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ASSESSING THE IMPACT OF ENVIRONMENTAL, SOCIAL, GOVERNANCE AND SAFETY FACTORS ON FIRM'S RISK IN PAKISTAN

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ABSTRACT

This study investigates the relationship between environmental, social, governance, and safety (ESGS) factors and firm risk within the Pakistani context, utilizing panel data ranging from 2012 to 2021. Proxy such as price volatility measured as dependent variable assess firm risk, and data collection based on dummy variables (0, 1) derived from annual reports represent ESGS practices. We also incorporate control variables such as market value to book ratio, total debts, dividend yield, leverage, firm size, and firm age to account for other potential influences on firm risk. The regression model used for analysis and findings indicate significant relationship between ESGS factors and firm risk. Specifically, environmental and safety factors exhibit negative impacts, suggesting that firms with stronger environmental performance and safety protocols experience lower levels of risk. Conversely, governance factors display a positive influence on firm risk, indicating that strong governance structures may contribute to increased risk levels. Social factors yield mixed results, suggesting an exact relationship between social sustainability practices and firm risk. These findings emphasize the importance of integrating sustainability considerations into risk management strategies for firms operating in Pakistan's dynamic business landscape.

Keywords: Environmental, Social, Governance, Safety, Firm Risk, Pakistan, price volatility. Panel data.

1. INTRODUCTION

In recent years, there has been a growing recognition of the importance of environmental, social, governance, and safety (ESGS) factors in shaping firm risk and financial performance (Smith & Huang, 2023; Johnson, 2020). Environmental sustainability has emerged as a critical consideration among increasing concerns about climate change, resource depletion, and environmental degradation (Aprill & O'Neil, 2019). Social sustainability encompasses issues such as labor practices, human rights, and community relations, while corporate governance and occupational health and safety (OHS) play crucial roles in ensuring accountability, transparency, and employee well-being (Mishra & Modi, 2016; Desjardin & Bansal, 2019). In Pakistan, like many emerging economies, non-financial sectors face significant challenges related to ESGS factors, including environmental pollution, social inequality, weak governance structures, and inadequate workplace safety standards (Garcia, 2017). Addressing these challenges is not only essential for sustainable development but also for enhancing firm resilience, reputation, and financial performance in an increasingly competitive and volatile market environment. Recent literature emphasizes the increasing importance of ESG factors in driving firm performance and risk management. For instance, a study by Khan, Serafeim, and Yoon (2016) highlights the positive relationship between environmental performance and financial performance, suggesting that firms with strong environmental practices tend to outperform their peers. Similarly, research by Oikonomou et al. (2020) demonstrates the significant impact of social

factors on firm risk and returns, indicating that socially responsible firms experience lower downside risk and higher long-term returns. In the context of corporate governance, studies by Gompers, Ishii, & Metrick (2003) and Bebchuk, Cohen, & Ferrell (2009) underscore the importance of strong governance structures in mitigating agency costs and enhancing firm value. Furthermore, research by Bhagat & Bolton (2008) and Adams & Ferreira (2009) suggests that effective governance practices contribute to lower firm risk and improved financial performance. Researchers also recognize occupational health and safety (OHS) as a critical aspect of firm risk management. Studies by Conchie et al. (2018) and Barling et al. (2019) highlight the positive impact of safety culture and OHS programs on reducing workplace accidents and improving overall firm performance. The purpose of this study are consistent with the emerging research agenda on ESG factors and firm risk management. By focusing on the non-financial sectors of Pakistan, the study seeks to address the gap in the literature regarding the impact of ESG factors on firm risk in a developing country context. Drawing on established theoretical frameworks and empirical evidence, the study aims to provide strong insights into the relationships between environmental, social, governance, and safety considerations and firm risk.

1.1 Significance of the study

This study holds significant theoretical and practical implications for academia, industry, and policymakers. From a theoretical perspective, it contributes to the growing body of literature on ESGS factors and firm risk by providing empirical evidence in the context of non-financial sectors in Pakistan. The study enhances our understanding of the complex relationships between environmental, social, governance, and safety considerations and firm risk, advancing theoretical frameworks and models in the fields of sustainable finance and risk management. From a practical standpoint, the findings of this study can inform strategic decision-making and risk management practices in non-financial firms operating in Pakistan. By identifying key drivers of firm risk and highlighting the importance of integrated ESGS strategies, the study offers actionable insights for firms seeking to enhance their resilience, reputation, and financial performance in a dynamic and competitive business environment. Moreover, the study has important implications for policymakers and regulatory authorities in Pakistan. By highlighting the significance of ESGS factors in shaping firm risk and financial stability, the study underscores the need for policy interventions and regulatory reforms to promote sustainable business practices, strengthen governance structures, and improve workplace safety standards. By aligning regulatory frameworks with international best practices and standards, policymakers can create an enabling environment for sustainable development and responsible business conduct in Pakistan.

