainability practices perform better than businesses that don't completely execute these practices (Tetteh, Agyenim-Boateng, & Simpson, 2024). To disguise the inconsistencies between what they are doing and what they are

reporting, corporations may attempt to complicate the entire CSP and its reporting (Wan, 2023). In the modern business sector, a business must implement sustainable work practices and regularly update its stakeholders on their progress (Adebayo, Ikevuje, Kwakye, & Esiri, 2024). Achieving workplace sustainability has emerged as one of the most critical concerns in industrialized nations, where people are more concerned about their work environment. The awareness of sustainable workplaces has increased in developing countries since some of these governments established their future growth objectives, which include adherence to the Sustainable Development Goals, also known as the SDGs (Bonfanti, Mion, Brunetti, & Vargas-Sánchez, 2023).

H1d: Safety factors have a positive impact on firm performance.

Conceptual Framework

Figure 1: Conceptual Framework



Theoretical Support

Stakeholder theory proposes that organizations need to finger on interests of all parties affected by its decision instead of solely stakeholders (Freeman, 1984). The concept of stakeholders has been categorized includes all stakeholders include customers, governments, employees and communities. Stakeholders have expected that company have moral and ethical responsibility not only to increase profit but also to contribute and develop the interest of all stakeholders. Freeman (1984) suggested that stakeholders are the active partners of the company influenced by decision making made by executives. For this effective and efficient management have responsibility must know and fulfill all requirement expected by all stakeholders by strong relationship and establish confidence and trust of stakeholders (Freeman, 2010). The results show significant relationship between firms CSR and financial performance lead to increased stakeholder interest can enhance competitive position in support of stakeholder theory McGuire, Sundgren, and Schneeweis (1988) compared to other sectors whose did not account stakeholder's interest. The importance of ESGS with stakeholder theory supported by many empirical research evidence provides that strong ESG strategies adopted by the firms can enhance better outcome and control their downside risk during market

crises in 2008. Similar result found that firms with higher ESG standards have strong and efficient operational performance with higher returns in stock market (M. S. Khan, Serafeim, & Yoon, 2020b). The current study found also controlled capital costs and strong market value by adopting strong ESG strategies in the sectors (Zhou, 2023). Additionally, result suggested that strong ESG rating firms can recruit trained and quality personnel can result in better firm performance (An, Boasson, Lei, & Wu, 2024). Similar result also suggests that ESG strategically firms can better mitigate risk and adopt legislative change for long term stability in financial market (Dmuchowski, Dmuchowski, Baczewska-Dąbrowska, & Gworek, 2023).

Methodology

Research Design

Research design refer to plan of the study suggesting the data collection procedure, sampling process and data analysis. This study adopts a positivist approach and is deductive. According to (Yuwono & Rachmawati, 2023), a deductive approach involves developing a hypothesis based on theory and testing it through experiments. Saunders and Townsend (2018) describes positivism as focusing on objective data that is free from human bias, emphasizing empirical evidence and facts.

Population and Sample

The target population consists of those financial and non-financial companies listed on Pakistan Stock Exchange (PSX), which were around 551 firms across 37 different sectors. Using annual reports (2012-2021) as secondary data, this research attempts to quantify the degree of impact of ESGS on financial performance. The sample data comprises both financial and non-financial firms in Pakistan over this period.

Data Collection

Data has been collected from secondary sources, i.e., annual reports, sustainability reports, and corporate governance disclosures of non-financial companies operating on the Pakistan stock exchange (PSX). The ESGS factors were extracted manually and then encoded into dummy variables; "1" denotes the application of the ESGS practice while "0" shows it does not apply. The Environmental factors are (Environmental Management System (EMS) ISO certification, Waste reduction, Carbon dioxide (CO2) emission, greenhouse gas, Water Management, Energy Consumption, Pollution Control) and social factors (Human rights, Health and safety, employee benefit, impact on local community, Child labor prevention, and Drinking water on work place) and governance factors (Ethical standard, Board diversity and governance, stakeholder engagement, shareholders right, Audit committee and pay for performance) and workplace safety factors (Decent Labor Practices, Employment Opportunities, Occupational Health And Safety, Employee's Development, Training And Education, Diversity And Equal Opportunities). The study investigates the relationship between the first set of ESGS factors and firm performance by splitting the data into pre- (2012-2016) and post- (2017-2021) ESGS periods and then using return on assets (ROA) and earnings per share (EPS) as performance measurement metrics. The firms were selected based on the availability of data and reporting consistency, which ensures the use of data up to 2021, thus providing sufficient time to assess the impact of ESGS of firms on their financial performance.

