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THE MODERATING ROLE OF ESG SCORES ON THE RELATIONSHIP BETWEEN FINTECH ADOPTION AND FINANCIAL PERFORMANCE: EVIDENCE FROM PAKISTANI COMMERCIAL BANKS

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Abstract

This research focuses on the moderation effect of the Environmental, Social, and Governance (ESG) scores on the association between Financial Technology (FinTech) adoption and the financial performance of Pakistan commercial banks. The paper utilizes panel data of 140 bank-years made up of 28 scheduled commercial banks on the Pakistan Stock Exchange (PSX) through the resources based view (RBV) and Stakeholder Theory and the data collection was conducted between 2018 and 2022. Endogeneity and sample selection issues are overcome by the use of fixed effects panel regression, which is complemented with the two-stage least squares (2SLS) estimation, Heckman correction; and propensity score matching (PSM). The results indicate that the use of FinTech will have adverse impact on short-term financial performance and ESG moderation has an additional negative impact on FinTech of market-based performance measures. These findings can indicate that within the changing regulatory context in Pakistan the congruence of digital innovation and sustainability goals creates compliance costs and transitional inefficiencies that suppress profitability in the short term. The research paper has added to the existing body of limited literature on FinTech-ESG relationships in the South Asian emerging market that has limited actionable implications to the regulators, bank managers, and the investors working in the banking industry of Pakistan.

Keywords: FinTech adoption; ESG scores; financial performance; commercial banks; Pakistan; panel data; moderating role

1. Introduction

The banking industry is in an ideal position in Pakistan; the banking market finds itself at a critical crossroads as it endeavors to fulfill the two demands of digital transformation and sustainable banking. The State Bank of Pakistan (SBP) already encourages integration of FinTech by its National Financial Inclusion Strategy and Raast payment infrastructure, meanwhile hinting at the implementation of mandatory frameworks of ESG disclosure in financial institutions (SBP, 2022). It is against this backdrop that the combined effect of the adoption of FinTech and the governance of ESG on the financial performance of banks has not been empirically studied.

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FinTech innovations have transformed the banking business model around the globe, with options like digital payments, AI-assisted credit scoring, and blockchain transactions and Robo-advisory services taking the shape of FinTech. Advocates believe that FinTech can help improve efficiency by increasing financial inclusion and enhancing transparency (Phan et al., 2020; Najaf et al., 2022). Critics yet warn that banks will also be prone to higher cyber risks, transition cost, and incompatibility of old system with FinTech, leading to diminishing short-term profits (Hou, 2019; Kayed et al., 2024). Equally, there is an emerging research literature that is associating better ESG performance with reduced cost of capital, higher stakeholder trust, and better long-run returns (El Khoury et al., 2023; Velte, 2017), though there are also mixed findings on growing economies, with certain studies reporting compliance-induced cost pressures cancelling near-term profits (Drempetic et al., 2020).

The conditioning relationship between the adoption of FinTechs and the ESG scores is especially relevant in the context of Pakistan. The Pakistani banks have immature standards of ESG disclosure, unequal technological preparedness, and decentralized regulatory control-environments, which structural factors that are fundamentally unlike those presented by the developed-market contexts which have been dominant up to this point in the literature (Muthuswamy and Sharma, 2023). In addition, the Green Banking Guidelines of the SBP (2023) and the Corporate Governance Code of the Securities and Exchange Commission of Pakistan (SECP) present a pressure of institutions that urges the banks to operationalize sustainability in their digitalisation policies. This research paper bridges this gap related to context as it seeks to answer the following research question: How does ESG score mediate the relationship between the FinTech adoption and the financial performance of commercial banks in Pakistan?

The rest of the paper further goes forth. In Section 2, the theoretical grounding of the study has been verified, with the hypotheses of the study developed. The section 3 explains the information, sample, the construction of variables and the econometric program. Section 4 describes the descriptive statistics, correlation, and regression results with significant robustness checks. Sections 5 and 6 speak about the findings and their theoretical and practical implications. Section 6 concludes.