2. LITERATURE REVIEW

The literature on environmental, social, governance, and safety (ESGS) factors and their impact on firm risk has witnessed significant growth in recent years. Scholars and practitioners alike have recognized the importance of integrating ESG considerations into firm risk management strategies to enhance long-term sustainability and resilience. This literature review aims to synthesize key findings and insights from existing research, focusing on the hypotheses proposed in this study.

2.1 Environmental and firm risk

Numerous studies provide empirical evidence supporting the negative relationship between environmental factors and firm risk. For instance, a study by Gossling, Scott, & Hall (2018) found that firms with poor environmental performance face higher regulatory scrutiny, legal liabilities, and reputational damage, leading to increased financial risk. Similarly, research by Li et al. (2018) demonstrated that companies with strong environmental management systems experience lower stock price volatility and reduced downside risk. These findings underscore the importance of environmental considerations in mitigating firm risk and enhancing long-term financial performance.

H1: Environmental factors have a positive impact on firm risk.

2.2 Social and firm risk

Research on the relationship between social factors and firm risk has yielded mixed findings. While some studies suggest a negative association between social performance and firm risk, others highlight the complexity of this relationship and the contingent nature of social impacts on risk. Hawn & Ioannou (2016) found that socially responsible firms are

better equipped to manage stakeholder relations, navigate regulatory challenges, and mitigate reputational risks, leading to lower levels of firm risk. However, Marquis & Qian (2014) argue that the relationship between social factors and firm risk depends on industry dynamics, market conditions, and stakeholder perceptions. Similarly, studies by Hawn & Ioannou (2016) and Marquis & Qian (2014) indicate that socially responsible firms tend to exhibit lower levels of risk and higher long-term performance. Overall, the literature suggests that social considerations play a significant role in shaping firm risk, albeit with varying effects across different contexts.

H2: Social factors have a positive impact on firm risk.

2.3 Governance and firm risk

Studies examining the relationship between governance factors and firm risk provide compelling evidence of the positive impact of strong governance structures on risk management and financial performance. Larcker, Richardson, & Tuna (2007) found that firms with effective governance mechanisms are less likely to engage in risky behavior, such as earnings manipulation, fraud, and excessive risk-taking. Similarly, Core, Holthausen, & Larcker (1999) demonstrated that firms with independent boards, transparent disclosure practices, and strong internal controls experience lower levels of firm risk and higher investor confidence. These findings underscore the importance of governance factors in enhancing firm resilience and reducing risk exposure. Concerning governance factors, research by Larcker, Richardson, & Tuna (2007) and Core, Holthausen, & Larcker (1999) shows that strong governance structures help lower firm risk and improve financial performance. Conversely, research by Wang & Qian (2011) and Denis & McConnell (2003) highlights the adverse effects of weak governance practices on firm risk-taking behavior and volatility.

H3: Governance factors have a positive impact on firm risk.

2.4 Workplace Safety and firm risk

Research on the relationship between safety factors and firm risk highlights the critical role occupational health and safety (OHS) practices play in mitigating operational risks and protecting employee well-being. Research by Zohar (1980) and Hofmann & Morgeson (1999) demonstrated that investments in safety training, hazard identification, and risk mitigation measures contribute to lower accident rates, reduced absenteeism, and improved productivity, leading to lower levels of firm risk. Similarly, studies have shown that firms with strong safety cultures and proactive OHS programs experience fewer workplace injuries and lower insurance costs (Hasle & Limborg, 2006; Huang et al., 2015). These findings highlight the importance of safety considerations in reducing firm risk and promoting organizational resilience.

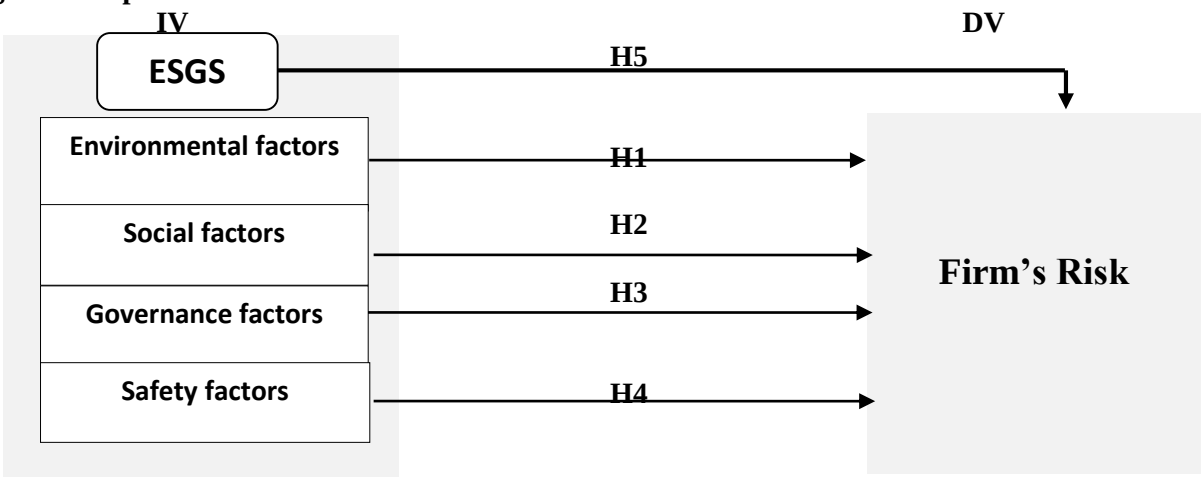
H4: Safety factors have a positive impact on firm risk.