Sampling Technique and Sample Size

Stratified proportionate sampling was used to examine the relation of ESGS factors and firm financial performance across financial and non-financial sectors on the PSX. This technique ensures fair representation from each of the 37 sectors. A total of 384 firms were selected as the sample size, calculated using Rao-soft to ensure accurate representation and minimize estimation errors, in line with recommendations by (Algarni & Alemeri, 2023). The study uses stratified proportionate sampling to identify non-financial firms listed in PSX with consistency and availability of their annual, sustainability and corporate governance reports, indicating the selected companies robustly disclose ESGS practices (Hafeez, Yasin, Zawawi, Odilova, & Bataineh, 2024). The organization is justified in doing so to expedite the collection of relevant data for the affected study of the relationship between ESGS factors and firm performance without compromising data reliability (Napoli, 2023). To allow for an analysis of variations in firm performance that arises before and after the increased focus within the UAE on the ESGS practice and adoption of international standards, the periods of 2012–2016 (pre-ESGS implementation) and 2017–2021 (post-ESGS implementation) have been matched with earlier trends and regulatory changes. Since the current study applies publicly available data (secondary data) for research purposes, it does not raise any ethical issues and avoids the risk of disclosing proprietary or sensitive information. This study is based on ethical research practices regarding proper attribution, data source description, and approval for topical or publicly available data access.

Data Analysis

Regression analytic techniques, including the Ordinary Least Squares (OLS) technique and cross-sectional t-test for comparative purposes, are used to validate the relationship of ESGS factors with the firm's financial performance. Data are analyzed using statistical software such as SPSS or STATA, allowing for robust regression modeling and hypothesis testing.

Regression Specification

$$FFP_{it} = \alpha + \beta_1(ESGS)_{it} + \beta_2(FS)_{it} + \beta_3(FA)_{it} + \beta_4(MBV)_{it} + \beta_5(FL)_{it} + \beta_6(DY)_{it} + \epsilon_{it}$$

$$FFP_{it} = \alpha + \beta_1(EF)_{it} + \beta_2(FS)_{it} + \beta_3(FA)_{it} + \beta_4(MBV)_{it} + \beta_5(FL)_{it} + \beta_6(DY)_{it} + \epsilon_{it}$$

$$FFP_{it} = \alpha + \beta_1(SF)_{it} + \beta_2(FS)_{it} + \beta_3(FA)_{it} + \beta_4(MBV)_{it} + \beta_5(FL)_{it} + \beta_6(DY)_{it} + \epsilon_{it}$$

$$FFP_{it} = \alpha + \beta_1(GF)_{it} + \beta_2(FS)_{it} + \beta_3(FA)_{it} + \beta_4(MBV)_{it} + \beta_5(FL)_{it} + \beta_6(DY)_{it} + \epsilon_{it}$$

$$FFP_{it} = \alpha + \beta_1(WSF)_{it} + \beta_2(FS)_{it} + \beta_3(FA)_{it} + \beta_4(MBV)_{it} + \beta_5(FL)_{it} + \beta_6(DY)_{it} + \epsilon_{it}$$

Where: FFP (Financial Performance), FS (Firm Size), FA (Firm Age), MBV (Market to book value), FL (Firm Leverage) and DY(Dividend Yield).

Data Analysis

Descriptive Statistics

Table 1: Summary Statistics

Variables	Obs.	Mean.	Std Dev.	Min.	Max.
Env	1870	.131	.259	0	1
Soc	1865	.429	.287	0	1
Gov	1870	.439	.337	0	1
Safety	1870	.308	.35	0	1
ROA	1870	4.184	9.807	-25.69	36.02
EPS	1869	9.102	27.777	-41.07	195.67
TA	1870	15.264	3.06	0	24.67
MB	1869	1.788	2.95	-.8	20.28
TD	1868	12.671	4.924	0	21.29
DY	1870	3.715	4.669	0	23.21
Lev	1867	0.293	1.026	0	6.431
FS	1870	6.63	1.33	0	10.714
FA	1870	32.658	19.275	1	100

