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Assessing the Interconnection of Environmental, Social, and Governance (ESG) Scores with the Financial Performance of Banks in Pakistan: Examining the Potential Mediating Influence of Innovation

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Abstract

The study investigates the impact of ESG on the corporate financial performance of banks and the impact of ESG on innovation in banks. It also examines the mediation impact of innovation in the relationship between ESG and corporate financial performance of banks. The research focuses on a sample of 15 commercial banks in Pakistan over a period of 7 years. The hypotheses proposed in the study are that ESG has a positive impact on financial performance and innovation. Overall, the results suggest that ESG scores have a positive impact on financial performance and innovation in the banking sector in Pakistan, with innovation playing a mediating role in enhancing financial performance. It provides practical implications for regulators, policy makers, shareholders, and other government bodies, emphasizing the significant relationship of ESG in the relationship between innovation and financial performance.

Keywords- Environmental, Social, Governance (ESG) Scores, Financial Performance of Banks, Innovation

Introduction

In the financial market, environmental, social, and governance (ESG) factors have become more important as an indication of sustainable company development corporate risk management and operations are guided by ESG, which is in line with the worldwide emphasis on sustainable, low-carbon, and green development (Chang et al., 2023). Financing limitations operate as a mediating factor in the link between improved corporate green innovation and better environmental, social, and governance (ESG) practices. Better ESG practices enable businesses to create strategic resources based on devoted stakeholder connections and their stellar reputation, which eventually improves green innovation (Zhai et al., 2022).

Companies may effectively respond to a multifaceted business landscape by leveraging the strategic adaptability afforded by their ESG rating performance. ESG rating performance, through positive spillover channels including the demonstration impact, promotes green innovation and

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firm growth. Promoting ESG governance more quickly, maximizing the growth of businesses with ESG advantages, and developing new competitive advantages all fit the definition of sustainable development and support the economy's superior green development (Liu & Lyu, 2022).

In the context of green innovation and financial performance within the framework of Chinese GEM-listed businesses, Zheng et al., (2022) emphasize the significance of ESG performance, political linkages, and regional innovation skills. Financial success is positively impacted by both green innovation and ESG performance, with ESG performance acting as a sort of indirect mediating factor. Besides there is growing complex relationships between ESG disclosure, technological innovation capabilities (TIC), and financial performance in an era where ESG considerations are increasingly intersecting with corporate strategies. However, the crucial function of financing constraints (FC) either as a catalyst or impediment in forming this complex connection is contingent with a special focus on the differences between the green sector and the high-tech area(Chen et al., 2023). Banks are increasingly integrating corporate governance into their provision of innovative financial services, with a positive correlation observed between profitability, total value, and the extent of financial innovation services offered (Wang & Cao, 2022). However, the effects of ESG regulations on operational and market performance vary in the Italian banking sector, emphasizing the importance of environmental advancements and cleaner production for profitability (Menicucci & Paolucci, 2023).

In a broader context, digital innovation adoption by banks enhances ESG performance by reducing resource waste, increasing environmental impact, and promoting transparency and social responsibility (Zhu & Jin, 2023). Digital technology aids in achieving environmental and sustainable development goals through green technology adoption, reducing information asymmetry, and fulfilling social obligations. Moreover, it strengthens governance and ESG performance while promoting green innovation, which is further supported by R&D investments (Xu et al., 2021). ESG performance also alters the relationship between R&D spending and green innovation success. These findings can guide decision-makers in underdeveloped countries in formulating ecological innovation strategies for long-term business sustainability.

Moreover, the current study is conducted in the context of Pakistan. In the midst of increased interest in sustainable business practices, this study digs at a specific economic sector: Pakistan's banking industry. While previous research has mostly focused on the implications of

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ESG ratings on non-financial industries, there is a significant vacuum in understanding their impact on the banking industry. This investigation is consistent with recommendations by Alam & Tariq,(2023). It calls for more study in this area, highlighting the significance of uniform Corporate Sustainability grading to permit meaningful comparisons. To reduce agency costs and enhance company performance, managers are aware of the influence of corporate governance and ESG performance in the banking industry. Rooh et al., (2021) looks at how corporate governance affects environmental, social, and governance (ESG) performance in Pakistan's banking industry, with a focus on how it affects ESG disclosure. This background context emphasizes the growing importance of ESG considerations in banking practices, underscoring the relevance and potential benefits of exploring ESG's role in the Pakistani banking sector.