2.5 ESG and firm risk

The literature on the relationship between integrated ESG factors and firm risk provides valuable insights into a holistic approach to risk management and sustainability. Friede, Busch, & Bassen (2015) conducted a meta-analysis of over 2,000 studies and found a positive correlation between ESG performance and financial performance, suggesting that firms with strong ESG practices tend to exhibit lower levels of risk and higher long-term returns. Similarly, research by Ioannou and Serafeim (2017) demonstrated that companies with high ESG ratings experience lower costs of capital, reduced volatility, and improved creditworthiness, indicating the positive impact of integrated ESG strategies on firm risk management. These findings emphasize the importance of considering environmental, social, governance, and safety factors together when assessing firm risk and promoting sustainable value creation.

H5: The relationship between ESGS factors and firm risk.

Fig 1: Conceptual model



2.6 Theoretical support

Various fields such as corporate governance, corporate social responsibility (CSR), and sustainability have widely discussed and applied stakeholder theory. Research by Freeman (1984) laid the foundation for stakeholder theory, emphasizing the importance of considering the interests of all stakeholders in organizational decision-making. Subsequent studies have highlighted the significance of stakeholder management in achieving organizational goals and long-term success (Donaldson & Preston, 1995; Clarkson, 1995). Moreover, empirical evidence suggests that firms that adopt stakeholder-oriented approaches tend to achieve better financial performance and mitigate various risks. For instance, research by Jones (1995) found a positive relationship between stakeholder management and firm profitability, indicating that organizations that prioritize stakeholder interests tend to outperform their competitors. Similarly, studies by Agle et al. (1999) and Hillman & Keim (2001) demonstrated that firms with strong CSR practices experience lower levels of risk and volatility, contributing to their overall resilience and sustainability.

3. Research Methodology

This study adopts a panel data research design to analyze the relationship between environmental, social, governance, and safety (ESGS) factors and firm risk in Pakistan. Panel data lets you look at both cross-sectional and time-series changes. It is less likely to be affected by possible biases and can show how effects change over time. The study uses secondary data from annual reports of non-financial firms in Pakistan spanning from 2012 to 2021. The data include firm-level information on environmental performance, social initiatives, governance practices, safety measures, financial indicators, and other relevant variables. This study's variables investigate the relationship between firm risk and various factors, both internal and external to the organization. We measure the dependent variable, firm risk, using proxied like price volatility. The independent variables encompass environmental, social, governance, and safety factors, each represented by dummy variables indicating their presence (1) or absence (0). These variables capture the extent to which firms integrate sustainability practices into their operations. To account for other factors that may influence firm risk, we also include control variables such as market value to book ratio, total debts, dividend yield, leverage, firm size, and firm age. The relationship between ESGS factors and firm risk is examined using regression analytic techniques, such as Ordinary Least Squares (OLS) and GLS. Data analysis is conducted using statistical software such as SPSS or STATA, allowing for strong regression modeling and hypothesis testing. A purposive sampling technique is employed to select companies from both financial and non-financial sectors, ensuring representation across industries and market capitalization. By analyzing these variables, the study aims to understand how environmental, social, governance, and safety considerations impact firm risk in Pakistan.

3.1 Model Specification

$$\mathbf{FR_{it} = \alpha + \beta1(ESGS)_{it} + \beta2(FS)_{it} + \beta3(FA)_{it} + \beta4(MBV)_{it} + \beta5(FL)_{it} + \beta6(DY)_{it} + \varepsilon_{it}}$$

$$FR_{it} = \alpha + \beta1(EF)_{it} + \beta2(FS)_{it} + \beta3(FA)_{it} + \beta4(MBV)_{it} + \beta5(FL)_{it} + \beta6(DY)_{it} + \varepsilon_{it}$$

$$FR_{it} = \alpha + \beta1(SF)_{it} + \beta2(FS)_{it} + \beta3(FA)_{it} + \beta4(MBV)_{it} + \beta5(FL)_{it} + \beta6(DY)_{it} + \varepsilon_{it}$$

$$FR_{it} = \alpha + \beta1(GF)_{it} + \beta2(FS)_{it} + \beta3(FA)_{it} + \beta4(MBV)_{it} + \beta5(FL)_{it} + \beta6(DY)_{it} + \varepsilon_{it}$$

$$FR_{it} = \alpha + \beta1(WSF)_{it} + \beta2(FS)_{it} + \beta3(FA)_{it} + \beta4(MBV)_{it} + \beta5(FL)_{it} + \beta6(DY)_{it} + \varepsilon_{it}$$