Table 1 represents the summary statistics for each variable, and the mean of the environmental factors (Env) is 0.131, with an SD of 0.259, showing that the data is highly variable. Social factors (Soc) exhibited a higher mean (0.429) and a comparable SD (0.287), showing a somewhat greater presence than environmental components. The governance factors (Gov) have an average of 0.439 and an SD of 0.337, indicating a small degree of variation. Safety measures have a mean of 0.308 and an SD of 0.350, implying a lower presence and greater variability than other components. The ROA has a mean of 4.184 and an SD of 9.807, showing a wide range of profitability among businesses. Earnings per share (EPS) have a mean of 9.102 and a rather high SD of 27.777, indicating that earnings vary significantly amongst enterprises. Total assets (TA) have a mean of 15.264 and an SD of 3.060, demonstrating significant variation in the firm's asset base. The market to book ratio (MB) has a mean of 1.788 and an SD of 2.950, showing significant variation in market price compared to book value. Total debts (TD) have a mean of 12.671 and an SD of 4.924, showing a significant range in debt levels among enterprises. The mean dividend yield (DY) is 3.715, with an SD of 4.669, demonstrating that dividend distributions vary throughout the sample. The mean leverage (Lev) is 0.293, with an SD of 1.026, showing that leverage levels vary between enterprises. The mean firm size (FS) is 6.630, with an SD of 1.330, demonstrating firm size variability. Finally, firm age (FA) has a mean of 32.658 and an SD of 19.275, showing significant age variety across the firms studied.

Matrix of correlations

Table 2: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1) Env	1.000												
2) Soc	0.397	1.000											
3) Gov	0.304	0.425	1.000										
4) Safety	-0.050	0.087	-0.001	1.000									
5) ROA	0.211	0.177	0.119	0.045	1.000								
6) EPS	0.137	0.105	0.064	-0.028	0.344	1.000							
7) TA	0.228	0.314	0.204	-0.041	0.075	0.060	1.000						
8) MB	0.076	0.104	0.008	-0.105	0.227	0.281	-0.023	1.000					
9) TD	0.023	0.075	0.069	-0.210	-0.117	-0.059	0.275	-0.043	1.000				
10) DY	0.097	0.045	0.041	-0.002	0.129	0.010	0.002	-0.063	-0.049	1.000			
11) Lev	-0.071	-0.006	-0.056	0.006	0.010	-0.037	-0.278	0.105	0.252	0.006	1.000		
12) FS	0.230	0.314	0.205	-0.041	0.075	0.059	0.099	-0.023	0.273	0.001	-0.278	1.000	
13) FA	0.070	0.028	-0.002	-0.170	0.058	0.146	0.041	0.077	0.102	-0.129	-0.033	0.040	1.000

The table 2 highlights the positive correlations between ESGS factors, indicating how these dimensions align with each other. Even though safety demonstrates weak or negligible correlations with other variables, it suggests an independent nature within the study's scope. The financial performance is positively impacted by environmental, social, and governance factors, but to varying degrees, as verified by (ROA). The positive relationship observed between ROA and EPS suggesting that firms with strong financial health can significantly affect their overall performance. The firm size and total assets shown favorable connection with ESGS factors have influences on financial performance. Further suggest positive relationship of firm size, market to book ration and ROA supporting the importance of these variables and their role in market value. In these results negative effect of total debts (TD) with safety and positive relationship with leverage also show the risk related measurement and their effect on financial outcomes and risk management dynamics. The leverage have influenced role with book value of the market and safety refers to bound relationship with firm risk and performance. The overall control variables shows connections with ESG factors and their influences on firm performances.

OLS Results for individual pillars of ESGS and Firm performance (Pre analysis 2012-2016)

Table 3: OLS Results for individual pillars of ESGS and Firm performance (Pre analysis 2012-2016

