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Role of Fintech in improving Corporate ESG Performance: Evidence from Pakistan

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ABSTRACT

In order to promote sustainable growth and enhanced well-being across economies, businesses are searching for methods to integrate Environmental, Social, and Governance (ESG) concepts into their operations. Therefore, raising the corporate ESG level for governments, businesses, and all stakeholders is currently regarded as a critical issue. Financial technology, or FinTech, may provide new approaches and be a remedy for the fundamental changes in the financial system brought about by technological innovation. Understanding how financial technology (FinTech) may improve business ESG performance is essential in Pakistan, where sustainability concerns are growing in importance with the country's rapid digital change. This research investigates the impact of FinTech on ESG performance of publicly listed textile companies in Pakistan during 2015-2024. The statistical analysis was performed using SPSS and STATA software. And found that FinTech implementation leads to better ESG performance by enhancing company internal controls and reducing financing constraints. The study shows how FinTech systems enable environmentally friendly business operations across Pakistan's developing market sectors. This study also offers helpful policy recommendations for investors, regulators, and corporate executives who wish to support digital financial innovation and sustainable economic development in Pakistan. Based on the aforementioned findings, it is also advised that the government provide relevant legislative assistance to encourage the expansion of FinTech and make efficient use of its financial resources and capabilities to enhance business ESG performance. FinTech will be able to effectively promote sustainable development and enhance business ESG performance as a result.

Keywords: FinTech, ESG Performance, Financing Constraints, Internal control quality, Pakistan

Introduction

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Background of the study

Sustainability has resurfaced on the global attention as the societal impacts of infectious sickness, wealth disparity, and climate change deteriorate (Cai et al., 2022). Because of awareness elements of the Environmental, Social, and Governance (ESG), investors have been more willing to consider sustainability in their finance and investing strategies. Ethical and responsible investing gave birth to the understanding of environmental, social, and governance. ESG allows for company operation and risk management (Wang and Sarkis, 2017). Also, because of the global financial crisis and its harmful consequences for growth and development, stakeholders are now concerned more than before with non-financial measures including governance, social, and environmental performance (Albitar et al., 2020). In many ways, the problems of the world are more than just macroeconomic issues; the environments of business and society are all seriously under threat. Onuselogu and Shahzad, (2023) describe the globe at the tipping point of many profound transitions, especially regarding the scarcity of water, air pollution, and the deterioration of the natural environment, which are threatening civilization and affecting the ecosystems on which it relies. Despite the rise of ESG in wealthy countries, Pakistan a developing country has not encountered or spoken of it in some time. Jamil and Siddiqui, (2020) note that in 2009, SECP issued an order to all entities mandating inclusion of ESG concepts, and consideration of ESG information in their annual reports.

The development of enterprises is associated with a beneficent external economic environment; as well as monetary being an instrument supporting genuine economic activity. In this regard, a new area of global financial business, financial technology or FinTech, is gaining in prominence. FinTech is promoting innovation in business operations, financial services, product services, and regulatory systems models by integrating traditional financial processes with new technologies (Qin et al., 2022). These integrated traditional processes and innovative technologies enable the modernizing and change of the financial ecosystem. FinTech can include blockchain, mobile banking apps, peer-to-peer lending sites, and machine learning for financial analysis. As advanced technologies (Romānova & Kudinska, 2016) are changing the financial services landscape to be more equitable, accessible and efficient, it also seems that FinTech can leverage its ties with ESG, while further supporting their innovation initiatives. Improvements in FinTech can help to mitigate investment funds with decreased risks, offer financial transaction efficiencies, broaden financial inclusion, and provide enhanced transparency through real-time visibility of the green finance payment (Bani Atta, 2025). Financial inclusion in Pakistan is at 21%, which is relatively low compared to the average of 33% amongst lower middle-income economies. With more than 160 million biometrically verified mobile connections, Pakistan only has 58 million mobile wallets, 53% of which are dormant. In terms of e-commerce merchants, as of June 30, 2021 there were approximately 3,003, 42.8 million ATM payment cards, and 8.9 million mobile banking customers (SBP, 2021). Fintech will likely be the most effective and efficient provider of financial services for those who handle, calculations, payment processing, remittance and record-keeping, which are areas where a high level of transparency exists and performance is easily verifiable and checkable (Thakor, 2019).