Problem Statement and Research Gap

The study examines the intricate relationship between "the impact of ESG on the financial performance of banks in Pakistan with the mediating effect of innovation." The growing interest in the nexus of Environmental, Social, and Governance (ESG) sustainability policies, innovation, and financial performance has spurred research in this domain. Existing literature predominantly concentrates on quantifying the influence of ESG policies on financial performance (Cherkasova & Nenuzhenko, 2022;Kalia & Aggarwal, 2023;Nekhili et al., 2021;Yu & Xiao, 2022). While some studies explore the link between innovation and financial performance (Huang et al., 2023; Zheng et al., 2022), limited research investigates the mediating role of innovation within the ESG context.

Given the pivotal role of the banking sector in the economy, understanding the ESG, innovation, and financial performance nexus (Chen et al., 2023; Chouaibi et al., 2022; Liu & Lyu, 2022; Zhou et al., 2023) is crucial. Banks facilitate financial management, credit access, and transactions, contributing to economic growth, entrepreneurship, and monetary stability. Particularly in emerging markets, the ESG performance of banks has been linked to their financial performance, indicating a positive association (Shakil et al., 2019). Moreover, it's vital to consider the interplay of financial elements with ESG factors in comprehending a company's overall financial success, as highlighted by El Khoury et al., (2023). This underscores the need for a comprehensive approach that encompasses various ESG dimensions and the broader financial environment.

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However, there hasn't been much investigation into these aspects, particularly from the standpoint of innovation in the Pakistani banking sector. Hence, this study endeavors to elucidate the multifaceted relationships among ESG, financial performance, and innovation, aiming to provide a deeper understanding of these three concepts through a comprehensive assessment. By conducting an extensive analysis that takes into account ESG, financial performance, and innovation, this investigation aims to provide a deeper understanding of these intricate linkages and contribute to the discussion on sustainable banking practices that leads to better financial performance.

Research Objective

The overall purpose of this research is to thoroughly investigate the connection between ESG practices and financial performance in Pakistan's banking industry. The study also aims to explore the mediating function of innovation in impacting this link, adding to our understanding of the complex interaction between innovation and ESG issues as it relates to banks in Pakistan.

Specific Objectives

To investigate the impact of ESG on the Corporate financial performance of banks.

To investigate the impact of ESG on the innovation in banks.

To investigate the impact of innovation on the corporate financial performance of banks.

To examine the mediation impact of innovation in the relationship between ESG and Corporate financial performance of banks.

Framework and Hypothesis

H1: Environmental, social, and governance (ESG) have positive impacts on financial performance.

H2: Environmental, Social and Governance (ESG) have positive impact on innovation.

H3: Innovation has positive impact on Corporate Financial Performance.

H4: Innovation mediates the relationship between Environmental, Social and Governance (ESG) and corporate financial performance.

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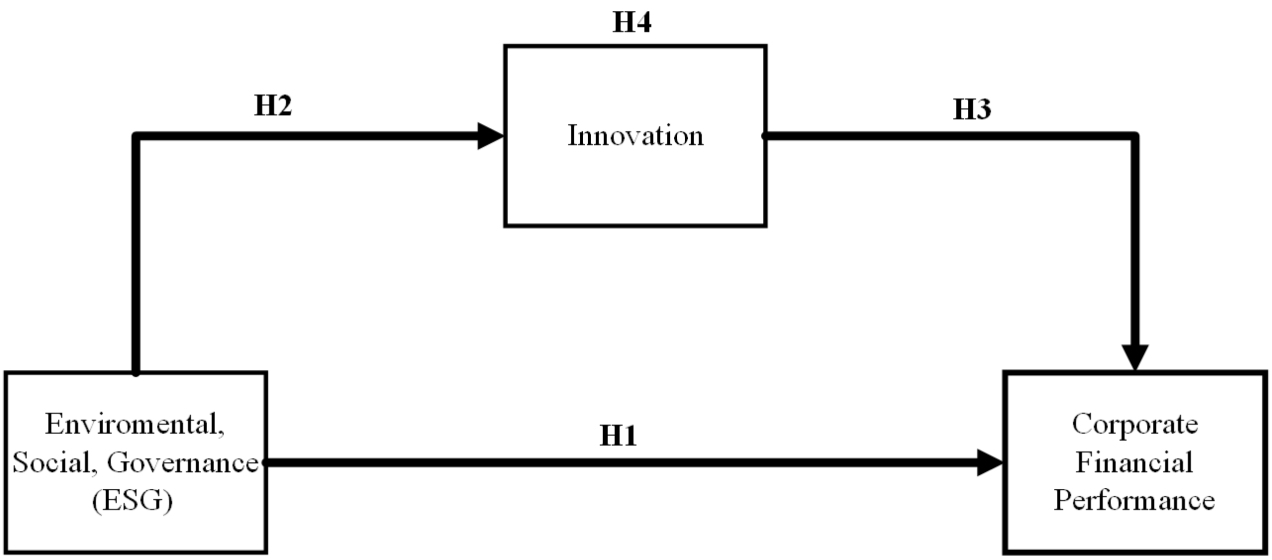