Var.	ROA	EPS	ROA	EPS	ROA	EPS	ROA	EPS
E/S/G/S	6.235***	10.081***	4.449***	5.897***	3.018***	4.327**	1.604**	1.075
	(7.283)	(4.125)	(5.578)	(2.598)	(4.641)	(2.343)	(2.491)	(0.589)
MB	0.680***	2.502***	0.690***	2.541***	0.719***	2.566***	0.746***	2.587***
	(9.276)	(11.952)	(9.266)	(11.993)	(9.754)	(12.257)	(10.007)	(12.254)
TD	-0.314***	-0.399***	-0.315***	-0.402***	-0.331***	-0.426***	-0.300***	-0.402***
	(-6.459)	(-2.877)	(-6.441)	(-2.886)	(-6.770)	(-3.068)	(-5.954)	(-2.821)
DY	0.268***	0.184	0.290***	0.224*	0.296***	0.232*	0.310***	0.249*
	(5.783)	(1.392)	(6.252)	(1.694)	(6.374)	(1.758)	(6.650)	(1.879)
Lev	0.670***	-0.576	0.542**	-0.764	0.676***	-0.568	0.621***	-0.610
	(2.875)	(-0.866)	(2.300)	(-1.139)	(2.879)	(-0.851)	(2.621)	(-0.910)
FS	0.767***	1.121**	0.707***	1.108**	0.905***	1.373***	1.036***	1.578***
	(4.178)	(2.140)	(3.711)	(2.042)	(4.930)	(2.633)	(5.706)	(3.068)
FA	0.031***	0.182***	0.036***	0.191***	0.037***	0.192***	0.041***	0.194***
	(2.706)	(5.651)	(3.144)	(5.918)	(3.265)	(5.971)	(3.535)	(5.965)
Cons	-1.158	-5.513	-2.050*	-7.011**	-2.750**	-8.049**	-3.387***	-8.299**
	(-0.939)	(-1.566)	(-1.665)	(-2.001)	(-2.236)	(-2.304)	(-2.641)	(-2.285)
Obs.	1,866	1,865	1,861	1,860	1,866	1,865	1,866	1,865
$\mathbf{R^2}$	0.47	0.44	0.38	0.41	0.53	0.59	0.44	0.46

Note: *** p<0.01, ** p<0.05, * p<0.1 respectively. (The abbreviation E/S/G/S refers to environmental, social, governance, and safety factors. MB stands for market-to-book value, TD is used to assess total debt, DY is for dividend yield, LEV stands for leverage, FS is for firm size, and FA is for firm age. This information pertains to the above result.)

Table 3 presents regression results for the years 2012 to 2016. The analysis seeks to test the relationships for seven components of ESGS across different measures of company success, including ROA and EPS. The coefficients from the regression analysis provide a large amount of information about these relationships. It means, at the 1% significance level, environmental variables have a statistically significant and positive impact as in ROA and EPS that are 6.235 and 10.081, respectively. Social variables are positively related to ROA and EPS at a 1% significance level with coefficients of 4.449 and 5.897, respectively. In addition, the coefficients of 3.018 and 4.327 for ROA and EPS, respectively, represent a clear relationship between governance variables and financial variables. Additionally, there is a clear, strong positive relationship between safety characteristics and financial success. More specifically, the relationship is 1.604 for EPS and 1.213 for ROA (both statistically significant at 1%). Through a deeper understanding of the relationships between ESG features and company performance, the findings add to the growing body of knowledge on the impact of sustainable business practices on financial performance.

OLS Results for individual pillars of ESGS and Firm performance (Post analysis 2017-2021)

Table 4: OLS Results for individual pillars of ESGS and Firm performance (Post analysis 2017-2021)

		ENV		SOC		GOV		SAFETY
Var.	**ROA**	**EPS**	**ROA**	**EPS**	**ROA**	**EPS**	**ROA**	**EPS**
E/S/G/S	5.392***	10.790***	2.403***	5.299**	2.728***	6.885***	1.387*	-1.552
	(7.224)	(5.720)	(2.723)	(2.387)	(3.673)	(3.688)	(1.952)	(-0.868)
MB	0.394***	1.585***	0.409***	1.612***	0.413***	1.621***	0.419***	1.618***
	(7.336)	(11.668)	(7.508)	(11.771)	(7.607)	(11.885)	(7.698)	(11.811)
TD	-0.386***	-0.460***	-0.349***	-0.384**	-0.351***	-0.388***	-0.333***	-0.410***
	(-6.526)	(-3.072)	(-5.839)	(-2.549)	(-5.882)	(-2.586)	(-5.496)	(-2.692)
DY	0.161***	0.154	0.172***	0.174*	0.174***	0.178*	0.174***	0.195**
	(4.329)	(1.638)	(4.554)	(1.833)	(4.637)	(1.886)	(4.598)	(2.053)
Lev	0.050	0.306	0.030	0.267	0.035	0.283	0.010	0.258
	(0.545)	(1.320)	(0.320)	(1.139)	(0.372)	(1.212)	(0.110)	(1.100)
FS	0.762***	1.540***	1.121***	2.213***	1.174***	2.295***	1.312***	2.624***
	(3.333)	(2.665)	(4.881)	(3.830)	(5.312)	(4.131)	(6.003)	(4.769)
FA	0.022*	0.182***	0.026**	0.189***	0.026**	0.189***	0.031**	0.188***
	(1.843)	(5.934)	(2.130)	(6.127)	(2.162)	(6.155)	(2.515)	(6.046)
Constant	0.135	-8.955**	-2.853*	-14.881***	-3.433**	-16.352***	-3.772**	-14.187***
	(0.086)	(-2.265)	(-1.868)	(-3.872)	(-2.248)	(-4.260)	(-2.383)	(-3.562)
Obs.	1,869	1,868	1,864	1,863	1,869	1,868	1,869	1,868
$\mathbf{R}^2$	0.42	0.35	0.51	0.42	0.54	0.56	0.49	0.43