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Moreover, the internal control design of corporations employing ESG as a basis encourages management to improve innovation efficiency, minimize hidden potential risks associated with agency problems, and regulate and control innovation risks. While superior ESG performance engages the interest of more and more analysts to evaluate the alternatives for business decisions, their continuous monitoring, and interpretation of information has an additional external control effect by eliminating information asymmetries between investors and firms that enable the pursuing of innovation investment that might otherwise be deemed too risky. In recent years, the focus of corporate competition and development has shifted from output and hasty quality competitors, to that of internal controls and strategic risk controls. Wanyama & Mwikya (2022) said that personnel must identify what to look for and then what they need to do about it in order to detect and prevent fraud. In conclusion, the internal control systems play a role in the ability to detect and prevent fraud. Yusri et al. (2024) for example, noted that the economic performance of the Indonesian economy (UMKM) is partially and simultaneously influenced by digital finance and internal control effectiveness. Al-Rawashdeh et al. (2024) stated that cyber governance positively impacts the adoption of financial technology because it has a direct impact on the effectiveness of internal controls and the effectiveness of financial technology adoption in commercial banks in Jordan.

Financial technology, or fintech, has emerged as a disruptive force in the financial industry by helping companies manage their financial constraints. Newer technologies such as blockchain, big data, and artificial intelligence have been developed and combined to facilitate credit distribution and create less information asymmetry between lenders and borrowers. According to a study by Chen et al. (2023), fintech substantially reduces the financial constraints that public agencies and SMEs face. For example, for every 1% increase in fintech use, SMEs' finance constraints are diminished by 0.0767%. For this reason, Hou (2023) indicated in his research that companies with higher ESG ratings are regarded as less risky thus closing the information gap between investors and management. Closing the information gap could potentially ameliorate access to financial capital as more analysts are concerned about a company and for this reason it would make it easier for these analysts to access capital. Furthermore, Xu and Cheng, (2024) study indicated that local financial barriers have an extremely positive effect on business ESG performance in China. Local government policies can also lessen capital barriers by forcing companies to adapt themselves to better ESG practices, especially in private and non-high-tech companies. For a long time, poor Environmental, Social, and Governance (ESG) performance was common in Pakistan's textile industry, largely due to fragmented supply chains, ineffective waste management, and a lack of transparency across labor and environmental protocols. Recently, however, significant developments have been seen in the sector as it embraces ESG norms to satisfy challenging international market requirements, specifically with respect to compliance with sustainability for their imports from major markets like the US and Europe (Akhtar & Urooj, 2024). To engage in sustainable practices and guarantee fair ESG reporting, however, businesses in this sector face severe financial limitations and inadequate internal control mechanisms (Rizvi and Ahmed et al., 2021). Additionally, FinTech-enabled finance programs, such as green bonds and ESG-linked loans, provide financial incentives

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and lower obstacles to investment in sustainable infrastructure and practices for textile companies, particularly SMEs (Kamran, 2025).

That's why this study analyzes the effect of FinTech on the ESG performance of publicly listed Textile firms of Pakistan from 2015 to 2024. In addition, this research recognized two primary mechanisms—the enhancement of internal controls and alleviation of financing constraints through which FinTech improved ESG performance. This research also makes a number of contributions. First, by examining the effect of FinTech on corporate ESG performance within Pakistani textile companies, it also contributes to the existing knowledge base associated with the economic impact of FinTech. The advantages of FinTech for corporate green innovation (Wen et al., 2023), corporate capital efficiency (Wang et al., 2024), and information disclosure (Liang & Renneboog, 2017) have all been well documented. But, ESG performance seems to be an important concern to investors and regulators—has been less well explored. Secondly, this research contributes to our understanding of the variable components that affect business ESG performance from a FinTech perspective. While other research has looked at things such as corporate performance (Gillan et al., 2021), and type of shareholder (Bai, 2021), the part of FinTech in determining the ESG outcomes seemed not to be systematically investigated.