Results and Analysis

Table 4.1 shows the descriptive statistics for dependent, independent and mediating variables of the study for 17 Pakistani commercial period of 7 years ranging from 2015 to 2022. There are total of 500 observations accounted for to get the outcomes of the study. The results in Table 4.1 for dependent variables (CFP) show that the mean values are high and positive which proved the assumptions.

Model Specification

Direct effect of ESG on Corporate Financial Performance

$$CFP_t = \beta_0 + \beta_1 ESG_t + \varepsilon_t$$

Whereas:

$CFP_t = Corporate\ financial\ Performance, ESG_t =$
$Enviromental, Social\ and\ Governannce$

Direct effect of ESG on Innovation

$$INN_t = \beta_0 + \beta_1 ESG_t + \varepsilon_t$$

Whereas: $INN_t = Innovation$

Direct effect of Innovation on Corporate financial performance

$$CFP_t = \beta_0 + \beta_1 INN_t + \varepsilon_t$$

Indirect effect of ESG on Corporate financial performance through mediation of innovation

$$CFP_t = \beta_0 + \beta_1 ESG_t + INN_t + \varepsilon_t$$

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Whereas: $Y_t = Corporate\ financial\ Performance, X_t = ESG, M_t = Innovation$

Table 4.1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
code	500	50.5	28.89498	1	100
year	500	2015	1.41563	2019	2022
esg	500	.806	.3958249	0	1
innovation	500	46.18618	13.04909	0	100
cfp	500	85.78867	18.80995	0	100
eps	500	.1785	.3690028	0	4.58
totalassets	500	1013682	2283966	11719	1.86e+07
size	500	6.49314	28.43707	-59.59	576.1
leverage	500	2.308308	5.134294	.03	47.3

Leverage is measured as financial leverage (LEV) of the firm it is calculated by firm's total liabilities on total assets (Nguyen and phung, 2019). Leverage, total assets and size are also taken as control variable. Table 4.1 shows that there is an average of 23% debt financing of the selected banks for the given period.

In summary, Table 4.1 reported the descriptive statistics of the data used in this study. It is worth noting from the results in Table 4.1, that despite the voluntary nature of the new code, compliance was improved based on the mean values shown in Table 4.1 about specific ESG attributes. Additionally, the average satisfactory results about ESG attributes may be due to a firm's willingness or the desire to improve legitimacy, reputation, and access to ESG data and other reporting needs.

The results of the analysis demonstrate the correlation coefficient for variables. The results show that each variable is perfectly correlated with itself because the value of correlation coefficient is one (R = 1). Table 4.2 shows that there is strong positive correlation between ROA and ROE, and ESG variables. Innovation, ESG has a slightly positive correlation. However, Innovation with ROA and size a slightly negative relationship whereas else all variables is positive.

Table 4.2: Analysis of Correlation

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Code	year	esg innova-n	cfp	eps totala-s	size leverage	
Code	1.0000					
Year	0.0000	1.0000				
Esg	0.0693	0.0322	1.0000			
innovation	0.0273	0.0522	-0.0250 1.0000			
Cfp	0.0324	0.0665	0.1000 0.2766	1.0000		
Eps	-0.0212	-0.0157	0.0459 0.1428	-0.0128	1.0000	
totalassets	0.1748	0.0649	0.1098 0.0613	-0.0670	0.3848 1.0000	
Size	- 0.0600	-0.0619	0.0112 0.1300	0.0642	0.5303 0.0104	1.0000
Leverage	0.0196	0.0412	0.0547 0.0445	-0.0384	0.7019 0.4795	0.0950 1.0000

Table 4.2: Regressions Result of Model Dependent variable is ROA and Independent Innovation:

Observations	=	1,683
F (1, 1681)	=	706.35
Probability > F	=	0.0000
R^2	=	0.2959
Adjusted R^2	=	0.2955

ROA	Coef.	Std. Err.	t	P>|t|
Innovation	0.2194737	0.008258	26.58	0.0000
_cons	3.445311	0.26786	12.86	0.0000

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The value of R-square is 29.59% which demonstrates that the model is best fit for this study. The value of F-statistics is 706.35% which shows that the model is best for the data and model is highly significant because it is greater than 4%. The value of probability is 0.0000 and P value is also significant which enlighten the fitness of the model. Based on the regression Deb-ratio shows that the value of t-stats is (26.58) which shows that financial leverage is highly positive significant with return on asset.