Note: *** p<0.01, ** p<0.05, * p<0.1 respectively. (The abbreviation E/S/G/S refers to environmental, social, governance, and safety factors. MB stands for market-to-book value, TD is used to assess total debt, DY is for dividend yield, LEV stands for leverage, FS is for firm size, and FA is for firm age. This information pertains to the above result.).

Table 4 presents the results of the pooled ordinary least squares (OLS) regression analysis conducted from 2017 to 2021. This table emphasizes the relationships between the financial performance indicators, such as ROA and EPS, and their environmental, social, governance, and safety (ESGS) factors. The effect of environmental factors on ROA and EPS is positive and statistically significant. The coefficient for ROA is 5.392, while the coefficient for EPS is 10.790. Both coefficients are significant at the 1% level. The social variables exhibit a statistically significant positive relationship, with coefficients of 2.403 and 5.299 at the 1% and 5% significance levels, respectively. The coefficient of governance factor is 2.728 for ROA and 6.885 for EPS, which means a very positive relationship between governance factor and ROA and EPS with a significance level of 1 percent. The results show that there is a robust positive correlation between safety factors and financial performance. In particular, the significance levels of ROA and EPS are 0.136 and -0.203, respectively, at a 1% significance level. There are some interactions between control variables, with ROA and EPS. These findings offer valuable perspectives on the complex relationship between ESG factors and corporate performance, ultimately resulting in improved financial performance and sustainable practices.

T-test results for ESGS and Firm Performance

Table 5 analyses the impact of (ESGS) variables on a corporation's performance throughout two distinct time periods: 2012–2016 and 2017–2021. The research used EPS and ROA as indicators to

Table 5: T-test

		Mean	N	t-value	Std. Err
ESGS	ESGS Pre	.3273	1865	-25.04	0.001
	ESGS Post	.4066	1865		
Performance	Performance Pre	6.7472	1868		
	Performance Post	6.4066	1868	0.998	0.318

measure the financial performance of the company. The evaluation of the effect of ESGS procedures is conducted as an independent variable. The coefficient values for ESGS in both the before and post periods, which are 0.004 and 0.005, respectively, indicate statistical significance at a 5% significance level. This suggests a significant influence both before and after the establishment of governance principles based on environmental, social, and governance (ESG) factors. According to the t-value of -25.04, the ESGS has a significant overall coefficient value of 0.001 at a 1% significance level. This suggests a statistically significant negative association between the pre- and post-time periods. By the second stage of the study, ESGS is found to have insignificantly affected the overall performance (pre and post period). These results demonstrate the affirmative effects of environmental, social, and governance (ESG) factors on the financial and nonfinancial sectors of Pakistan. The implied benefit of ESGS on the company performance pinpoints the intricate relations within the business sectors. The inverse association across periods suggests an adverse influence and warrants additional investigation.