Literature Review:

Theoretical framework

An idea of Resource-Based View (RBV), formulated by Barney (1991) and it was the basic theory in strategic management because it explains how businesses leverage their unique internal resources and capabilities to obtain and sustain a competitive advantage. When considering the subject of FinTech adoption with the effect on ESG (Environmental, Social, and Governance) performance, RBV provides a robust theoretical base to understand how technology-driven innovations may improve ESG performance. For example, FinTech solutions such as real-time sustainability assessments; creation of AI-based ESG reports, and blockchain for the provision of transparent supply chains can evolve into such strategic assets. These technologies are not just a part of normal operations; they are important assets to the company that improve internal processes, decisions, and ability to respond to ESG requirements. From an environmental standpoint, FinTech solutions allow firms to understand energy consumption better, monitor carbon emissions, and better ensure environmental compliance. On the social side, FinTech enables data-driven HR procedures, enhances stakeholder engagement, and allows for greater employee monitoring. Advanced analytics can examine workplace safety trends, community impact projects, and diversity metrics. FinTech improves internal controls, mitigates fraudulent nature, and ensures regulatory compliance in governance. AI-based auditing tools can detect anomalies in real-time, while digital platforms can facilitate both voting and communication.

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FinTech, Financing Constraints and ESG Performance

FinTech and digital finance are fundamentally disrupting the financial space by creating new technology, software, business models, and practices that exceed but are similar to the financial services sector while simultaneously providing innovative and alternative financial services (Suryono et al., 2020 and Firmansyah et al., 2023). Gao & Duan (2024) study demonstrated that fintech leverages cutting-edge technological innovations such as the Internet, blockchain and big data, not only to revolutionize conventional financial models but also to enhance the integration of ecological and economic development in a way that allows businesses to develop sustainably. A number of authors, including Gopal & Schnabl, (2022) and Yang et al., (2024) also acknowledged that FinTech has mitigated barriers for borrowers through the use of artificial intelligence that generates sophisticated user profiles and automates the loan application process. Credit institutions can now provide affordable lending services that traditional banks are often unable to offer by aggregating the borrowing requirements of diverse specialized markets through the use of big data, cloud computing, and other FinTech solutions. This additional dimension of financing availability addresses the 'financing constraints that many companies face when delivering financial services, increasing the success of borrowing for groups that typically fall outside of financial services. Likewise, many studies have found that FinTech diminishes the risk that financial institutions must bear, particularly through the creation of enterprise databases and the sharing of accurate up-to-date information, and thus lowers the cost of financing for businesses. This mitigates the problem of "expensive financing" that many businesses encounter (Zhou et al., 2022; Sun et al., 2023).

Sachdeva & Taneja (2023) claimed that financial systems are also confronted with sustainability issues. Digitalization and sustainability are the driving forces behind financial services in the quickly evolving environment of today. One key factor that might improve a company's ESG performance is lowering financial limitations. Companies may invest in sustainability projects more easily when finance costs are lower since they can keep more of their money. He & Chen, (2023) indicated that optimistic ESG performance is helpful for easing business financing constraints and lowering firm risk. Ren et al., (2024) observed that when a business has financial difficulties, it could give priority to directing its meager resources toward environmental management and social responsibility initiatives. Serafeim and Yoon (2023) inclined that lenders of capital could impose higher risk premiums, so limiting the amount of cash available to enterprises. Furthermore, market players may place greater attention on possible negative risk to enterprises if there is a discrepancy in ESG ratings, which heightens concerns about their operations and prospects for growth.

Fintech, Internal control quality and corporate ESG performance

Allen et al., (2021) exerted the opinion that the growth of FinTech can be quite fundamental with respect to internal control systems within organizations. FinTech involves the application of advanced technologies including blockchain, AI and big data, FinTech provides transparency of information both internally and externally and improves business data analysis. demonstrated that digitally-assisted control systems

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can handle large data sets, whether that data is administrative or accounting information, more efficiently than manual data processing and therefore reduce errors. In traditional internal control systems, the flexibility allowing dishonest employees to embezzle significant sums of money is much greater (COBIT, 2019). Hertouch and Achibane (2024) believed that to run a business effectively, an effective internal control system is vitally important. Every bank is expected to frequently or at least every year assess technology risk, particularly during the implementation of new systems. Heese et al. (2022), described that the technical innovations help to enhance corporate governance mainly through the strengthening of internal monitoring and business processes. Furthermore, improved information transparency allows institutional investors to gain information that is meaningful and strengthens the efficacy of their decision making. This motivates and enables investors to monitor the business which reduces the potential for management and shareholders to violate the best interests of the business.