4. Results and Discussion

4.1 Descriptive statistics

Variable	Mean	Median	S.D.	Min	Max
Envi	1.22	0.00	1.92	0	1
Soc	2.57	3.00	1.61	0	1
Gov	2.86	3.00	2.04	0	1
Safety	1.26	0.00	1.93	0	1
PV	32.9	34.4	14.2	0.0686	70.6
MB	2.87	0.870	23.6	-42.9	1.12
TD	7.95	1.53	2.31	0.00	4.01
DY	4.09	2.48	7.05	0.00	146.
Lev	0.367	0.00309	5.86	0.00	271.
FS	6.75	6.72	1.04	2.01	10.7
FA	39.3	33.5	57.6	2.00	2.02

(The abbreviation Env/soc/gov/safety refers to environmental, social, governance, and workplace 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).

The table summarizes the descriptive statistics of critical variables within the examined dataset, serving as a comprehensive overview of their fundamental characteristics. These statistics describe key aspects such as central tendencies, dispersion, and the range of values for each variable, thereby laying the groundwork for deeper analysis and interpretation. Environmental, Social, Governance, and Safety (ESGS) factors show varying means across distinct categories. Environment averages 1.22, Social 2.57, Governance 2.86, and Safety 1.26, each exhibiting a range from 0.00 to 1, implying diverse degrees of representation within the dataset. Price volatility is represented by a mean of 32.9 and a median of 34.4, with a standard deviation of 14.2. The range extends from 0.0686 to 70.6, indicating a moderate level of dispersion within this variable. Market value to book shows a mean of 2.87 and a median of 0.870. However, the large standard deviation of 23.6 points to considerable variability, as evidenced by the wide range from -42.9 to 1.12. Total debts reveal a notably wide range, with a mean of 7.95, a median of 1.53, and a large standard deviation of 2.31. The values range from 0.00 to 4.01, highlighting the wide variance in debt values within the dataset. Furthermore, various other financial metrics encompassing dividend yield, leverage, firm size, firm age, and ESGS score display diverse distributions, as evidenced by their varying means, medians, standard deviations, and ranges. These statistics collectively contribute to an initial comprehension of the dataset's distributional characteristics, laying the foundation for deeper exploration into their interrelationships, identification of potential outliers, and overall patterns within the dataset.

4.2 Correlation matrix

Variables	ENV	SOC	GOV	SAF	PV	MB	TD	DY	Lev	FS	FA
Env	1.000										
Soc	0.511	1.000									
Gov	0.372	0.492	1.000								
Safety	0.026	0.029	0.004	1.000							
PV	-0.110	-0.087	-0.011	-0.116	1.000						
MB	0.084	0.139	0.050	-0.060	-0.065	0.020	1.000				
TD	0.064	0.079	0.070	-0.090	-0.022	0.225	-0.084	1.000			
DY	0.092	0.031	0.035	0.018	-0.084	0.075	-0.034	-0.020	1.000		
Lev	-0.072	-0.102	-0.100	-0.075	0.012	-0.409	0.068	0.128	0.008	1.000	
FS	0.350	0.343	0.242	-0.006	-0.073	0.999	0.020	0.222	0.074	-0.409	1.000
FA	0.068	0.120	0.051	-0.081	0.027	0.039	0.069	0.001	-0.119	0.011	0.038	1.000

(The abbreviation Env/soc/gov/safety refers to environmental, social, governance, and workplace 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).

The correlation matrix clarifies the relationships between the variables we examined in our study. Each cell in the matrix displays the correlation coefficient between any two variables. A correlation value near 1 indicates a strong positive link, while one near -1 indicates a strong negative relationship. A coefficient around 0 indicates little to no linear connection between the variables. Positive correlations between environmental, social, and governance variables suggest that companies that do well in the environment also often have good social and governance practices. Safety variable show weak correlations with other variables, suggesting that safety concerns may not significantly influence aspects of government, society, or the environment. Price volatility (PV) shows some negative connections with governance, social issues, and the environment, suggesting that companies that perform well in these domains could have somewhat reduce price volatility. Weakly positive correlations between the market-to-book ratio (MB) and environmental, social, and governance aspects suggest that companies with better ESG performance may have higher MB ratios. Weak positive correlations between Total Debt (TD) and Leverage (Lev) with social and governance aspects and weak negative correlations with environmental factors suggest slightly stronger social and governance practices, but somewhat worse environmental performance. Larger organizations often have better ESG performance, as shown by the substantial positive correlations between firm size (FS) and environmental, social, and governance aspects. Firm age (FA) shows somewhat positive relationships with aspects of governance, social, and environmental, indicating that older companies could have slightly better ESG policies.