Table 4.4: Comprehensive Mediation Table: ESG, Innovation and CFP

Source	SS	df	MS Number of obs =	500
	F(5, 494) =	1.33		
Model	1.03758113	5	.207516225 Prob > F =	0.2505
Residual	77.1444189	494	.156162791 R-squared =	0.0133
	Adj R-squared =	0.0033		
Total	78.182	499	.156677355 Root MSE =	.39517
esg	Coef.	Std. Err.	t P>t [95% Conf.	Interval]
innovation	-.0010209	.0013757	-0.74 0.458 -.0037239	.0016821
eps	-.0026463	.0901922	-0.03 0.977 -.179854	.1745613
totalassets	1.93e-08	8.92e-09	2.16 0.031 1.72e-09	3.68e-08
size	.0002151	.0008325	0.26 0.796 -.0014206	.0018509
leverage	.0002423	.0056173	0.04 0.966 -.0107944	.011279
_cons	.8321478	.0655537	12.69 0.000 .7033493	.9609464

The mediation result for finding the impact of Innovation as a mediator between the relationship of ESG and CFP is shown in Comprehensive Mediation Table above. All the findings in Comprehensive Mediation Table above is based on the four-step mediation process. The finding presented in Comprehensive Mediation Table above, step 1, support the assumption of path (a), specifying a significant impact of ESG on Innovation by showing the result as $\beta = 0.1827^{***}$, and the $p > 0.00$, which meet the first condition of mediation. Therefore, in path (a) innovation had a significant and positive association with CFP.

Similarly, in ascertaining the second condition of mediation for path (b) step 2, this study also found a statistically significant positive impact of ESG on Innovation with the $\beta = 0.8327^{**}$ and p

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< 0.005. Thus, path (b), shows that Innovation had a significant impact on CFP. However, moving towards the third condition of mediation in Comprehensive Mediation Table above, path (c), the study did not find a significant and impact of Innovation on CFP with the $\beta = -0.01596$ and $p > 0.10$.

Conclusion

The prime objective of this study is to analyze the direct impact of ESG on corporate financial performance (CFP) and thereafter mediating role of Innovation between ESG on CFP of sampled commercial banks of Pakistan. The objective has proved that good ESG practices make a positive and significant impact on the CFP. The innovation has also portrayed a positive impact on CFP. The results are witnessed that that the innovation is positively mediating between ESG and CFP. The first portion is checked the direct association of Innovation with CFP. The CFP is checked by ROA, ROE. The results are witnessed that capital structure has a significant and positive association with CFP. The second portion is to check the direct impact is ESG with CFP, the result for this are found that Environmental and social factors has insignificant relationship with CFP while Corporate Governance mechanism has positive and significant relationship on ROA and ROE but insignificant relationship with earning per share. The third portion is checked the mediating impact of Innovation between ESG and CFP. The result showed that Social score has insignificant relationship with CFP. While Environmental and governance mechanism has positive and significant impact on ROA and ROE but insignificant with EPS.

Limitation

The study is focused on a sample of 15 commercial banks for a period of 7 years (2015-22). There are more than 22 commercial, noncommercial, and Islamic banks but the study is focused on the sample population. The core variables are ESG, Innovation and CFP and their proxies are limited. There are more related proxy variables existed, but the study is focused on the given main proxies which served the prime objective.

Practical Implication

The contribution of this paper provides practical implication for regulators such as SECP and SBP, Policy makers such as BODs and shareholders of the companies, other government bodies. This study also motivated the investor and companies by emphasizing the significant relationship of ESG in relationship between Innovation and CFP. The aftereffects of this exploration can add to organization decisions maker in relation with the strategy of choosing board member as another way to deal with augment the organization's good corporate governance practice. Besides it tends to be utilized as thought for the controller with respect to guideline on the great corporate governance practice.

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