Corporate ESG performance will benefit from FinTech-driven improvements to internal control. Whereas, Harp & Barnes (2018) suggested that strong internal controls signal positive intents to the market. Companies that have strong internal controls are more likely to see an increase in their stock prices. Savčuk (2007) stated however that businesses with weak internal controls, often-times have difficulty managing their production and following through with social responsibility obligations which in turn (1) diminish the effectiveness of decision-making, and (2) increase coordination costs. In addition, Beasley (1996) proposed that ESG performance could also deteriorate if weak internal controls raised the likelihood of fraud in financial reporting. Boulhaga et al. (2023) looked that the strategic consequences of internal control weaknesses (ICW) concerning a company's performance and ESG ratings, finding that ICW significantly and negatively moderates the relationship between corporate performance and ESG ratings. Li et al. (2022) demonstrated that ESG performance significantly increases both the number and degree of innovation evidenced by the number of Patents granted for inventions and patent citations. The internal and external mechanism tests demonstrate that effective internal controls and sample size of analysts who cover them are needed to affect a quantity and quality improvement effect of ESG performance on corporate innovation. In the recommended spirit of open reporting, we note that Moffitt et al., (2024) have established, our results yield a negative correlation of ESG performance to the likelihood of general internal control weaknesses. In addition, we find a negative correlation of ESG performance to slightly significant internal control weaknesses at the firm level.

Hypothesis development:

On the basis of above literature following hypothesis could be developed.

H_1: Fintech have positive influence on corporate ESG performance.

H_2: Fintech can significantly improve corporate ESG performance by mitigating the impact of financing constraints.

H_3: FinTech can significantly improve corporate ESG performance by enhancing internal controls quality.

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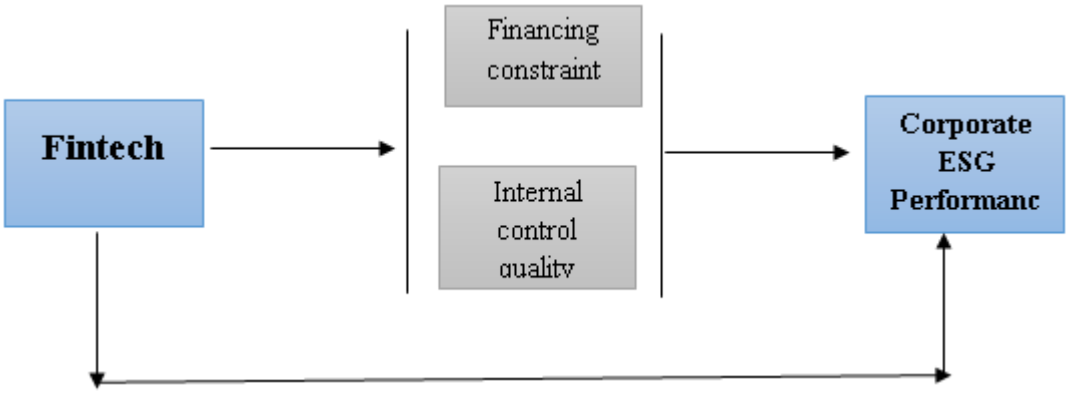
Conceptual Framework



Empirical model:

Empirical models enable researchers to quantify the effects of key variables, control for confounding factors, and explore complex interactions within observed phenomena, which is essential for advancing knowledge across various fields.

$ESG_{it} = \alpha_0 + \beta_1 FINTECHit + \beta_2 Controls_{it} + \varepsilon_{it}$

$ESG_{it} = \alpha_1 + \beta_1 FINTECH_{it} + \beta_2 FC_{it} + \beta_3 Controls_{it} + \varepsilon_{it}$

$ESG_{it} = \alpha_2 + \beta_1 FINTECHit + \beta_2 ICQit + \beta_3 Controls_{it} + \varepsilon_{it}$

Where:

ESG_{it}	Environmental, Social, and Governance performance of firm *i* at time *t*
$FINTECH_{it}$	Level of Fintech adoption by firm *i* at time *t*
FC_{it}	Financing Constraints faced by firm *i* at time *t*
ICQ_{it}	Internal Control Quality of firm *i* at time *t*
$Controls_{it}$	Control variables for firm *i* at time *t*
α_0 to α_2	Intercept terms of the respective regression models
β_1 to $\beta 3$	Coefficients for main independent variables
ε_{it}	Error term capturing unobserved influences for firm *i* at time *t*