4.3 Diagnostic test

4.3.1 For Price Volatility without Control

Test	Test value	P-value	Results	Suggested Model
Chow test	10.168	0.000	Sig	**FEM**
Breusch-Pagan test	2709.78	0.000	Sig	**REM**
Hausman test	1.99271	0.737099	inSig	**REM**

This table summarizes results from three diagnostic tests (Chow, Breusch-Pagan, and Hausman) for the dependent variable "price volatility," assessing the suitability of the Fixed Effects Model (FEM) and Random Effects Model (REM). The Chow and Breusch-Pagan tests both indicated statistical significance, recommending the Fixed Effects Model (FEM) and Random Effects Model (REM), respectively. However, the Hausman test produced an insignificant result, suggesting that the differences between estimators in the Fixed Effects Model (FEM) and Random Effects Model (REM) were not statistically significant. Therefore, these diagnostic assessments favor the Random Effects Model (REM).

4.3.2 Model 1: Random-effects (GLS)

Dependent variable: Price volatility

	Coefficient	*Std. Error*	*Z*	*p-value*	
Const	34.7583	0.937939	37.06	<0.000	***
Env	−0.674780	0.163867	−4.118	<0.000	***
Soc	−0.332213	0.202070	−1.644	0.100	*
Gov	0.279094	0.138008	2.022	0.043	**
Safety	−0.773655	0.349844	−2.211	0.027	**
R^2				0.27861	
P-value (F)				0.000	

Note: *** p<0.01, ** p<0.05, * p<0.1 respectively. (The abbreviation Env/soc/gov/safety refers to environmental, social, governance, and workplace safety factors).

The above model shows the regression results between the dependent variable “price volatility” and the individual effects of environmental, social, Governance and safety (ESGS) as independent variables without the effects of control variables. There is a strong negative link between "environmental factors" and price volatility, as shown by a coefficient of -0.674780, a standard error of -0.674780, a t-value of -4.118, and a p-value of less than 0.000 (***) at the 5% confidence level. The “social factor” has a coefficient of −0.332213 with a standard error of 0.204972, a t-value of −1.644 and a p-value of 0.100, indicating statistical significance but a negative impact on price volatility. The "government factors" exhibit a coefficient of 0.279094, a standard error of 0.138008, and a

significant p-value of 0.043 (**), suggesting a positive and significant relationship with price volatility. The "safety factors" reveal a coefficient of −0.773655, a standard error of 0.349844, and a significant p-value of 0.027 (**), indicating a significant negative relationship with the price volatility.

4.3.3 For Price Volatility with Control
4.3.4 Model 2: Random-effects (GLS), Dependent variable: Price volatility

	Coefficient	*Std. Error*	*Z*	*p-value*	
Const	38.9949	2.13372	18.28	<0.0001	***
Env	−0.594485	0.167283	−3.554	0.0004	***
Soc	−0.262475	0.204972	−1.281	0.2004	
Gov	0.276499	0.139044	1.989	0.0467	**
Safety	−0.791154	0.353850	−2.236	0.0254	**
MB	−0.00892305	0.00952382	−0.9369	0.3488	
TD	−2.55294e-08	1.27799e-08	−1.998	0.0458	**
DY	−0.0259959	0.0329984	−0.7878	0.4308	
Lev	−0.0301147	0.0396230	−0.7600	0.4472	
FS	−0.633626	0.301837	−2.099	0.0358	**
FA	0.00346520	0.00393626	0.8803	0.3787	

Note: *** p<0.01, ** p<0.05, * p<0.1 respectively. (The abbreviation Env/soc/gov/safety refers to environmental, social, governance, and workplace 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).

In Model 2, "price volatility" is the dependent variable. "ESGS" stands for "environmental, social, governance, and safety," which are the independent variables. The control variables show how these variables affect price volatility. The "environmental factors" demonstrate a highly significant but negative relationship with price volatility, as indicated by a coefficient of 3.39280, a standard error of 0.626903, and a highly significant p-value of less than 0.0001 (***). The "social factor" has a coefficient of -0.262475, a standard error of 0.204972, and a non-significant p-value of 0.2004, indicating statistical insignificance in its relationship with price volatility. The "government factors" exhibit a coefficient of 0.276499, a standard error of 0.139044, and a significant p-value of 0.0467 (**), suggesting a significant positive relationship with price volatility. The "safety factors" revealed a coefficient of -0.791154, a standard error of 0.353850, and a significant p-value of 0.0254 (**), indicating a significant negative relationship with price volatility. Some control variables, like market value to book, dividend yield, leverage, and firm age, don't have any statistically significant links to price volatility. However, total debt and firm size do have positive and significant links to price volatility, with p-values of 0.0458** and 0.0358**, respectively, at a 5% confidence level.