2. Literature Review and Hypothesis Development

2.1 Theoretical Framework

The conceptual construct of the present research has its basis in two complementary theoretical perspectives, that is, the Stakeholder Theory and the Resource-Based View (RBV). The Stakeholder Theory by Freeman (1984) assumes that a company can generate sustainable value through the fulfillment of the legitimate rights of a wide-based group of stakeholders not just ownership as represented by shareholders, but also the employees, communities, customers, regulators and creditors. In this regard, the ESG practices can be viewed as an institutionalized reaction to the multi-stakeholder expectations: when banks score well on ESG it indicates that they are acting in a responsible manner in terms of governance, social equity as well as environmental stewardship; hence, diminishing reputational risk and keeping investors on board. The second hypothesis of the study is directly inspired by such logic: the ESG scores precondition the performance implications of the FinTech adoption by making the technology-driven change understandable or inappropriate in reference to the expectations of stakeholders. Resource-Based View, as the statement presented by Barney (1991) compliments this framing as it considers FinTech capabilities and ESG assets as strategic resources that are valuable, rare, inimitable and non-substitutable (VRIN). The technological resources that may be used to improve the operational efficiency include FinTech features, such as artificial intelligence-

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based analytics, digital payment rails, and blockchain infrastructure. ESG assets include regulatory compliance capital, social licenses and governance structures, which are intangible resources that enhance the performance opportunities of FinTech investments. RBV hence signifies that the impacts of FinTech performance would also depend on the presence or lack of complementary ESG related capabilities of banks to exploit digital resources on advantage. These theories have a special echo in the Pakistan context. Banks in Pakistan are nascent ESG adherents that are subject to fragmented regulatory possibilities and varied rates of technological infrastructure. This RBV lens thus warns not to expect performance improvements with adopting FinTech without plan orchestration of complementary ESG capabilities, and the Stakeholder Theory predicts that ESG alignment can create friction in compliance which will moderate or even suppress the financial gains of digitalization.

2.2 FinTech Adoption and Financial Performance

The use of FinTech transforms the work of banks in various aspects: the operations becomes cheaper, the access to credit is generalized, and the risk monitoring is regularized in real time. The empirical results in the banking markets of Asia record productivity benefits related to the adoption of digital payment and mobile banking (Phan et al., 2020). Nevertheless, some studies find the negative relationship between FinTech intensity and short-term financial performance, which can be explained by the duration of sunk costs on infrastructure modernization, regulatory compliance costs, and customer and staff time to adjust to new modalities of services (Dicuonzo et al., 2024; Kayed et al., 2024). In Pakistan with legacy core banking systems and how cybersecurity infrastructure is yet to mature, such transitional frictions will be pronounced. Consistent with this logic, we hypothesize:

H1: FinTech adoption is negatively associated with the financial performance of Pakistani commercial banks.

2.3 ESG Scores as a Moderator

The connection between the scores of ESG and financial performance has received significant academic interest. Broadly, meta-analytic evidence shows that there is a positive association between ESG-performance (Zheng et al., 2025), the association is however, context-specific. In markets characterized by immature institutional structures, the cost of ESG compliance creates an initial cost, including reporting frameworks, external audit, and on the governance front, a cost of reorganization which would squeeze short-term profits. The ESG-performance correlation, according to Drempetic et al. (2020), depends upon the firm size and available resources, whereas the Fatemi et al. (2018) record that the benefits of good ESG are accrued only during the medium-and-long periods of time.

In the cases when ESG scores are added as a mediator of the FinTech-performance association, the conditional factor of ESG scores becomes theoretically ambiguous. On the one hand, the high level of ESG can reflect institutional readiness and good governance that can help banks to realize more value through FinTech investment (Galeone et al., 2024). Alternatively, compliance requirements and strategic limitations of ESG frameworks could constrain the required risk appetite to innovate as quickly as possible with FinTech thus weakening its financial effectuality (Wang et al., 2022). Since ESG regulatory practices are still in its infancy in Pakistan, and that the banking industry is largely transitional, the latter is the effect we anticipate prevailing.

H2: ESG scores negatively moderate the relationship between FinTech adoption and the financial performance of Pakistani commercial banks, such that higher ESG scores are associated with a weaker positive (or stronger negative) effect of FinTech adoption on financial performance.