Materials and Methods

Sample and Data

This study investigates 60 Pakistani textile firms that are listed in Pakistan stock exchange for the duration of 2015 to 2024. The following processing has been done on the raw data to limit the effect of outliers: (1) (outliers related to the financial sector have been excluded simply because of the nature of the asset and liability structure); (2) missing samples that are missing important variables were excluded; (3) outliers that are clearly contravening accounting framework have been removed; and (4) samples that were just missing data were removed. Additionally, it used SPSS and STATA research software for descriptive statistics, regression, correlation, and analysis of variables and relationships. The selection criteria were strict in order to be representative and consistent.

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Measurement of variable

Dependent variable

The study's dependent variable is corporate ESG performance. The data it contained was gathered from secondary sources. According to Skinner (2020), secondary quantitative data is numerical information that has previously been collected, examined, and arranged by a variety of websites, reports, or financial statements. Because secondary data is dependable and consistent, the study gathered it from a variety of annual reports, websites, and other sources. Financial statements and ESG disclosures were also included in the annual reports of a few chosen Pakistani businesses. It gathered information from Reuters, a well-known website that offers financial statistics about businesses and provides pertinent details about them and their overall performance (Abbas et al., 2024).

Independent variable

This study quantified Fintech using secondary data from Global Findex database, State Bank of Pakistan; besides the global competitiveness report and research surveys, white papers for different organizations were also used. The main search strategy was developed using various key phrases such as fintech, financial technology (or the tranche of these terms), or practices related to FinTech in one section and inclusive Pakistan (in any combination form) on another along with state bank of Pakistan Strategy for Financial Inclusion in Pakistan, National Financial inclusion Strategy etc. Besides searching the website of State Bank of Pakistan also have some fintech-related material and reports. The extent of which English-language documents were limited for this assessment (Noreen et al., 2022)

Mediating Variables

This study considers internal control quality and financial limitations as mediating factors between internal control quality and fintech. The paradigm developed by Hadlock and Pierce (2010), which was also previously used by Bai (2024), is
employed in this research to describe the degree of corporate finance limitations using the FC index. The FC index provides a more sophisticated measure of a firm's funding restrictions than other indices that evaluate financing constraints because it more precisely captures the impact of a firm's internal capital position on its external financing requirements. This indicator has a value between 0 and 1, where values near zero indicate that firms are facing more financing limitations, and values near 1 indicate that enterprises are facing fewer financing constraints.

Whereas, the internal control disclosure index, which was used in this study to measure the quality of internal control, consists of eight items: internal environment, risk assessment, control activities, information and communication, internal supervision, internal control defects, internal assessment, and external assessment (Jadoon, 2021). To evaluate the degree of internal control information disclosure, data was manually extracted from yearly reports.

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Control variables

Following are the control variables used in this study to determine if there are any external factors or not that might influence the dependent variable, so that isolated true effect of the independent variable can be determine i.e. (1) firm profitability (ROA); (2) firm growth (Growth); (3) firm age (Age); (4) board size (Board); and (5) the percentage of women in management (Female).

ROA = Net profit/average total assets

Growth = Current year's operating income/previous year's operating income – 1

Age = Logarithm of the difference between the year of observation and the year of incorporation plus one

Board = Natural logarithm of the number of board members

Female = Number of women in management / number of people in management.

Results and Discussion

Descriptive statistics

Table 1: Descriptive results of main variables

Variable	N	min	max	SD	median	mean
ESG	600	1.000	6.000	1.095	3.000	4.155
Fintech	600	0.100	7.502	1.425	5.362	5.188
Roa	600	-0.457	0.397	0.079	0.144	0.061
Growth	600	-0.788	4.134	0.577	0.216	0.272
Age	600	1.683	3.722	0.433	2.855	2.736
Board	600	1.519	2.714	0.206	2.208	2.222
Female	600	0.000	0.564	0.226	0.289	0.301

Table 1 presents descriptive statistics of the key variables which are under investigation. The ESG performance of listed companies needs enhancement because the average corporate ESG performance score stands at 4.155. The average value of FinTech development in Pakistan suggests that the sector remains open to expansion at 5.188. The wide gap between minimum and maximum FinTech development values demonstrates how different Pakistani businesses show substantial variations in their FinTech adoption. The other control variables display statistical properties which align with the information currently available.