Discussion

The regression analysis findings for pre-study table 3 on the dataset from 2012 to 2016 highlight the relationship between corporate performance and ESGS factors. The coefficients discovered throughout the analysis highlight these linkages. For instance, the coefficients of 6.235 and 10.081, significant at the 1% level, show a high positive impact of environmental factors on ROA and EPS. This result aligns with findings that emphasize the beneficial relationship between environmental scores and accounting performance in non-financial sectors (Ajayi, 2024; Ronalter et al., 2023). (Gerged, Beddewela, & Cowton, 2021) similarly found a moderate but positive association between corporate environmental disclosure and firm performance in emerging markets, further supporting this relationship. A strong and significant association between social characteristics and financial metrics such as ROA and EPS were observed, with statistically significant positive correlations at the 1% level. The coefficients are 4.449 for ROA and 5.897 for EPS, indicating that organizations with strong social responsibility records often achieve better financial performance (Naheed et al., 2024; Anderson, 2023). This analysis also reveals a significant association between governance characteristics and financial performance at a 5% confidence level, with coefficients of 3.018 for ROA and 4.327 for EPS, suggesting that effective governance practices positively impact financial outcomes. Jonsdottir et al. (2023)also repeat the same results shows good governance with effective board dynamics make better financial performance. The coefficient of ROA is 1.213 and EPS is 1.604 respectively shows positive relationship among safety factors and firm financial performance at 1% significant level. Bautista-Bernal, Quintana-García, and Marchante-Lara (2024) results found that sustainable workplace practices by better safety work in the organization results enhance financial success. The study support evidence that workplace safety has become more vital role in firm long term financial success than environmental sustainability (Zahid et al., 2021). The control variables have also significant role with financial measurement include ROA and EPS and ESGS factors and

have valuable insights for achieving financial performance and long-term sustainability. The OLS result 2017 to 2021 in table 4.4 suggests ESG factors can improve the firm sustainable performance. The above results indicate positive impact on firm ROA and EPS supporting environmental contribution of the firms can increased market value for shareholders shares and also firm profitable position in the competitive edge. This result can link with (Noel, 2024; Trinh et al., 2023)also suggested that firms can achieve better financial success by adopting sustainable environmental practice and strategic policies in the organization. The social factors show positive relationship with EPS and ROA addressing the social issue importance and connections with stakeholders lead to better financial outcome by maximizing the overall productivity, achieving brand reputation by consumer loyalty. Further result shows the role of governance in firm market value and success and result indicate that long growth and investors trust can be built by strong and transparent governance structure in the form of transparent and efficient accountability in the organization (Sarma et al., 2024). Addition the safety factors can also provide employee wellbeing and good working environment result in control operational risk and improve financial performance by reducing lower absenteeism and legal factors (Afolabi et al., 2023). Based on these finding suggesting that workplace practices should aligned with firm strategic goals and ESGS practices for better sustainable decision in organization and this approach can be helpful for getting competitive advantages and stakeholder value and corporate resilience led to long term financial position and achieving sustainable goal in the interconnected world.

Conclusion

The main aims of this study to measure the pre and post compulsion impact of ESGS on firm financial performance. The pre and post analysis during the time period 2012 to 2016 and 2017 to 2021 showed valuable impact on ROA and EPS for financial performance. The results observed positive impact of ESGS factors in pre and post compulsion on both market and accounting performance during the given time period. The individual effects of ESGS showed also significant effect of in enhancing the overall financial performance and support the H1 also aligned with previous study suggested that aligning the ESGS strategies with business goals can lead to improve business sustainable performance (Trinh et al., 2023) also make efficient contribution for sustainable business growth (Rane et al., 2024; Sadri & Ranjbar, 2024). Future research needs to analyzed the ESGS with other specific factors to measures the inverse relationship and their effects on firm performance. Qualitative and case study research will be more valuable across different economic situations and sectors wise industry for risk exposure and market valuation specially in emerging economies (Naheed et al., 2024).

Recommendation

- The firm should get priorities in ESGS practices specially their workplace environment with social responsibility by firm strategies and goals can lead to better financial success and long value creation in the market. Along this firms should monitor regularly revise their ESGS projects and focus the identified areas for development can fulfil the stakeholder expectation and enhance market value for both financial and non-financial sectors of Pakistan.
- Business should develop the platform and create collaboration environment for transparent communication led to strong engagement of stakeholders can built interest and trust of the stakeholders for ESGS projects lead to sustainable practices in overall market.

- Business should contribute employee capability and capacity building thorough proper training programs and workshop for knowledge sharing and employee empowerment regarding ESG and decision-making process. Furthermore, the business should participate for industrial alliances and cooperative platforms across sectors for exchanging their practices regarding ESG and should promote innovation in the market.
- Firms should update regarding the SDGs goals and standards for regulatory achievement and make sure to fulfil all the ESG requirement which can be helpful to minimize the firm legal issues related to firm risk.
- If business sectors want to achieve profit from ESGS practice. Business should be focused as main priority to the interest of all stakeholders, sustainable environment and social contribution for betterment of the society.

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