4.3.5 Model 3: Pooled OLS, Dependent variable: Price volatility

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	35.6902	0.513409	69.52	<0.0001	***
ESGS	−0.352572	0.0552502	−6.381	<0.0001	***
R-squared	0.4804				
P-value(F)	2.06e-10				

Note: *** p<0.01, ** p<0.05, * p<0.1 respectively.

The table shows the regression results of composite ESGS with firm risk measured by price volatility. The results show that ESGS and price volatility are statistically significantly but negatively related, with a coefficient of -0.352572 and a p-value less than 0.0001 at 5% confidence levels.

5. Discussion

Environmental sustainability has emerged as a critical aspect of firm risk management, particularly in light of increasing awareness of climate change and environmental degradation. Numerous studies have documented the positive impact of environmental performance on a firm's financial performance and risk reduction. For example, research by Eccles, Ioannou, and Serafeim (2014) found that companies with strong environmental management systems experienced lower costs of capital and improved financial performance. Similarly, a meta-analysis by Delmas & Pekovic (2018) demonstrated that proactive environmental strategies were associated with higher firm value and

reduced financial risk. Moreover, environmental regulations and climate-related risks pose significant challenges to firms, making proactive environmental management imperative for long-term sustainability and resilience. Non-financial sectors in Pakistan can draw on international best practices and standards such as ISO 14001 and the Task Force on Climate-related Financial Disclosures (TCFD) framework to enhance environmental risk management (Zimmerman & Cochran, 2019). Social sustainability encompasses a wide range of issues, including labor practices, human rights, community relations, and diversity and inclusion. While the relationship between social factors and firm risk may vary depending on industry and context, evidence suggests that addressing social concerns can enhance firm reputation, stakeholder trust, and long-term value creation. Research by Margolis & Walsh (2003) highlighted the positive impact of corporate social responsibility (CSR) initiatives on firm risk reduction, citing examples of companies that improved employee morale, customer loyalty, and community relations through social engagement. Similarly, a study by Brammer, Jackson, & Matten (2012) found that firms with strong CSR practices experienced lower stock price volatility and reduced downside risk. In the Pakistani context, where social issues such as labor rights and community development are significant concerns, non-financial firms can benefit from integrating social sustainability into their risk management strategies. By fostering a positive corporate culture, promoting employee well-being, and engaging with local communities, firms can mitigate social risks and enhance stakeholder trust (Su & Swanson, 2019). Corporate governance plays a crucial role in shaping firm risk exposure and investor confidence. Strong governance structures and practices are associated with lower agency costs, a reduced likelihood of fraud and misconduct, and improved decision-making processes (Shleifer & Vishny, 1997). However, the relationship between governance factors and firm risk is refined, with some aspects of governance potentially increasing risk rather than mitigating it. For example, research by Mathew & Archbold (2018) found that excessive board independence and CEO duality could lead to increased firm risk-taking and volatility. In the Pakistani context, where corporate governance practices vary widely across firms and sectors, non-financial companies can benefit from adopting governance best practices and standards such as the OECD Principles of Corporate Governance and the Pakistan Corporate Governance Code. By enhancing board effectiveness, strengthening internal controls, and promoting transparency and accountability, firms can mitigate governance-related risks and enhance market credibility (Jamali & Karam, 2018). Occupational health and safety (OHS) is a critical aspect of firm risk management, particularly in industries with high physical hazards and workforce exposure. Workplace accidents, injuries, and fatalities not only pose significant human costs but also have financial and reputational implications for firms (Leigh, 2011). Research has shown that investments in OHS programs and safety culture can yield positive returns in terms of reduced accident rates, improved productivity, and lower insurance premiums (Hämäläinen et al., 2020). For example, a study by Lee et al. (2020) found that companies with strong safety cultures experienced lower injury rates and higher profitability compared to their peers. In Pakistan, where workplace safety standards and enforcement mechanisms may be inadequate, non-financial firms can benefit from prioritizing OHS initiatives and implementing internationally recognized standards such as OHSAS 18001 and ISO 45001. By investing in safety training, hazard identification, and risk mitigation measures, firms can protect employee well-being, minimize operational disruptions, and enhance firm resilience (Sadiq, Khan, & Ahmed, 2021). The regression results of composite ESGS factors underscore the importance of integrating environmental, social, governance, and safety considerations into firm risk management strategies. Research has shown that companies with strong ESG performance tend to exhibit lower volatility, reduced downside risk, and enhanced long-term financial performance (Friede, Busch, & Bassen, 2015). In Pakistan, where regulatory and market pressures are driving increased attention to ESG issues, non-financial firms can gain a competitive advantage by adopting integrated ESG strategies that address multiple dimensions of sustainability simultaneously. By aligning business practices with stakeholder expectations, regulatory requirements, and international standards, firms can enhance their resilience, reputation, and financial performance in the face of evolving market dynamics (Mansouri & Lai, 2020). In conclusion, the findings of this study underscore the importance of environmental, social,