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Baseline regression results

Table 2: Baseline regression results

Variables	Model 1	Model 2
	ESG	ESG
Fintech	0.041***	0.067***
	(0.013)	(0.011)
Roa		3.542***
		(0.163)
Growth		-0.150***
		(0.034)
Age		-0.032
		(0.030)
Board		0.052
		(0.039)
Female		-0.477***
		(0.100)
Industry effect	YES	YES
Year effect	YES	YES
Constant	4.193***	4.265***
	(0.075)	(0.267)
Adjusted R^2	0.089	0.247
N	600	600

Note: *、**、*** denote significant at the 10%, 5%, and 1% statistical levels, respectively; standard errors for clustering at the province-year level are in parentheses.

The research conducted a regression analysis using Equation (1) to determine how FinTech impacts the ESG performance of publicly traded companies. The results of this analysis appear in Table 2. The primary explanatory variables appear only in Column (1) of Table 2 where industry and year fixed effects are included. At the 5% level the FinTech coefficient demonstrates statistical significance for positive results. The assessment of FinTech's influence on business ESG performance improves through the addition of control variables in Column (2). The coefficient for FinTech stands at 0.067 with statistical significance at the 1% level showing positive results. The findings support hypothesis 1 through evidence that FinTech enhances the ESG performance of businesses.

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Robustness Tests

Table 3: Instrumental variable regression results

Variables	1st Stage	2nd Stage
	Fintech	ESG
Fintech		0.076***
		(0.032)
Constant	4.7856***	
	(0.222)	
Controls	YES	YES
Industry effect	YES	YES
Year effect	YES	YES
Kleibergen-Paap Wald rk F statistic		37.599
Cragg-Donald Wald F statistic		76.905
Kleibergen-Paap rk LM statistic		21.853
Adjusted R^2	0.805	0.066
N	600	600

Note: *、**、*** denote significant at the 10%, 5%, and 1% statistical levels, respectively; standard errors for clustering at the province-year level are in parentheses.

A crucial problem in economic research is mitigating endogeneity, which entails employing specialized methods (such as instrumental variables) to ensure that our findings are more reliable and unaffected by obscure or conflicting factors. By selecting appropriate instrumental variables and using the two-stage least squares (2SLS) approach, this study resolves the endogeneity problem.

Table 3 displays the regression findings. The results of the first-stage regression are shown in Column (1), where the instrumental variable's (IV) regression coefficients are significantly positive at the 1% level. According to previous assumptions, this result shows a significant positive association between the FinTech in the area where the companies are located and the logarithm of the average number of FinTech companies in three cities with comparable GDPs within the same province. Additionally, a variety of statistical techniques were used to evaluate the instrumental variables' validity. Initially, the Cragg-Donald Wald F statistic was 76.905 and the Kleibergen-Paap Wald rk F statistic was 37.599, both of which were higher than 16.38. Therefore, the hypothesis that the instrumental variables are weakly recognizable at a high level can be rejected thanks to this crucial value of 16.38. Secondly, the idea that instrumental factors are barely identified at the 1% level is significantly rejected by the Kleibergen-Paap rk LM statistic. All of these tests show that the instrumental factors created for this investigation are legitimate. The second-stage regression's findings are shown in Column (2), where the predicted coefficient

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for FinTech is noticeably positive. This finding implies that even after adjusting for possible endogeneity problems with instrumental variables, FinTech's beneficial influence on businesses' environmental, social, and governance (ESG) performance is still substantial.

Mechanism analysis

Mechanism analysis represents the empirical study which focuses on understanding the specific procedures through which an intervention or treatment brings about its result. The process of mechanism testing seeks to uncover and validate the mediating elements that link causes to effects rather than simply establishing whether an intervention produces an effect (Kwon & Roth, 2024).

Table 4: Mechanism analysis regression results

Variables	(1)	(2)
	FC	Quality
Fintech	-0.026***	0.051***
	(0.003)	(0.008)
Constant	1.055***	2.506***
	(0.034)	(0.079)
Controls	YES	YES
Industry fixed effect	YES	YES
Year fixed effect	YES	YES
Adjusted R^2	0.330	0.133
N	600	600

Note: *、**、*** denote significant at the 10%, 5%, and 1% statistical levels, respectively; standard errors for clustering at the province-year level are in parentheses.