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3. Research Methodology

3.1 Sample and Data Sources

The research utilizes an imbalanced panel data that consists of 28 planned commercial banks listed and traded in Pakistan Stock Exchange (PSX) between 2018 and 2022. Banks were identified according to (i) active listing on PSX during the sample period, (ii) publication of audited annual financial reports, and (iii) having enough ESG-appropriate disclosures in the published annual reports and sustainability reports. The exclusion of Islamic banks, development finance institutions and microfinance banks were done so as to maintain sectoral uniformity which provided a 140 bank-year observations. The financial data were gathered using the Banking statistics publications by the SBP and the audited accounts of specific banks. Annual reports, sustainability disclosures, and the Annual Reports of SBP were hand-collected and ESG data used on them, topped by ESG ratings of banks where available provided by Bloomberg. The data connected to FinTech were selected based on the reviews of payment systems made by SBP and disclosures of one of the banks.

The banking industry in Pakistan is a right place where this study can be carried out. The industry has five major commercial banks, including HBL, MCB, UBL, NBP, and Allied Bank, that have more than 55 per cent of the industry assets (SBP, 2022). By 2019, the increase in the pace of FinTech adoption has accelerated due to the adoption of the Raast platform by SBP, mobile banking regulation measures, and open banking initiatives. At the same time, albeit voluntary, ESG reporting is gaining momentum as per SECP Stewardship Code and Green Banking Policy by SBP.

3.2 Variable Measurement

3.2.1 Dependent Variable: Financial Performance

There are two complementing measures used to proxy financial performance. Market-to-Book Value (MBV) captures the performance endeavors and the expectations of investors as it relates to the future performance and growth packaged by the market. Tobin Q (TQ) which is defined as the market value of the capitalization plus the total debt of assets divided by total assets is also a good measure of the market value given asset base and is commonly used in the researches on banking performance. ROA is also used as a robustness check that is based on accounting.

3.2.2 Independent Variable: FinTech Adoption

The adoption of FinTech is operationalized in the form of a composite FinTech Adoption Index (FTAI), which is compiled of four equally weighted variables (1) digital payment infrastructure score, operationalized as the percentage of bank digital payment transactions when compared to total transactions; (2) AI-based credit scoring adoption, operationalized by the presence of AI/ML language in annual report accounts of credit operations; (3) blockchain-enabled transaction systems, operationalized by a (binary) indicator of blockchain pilot or deployment; and (4) mobile banking penetration, operationalized as the percentage of registered mobile The components are standardized and added up to create FTAI with a range of 0 to 4.

3.2.3 Moderating Variable: ESG Score

ESG scores have been built on a composite index that reflects the sub-dimensions of social, environmental, and governance. The sub-scores of the environment incorporate revelations of energy use, green financing ratios, and carbon minimizing efforts. Social sub-scores reflect the welfare of the employees, community development spending as well as financial inclusion indicators. Sub scores under governance refer to independence of the board, quality of audit and disclosure of Shariah compliance (where there is Islamic windows). In areas where Bloomberg ESG scores exist, these are taken directly; in the case of the remaining banks, sub-

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index scores of hand-collected data are standardized and pooled. Composite ESG is a scale of 0 to 100.

3.2.4 Control Variables

These control variables will be the following and are included in accordance with existing literature (El Khoury et al., 2023; Galeone et al., 2024): the Bank Size (SZ), which is defined as a natural logarithm of total assets; Financial Leverage (LEV), which is the ratio between total debt and total equity; Capital Adequacy (CA), which is the ratio between Tier-1 capital and the natural logarithm of total assets; Return on Assets (ROA), which is a profitability control in market-value models; G There are also the year and bank fixed effects.

3.3 Econometric Strategy

The baseline estimation employs fixed effects (FE) panel regression to control for unobserved time-invariant bank heterogeneity. The core model is specified as:

$$FP\text{it} = \alpha + \beta_1 FTAI\text{it} + \beta_2 ESG\text{it} + \beta_3 (FTAI \times ESG)\text{it} + \gamma X\text{it} + \mu\text{i} + \delta\text{t} + \varepsilon\text{it}$$

where FP is the financial performance measure, FTAI is the FinTech Adoption Index, ESG is the composite ESG score, (FTAI × ESG) is the interaction term capturing ESG moderation, X is a vector of control variables, μ_i represents bank fixed effects, δ_t represents year fixed effects, and ε_{it} is the idiosyncratic error term.