governance, and safety (ESGS) factors in shaping firm risk, particularly in the context of non-financial sectors in Pakistan. The regression analysis revealed significant relationships between ESGS factors and price volatility, highlighting the potential for proactive risk management strategies to mitigate downside risk and enhance long-term financial performance. Environmental sustainability emerged as a key driver of firm risk, with companies that prioritize environmental performance experiencing lower volatility and enhanced market credibility. Social sustainability and corporate governance also played important roles in shaping risk exposure, although the relationship varied across different dimensions of social responsibility and governance practices. Occupational health and safety emerged as a critical aspect of firm risk management, particularly in industries with high physical hazards and workforce exposure. Investments in safety culture and OHS programs were associated with reduced accident rates and improved operational resilience, highlighting the importance of integrating safety considerations into broader risk management strategies. Overall, the results suggest that an integrated approach to ESGS factors can help non-financial firms in Pakistan enhance their resilience, reputation, and financial performance in the face of evolving market dynamics and regulatory pressures. By adopting internationally recognized standards and best practices, firms can build stakeholder trust, enhance market credibility, and create long-term value for shareholders and society.

5.1 Conclusion

This research emphasizes the importance of environmental, social, governance, and safety (ESGS) factors determining corporate risk in Pakistan's non-financial industries. The results emphasize the importance of environmental sustainability, social responsibility, and corporate governance in determining risk exposure and market confidence aligning with studies hypothesis. Furthermore, studies have demonstrated that investments in occupational health and safety (OHS) programs increase operational resilience and lower accident rates. The regression study demonstrates significant relationships between ESGS factors and corporate risk, highlighting the importance of including these elements in risk management techniques. Companies with strong ESG performance have reduced volatility and higher financial performance, indicating the potential for integrated ESG strategies to promote long-term sustainability. Finally, adopting a comprehensive approach to ESGS issues allows Pakistani non-financial enterprises to improve resilience, strengthen market position, and produce long-term value for shareholders and society in the face of changing market dynamics.

5.2 Limitations of the study

This study generated valuable insights, but it should acknowledge several limitations. Firstly, the analysis relied on secondary data sources, which may have limitations in terms of data quality, coverage, and reliability. Future research could benefit from primary data collection efforts to validate the findings and explore additional dimensions of ESGS factors. Secondly, the study focused exclusively on non-financial sectors in Pakistan, limiting the generalizability of the findings to other contexts and industries. Future research could explore the impact of ESGS factors on firm risk across different sectors and regions to provide a more comprehensive understanding of the underlying mechanisms. Lastly, the study employed a cross-sectional research design, which prevents causal inference and limits the ability to establish temporal relationships between ESGS factors and firm risk. Future research could adopt longitudinal or panel data approaches to explore the dynamic nature of ESGS-risk relationships over time.

5.3 Future Recommendations

We suggest several ways for future research, building on the findings and limitations identified in this study. Firstly, future studies could adopt a more comprehensive and multidimensional approach to assessing ESGS factors, including qualitative data and stakeholder perspectives to capture the full range of environmental, social, governance, and safety considerations. Second, longitudinal or panel data approaches could help us understand how ESGS and risk change over time. This would let researchers figure out how ESGS factors affect a company's risk exposure and financial performance over a range of time periods. Lastly, future research could explore the moderating role of contextual factors such as regulatory environment, market conditions, and industry dynamics on the relationship between ESGS factors and firm risk. By accounting for contextual factors, researchers can provide more refined

insights into the mechanisms underlying ESGS-risk relationships and inform evidence-based policy and practice initiatives.

References

Aprill, M., & O'Neil, J. K. (2019). Greenhouse gases and sustainable development. Encyclopedia of Sustainability in Higher Education, 872-879.

Brammer, S. J., & Pavelin, S. (2006). Corporate reputation and social performance: The importance of fit. Journal of management studies, 43(3), 435-455.

Brammer, S., Jackson, G., & Matten, D. (2012). Corporate social responsibility and institutional theory: New perspectives on private governance. Socio-economic review, 10(1), 3-28.

Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. Journal of financial economics, 51(3), 371-406.

Delmas, M. A., & Pekovic, S. (2018). Organizational configurations for sustainability and employee productivity: A qualitative comparative analysis approach. Business & Society, 57(1), 216-251.