Financing constraints

The financial technology sector enhances funding access to extended customer bases and lowers barriers for loan applicants while assisting financial organizations to predict demand patterns for loans (Gopal and Schnabl, 2022). The results of the regression analysis examining regional FinTech index relationships with FC appear in Table 4 Column (1). Business finance constraints (FC) experience significant reduction through FinTech based on estimated coefficients which show strong negative values at the 1% statistical significance level. Research demonstrates that companies which enhance their ESG ratings achieve better financial conditions and improved market competitiveness as well as sustainable growth. The data indicates that financial constraint reduction produces substantial improvements in corporate

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ESG performance. Bollaert et al., 2021; Zhou et al., 2022; Sun et al., 2023; Habib, 2023; Bai, 2024; Fazzari et al., 1987). The validation of hypothesis H_2 stands on that is FinTech's ability to minimize finance limitations which in turn leads to improved corporate ESG performance.

Internal control quality

Financial technology advancements lead to enhanced business financial information output while lowering enterprise information search costs and strengthening internal governance frameworks (Zhu et al., 2021). Table 4 presents the mechanism analysis of internal control in column (2) which reveals that FinTech has a positive impact on internal control in businesses at the 1% significance level. The internal control systems of companies experience a positive impact from corporate ESG (Environmental, Social, and Governance) performance improvement. The implementation of stronger internal controls leads investors to trust company honesty which results in higher stock prices through favorable market signals (Harp and Barnes, 2018). The assurance process drives managers to establish better sustainable development strategies which leads to enhanced ESG performance within the organization. The proactive management approach reduces negative impacts that affect the improvement of business ESG performance. The regression analysis validates the hypothesis H_3 that FinTech achieves by improving internal control systems which leads to better ESG performance for organizations.

Conclusion

This study explored the connection between financial technology and ESG performance through funding limitations and internal control quality as mediators. The findings reveal that financial technology applications boost Pakistani corporate ESG performance (Rahman et al., 2024; Farooq et al., 2024; Awais et al, 2023). Through its technological platforms FinTech provides companies with essential capabilities to satisfy stakeholder non-financial performance needs and sustainability targets by transforming financial services and enhancing operational clarity and operational efficiency.

The study identifies two essential methods through which FinTech drives ESG progress. Through its alternative lending platforms and cost reduction capabilities and enhanced financial accessibility FinTech enables businesses to make more confident investments in sustainable practices (Bai, 2024; Liu et al., 2025; Huang et al., 2025; Du et al., 2022). Second, FinTech improves accountability, risk identification, and governance standards by utilizing cutting-edge technology like blockchain, big data, and artificial intelligence to strengthen internal control systems (Ding et al., 2024; Du et al., 2022; Yumeng, 2024).

Practical Implication

The investigation demonstrates that Fintech adoption enables substantial enhancements in ESG performance of Pakistani textile companies through financial constraints elimination and improved internal control quality. Through supply chain finance and digital lending Fintech provides innovative financing solutions to small and medium businesses which allows them to invest in sustainable technologies and

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practices (Guo et al., 2023; Du, et al., 2022). Organizations strengthen their internal controls and governance frameworks through the implementation of Fintech tools which provides real-time monitoring capabilities and automated compliance processes and transparent reporting functions (Bai, 2024; Xiao, 2025). Businesses now have the ability to meet global ESG standards because of these developments which boosts their market position internationally and attracts ethical investment while delivering operational efficiency and risk reduction. The outcomes demonstrate to policymakers along with industrial leaders that establishing proper digital infrastructure combined with supportive regulatory frameworks is essential to maximize Fintech's transformative impact on sustainable industrial growth within Pakistan's textile sector.

Limitations

There also lies limitations in this study that:

This study emphasis exclusively on the textile companies which trade on the Pakistan Stock Exchange thus limiting the generalizability of its findings to other sectors. Different industries have unique operational and legal frameworks which could lead to variations in how Fintech relates to ESG performance.

The research depends exclusively on secondary data sources (such as Reuters, SBP, and Global Findex) which might fail to properly capture the business-level operational reality and qualitative aspects of Fintech adoption and ESG strategy implementation.

In this study Financing constraints measures by using FC index, for that in future other indexes could be used for the measurement of financing constraints for more accuracy.

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