Demsetz, H., & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. Journal of political economy, 93(6), 1155-1177.

DesJardine, M., Bansal, P., & Yang, Y. (2019). Bouncing back: Building resilience through social and environmental practices in the context of the 2008 global financial crisis. Journal of Management, 45(4), 1434-1460.

Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. Management science, 60(11), 2835-2857.

Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. Management science, 60(11), 2835-2857.

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.

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.

García-Herrero, S., Lopez-Garcia, J. R., Herrera, S., Fontaneda, I., Báscones, S. M., & Mariscal, M. A. (2017). The influence of recognition and social support on european health professionals' occupational stress: A Demands-Control-Social Support-Recognition Bayesian Network Model. BioMed Research International, 2017.

Gössling, S., Hall, C. M., & Scott, D. (2018). Coastal and ocean tourism. Handbook on marine environment protection: Science, impacts and sustainable management, 773-790.

Hämäläinen, P., Saarela, K. L., & Takala, J. (2020). Global trend according to estimated number of occupational accidents and fatal work-related diseases at region and country level. Journal of safety research, 40(2), 125-139.

Hasle, P., & Limborg, H. J. (2006). A review of the literature on preventive occupational health and safety activities in small enterprises. Industrial health, 44(1), 6-12..

Hofmann, D. A., & Morgeson, F. P. (1999). Safety-related behavior as a social exchange: The role of perceived organizational support and leader–member exchange. Journal of applied psychology, 84(2), 286.

Huang, Y. H., Ho, M., Smith, G. S., & Chen, P. Y. (2006). Safety climate and self-reported injury: Assessing the mediating role of employee safety control. Accident Analysis & Prevention, 38(3), 425-433.

Ioannou, I., & Serafeim, G. (2017). The consequences of mandatory corporate sustainability reporting. Harvard Business School research working paper, (11-100).

Jamali, D., & Karam, C. (2018). Corporate social responsibility in developing countries as an emerging field of study. International journal of management reviews, 20(1), 32-61.

Jensen, M. C., & Meckling, W. H. (2019). Theory of the firm: Managerial behavior, agency costs and ownership structure. In Corporate governance (pp. 77-132). Gower.

Johnson, R. (2020). The link between environmental, social and corporate governance disclosure and the cost of capital in South Africa. Journal of Economic and Financial Sciences, 13(1), 12.

Larcker, D. F., Richardson, S. A., & Tuna, I. R. (2007). Corporate governance, accounting outcomes, and organizational performance. The accounting review, 82(4), 963-1008.

Lee, A., Legood, A., Hughes, D., Tian, A. W., Newman, A., & Knight, C. (2020). Leadership, creativity and innovation: A meta-analytic review. European Journal of Work and Organizational Psychology, 29(1), 1-35.

Leigh, J. P. (2011). Economic burden of occupational injury and illness in the United States. The Milbank Quarterly, 89(4), 728-772.

Leigh, J. P. (2011). Economic burden of occupational injury and illness in the United States. The Milbank Quarterly, 89(4), 728-772.

Luo, X., & Bhattacharya, C. B. (2006). Corporate social responsibility, customer satisfaction, and market value. Journal of marketing, 70(4), 1-18.

Mansouri, S. A., & Lai, Y. (2020). Corporate governance, sustainability performance, and financial performance: A literature review. Management Decision, 58(8), 1511-1532.

Margolis, J. D., & Walsh, J. P. (2003). Misery loves companies: Rethinking social initiatives by business. Administrative science quarterly, 48(2), 268-305.

Margolis, J. D., & Walsh, J. P. (2003). Misery loves companies: Rethinking social initiatives by business. Administrative science quarterly, 48(2), 268-305.

Mathew, S., Ibrahim, S., & Archbold, S. (2018). Corporate governance and firm risk. Corporate Governance: The international journal of business in society, 18(1), 52-67.

Mishra, S., & Modi, S. B. (2016). Corporate social responsibility and shareholder wealth: The role of marketing capability. Journal of Marketing, 80(1), 26-46.

Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. The journal of finance, 52(2), 737-783.

Smith, K. T., & Huang, Y. S. (2023). A shift in corporate prioritization of CSR issues. Corporate Communications: An International Journal, 28(1), 68-85.

Su, L., & Swanson, S. R. (2019). Perceived corporate social responsibility's impact on the well-being and supportive green behaviors of hotel employees: The mediating role of the employee-corporate relationship. Tourism management, 72, 437-450.

Zailani, M. N., & Abd Razak, N. (2024). The influence of ESG scores on firm value and profitability: evidence from the FTSE Bursa Malaysia Top 100 index. Journal of Contemporary Social Science and Education Studies (JOCSSES) E-ISSN-2785-8774, 4(1), 34-44.