Two-stage least squares (2SLS) estimation is used to overcome endogeneity due to reverse causality the better banks perform, the more they invest in FinTech and ESG. ESG instruments are lagged ESG scores and ESG industry-median score. Sample selection bias is corrected using the Heckman two-stage model, because the banks that get a higher ESG rating might be systematically dissimilar to those with lower ESG, in a way that is caused to affect performance. Propensity Score Matching (PSM) also solves the issue of selection bias by matching high- and low-ESG banks based on the measurable characteristics. To test the robustness, the models are re-estimated with the use of a Random Effects (RE) model and with Stock Price Performance (SPP) as an alternative dependent variable.

4. Empirical Results

4.1 Descriptive Statistics

Table 1 displays descriptive statistics of the entire sample of 140 bank-year observations. It can be observed that the average MBV of 1.42 is widely in tandem with the Pakistani banking sector valuations as evidenced by SBP reports. A mean FTAI score of 1.84 (4) shows moderate FinTech adoption and that is an indication of transitional digital Pakistan. The mean composite ESG score of 31.6 (out of 100) is rather low, which is in line with voluntary and new sustainability reporting standards. Both FTAI (SD = 0.72) and ESG (SD = 14.3) exhibit much cross sectional heterogeneity, giving enough variation to identify.

Table 1: Descriptive Statistics (N = 140 bank-year observations)

Variable	N	Mean	Median	SD	Min	Max	Skew
MBV	140	1.42	1.28	0.61	0.55	3.74	1.21
Tobin's Q	140	1.09	1.04	0.23	0.71	1.88	0.89
ROA (%)	140	1.16	1.08	0.74	-0.43	3.12	0.43
FTAI	140	1.84	1.75	0.72	0.50	3.90	0.31
ESG Score	140	31.6	29.8	14.3	7.2	68.5	0.62

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Variable	N	Mean	Median	SD	Min	Max	Skew
Bank Size (ln)	140	18.42	18.51	1.03	15.87	20.44	-0.18
Leverage (LEV)	140	8.34	7.92	3.21	2.11	18.45	0.74
Tier-1 Ratio (%)	140	14.8	14.2	3.6	8.1	26.3	0.55
GDP Growth (%)	140	3.21	3.67	2.14	-0.94	5.84	-0.49
Inflation (%)	140	10.82	9.14	5.63	3.72	21.34	0.68

Notes: MBV = Market-to-Book Value; TQ = Tobin's Q; ROA = Return on Assets; FTAI = FinTech Adoption Index; ESG = Composite ESG Score; SD = Standard Deviation.

4.2 Baseline Regression Results

Table 2 presents the fixed effects panel regression estimates. Column (1) and (2) include findings of MBV and the Q of Tobin in the absence of the ESG interaction factor, whereas Column (3) and (4) involve facts of the ESG moderation factor.

In line with H1, the effect of FTAI on MBV is statistically significant and negative: b =.187 [?], p =.01). Similarly, the effect of FTAI on Tobin is statistically significant and negative: b =.096 [?], p =.05). This observation indicates that the use of FinTech in the Pakistani setting is already linked with transitional cost pressure that compromises valuations in the market. The strategic implication is economically significant: an increase of one unit in FTAI will lead to a decrease in MBV by about 13 per cent, which highlights the lack of confidence investors and market participants place in FinAccel earning in an immature institutional framework.

The T of the ESG interaction term negative, statistically significant in column (3) and column (4) confirms that there is a relationship between FTAI and ESG. The interaction coefficient of [?] 0.008 ($p < 0.05$) of MBV shows that an increase in the ESG score enhances the negative relationship amid FTAI and market performance. This result aligns with the compliance cost claims: when banks adopt FinTech both actively and actively enhance their ESG, they experience a doubled resource squeeze, as well as increased governance trade-offs.

Table 2: Baseline Fixed Effects Panel Regression Results

Variable	(1) MBV	(2) TQ	(3) MBV + Int.	(4) TQ + Int.
FTAI	−0.187*** (0.041)	−0.096** (0.038)	−0.214*** (0.048)	−0.118*** (0.041)
ESG Score	−0.004** (0.002)	−0.002* (0.001)	−0.005** (0.002)	−0.003** (0.001)
FTAI × ESG	—	—	−0.008** (0.003)	−0.005** (0.002)
Bank Size	0.312*** (0.074)	0.142*** (0.041)	0.308*** (0.073)	0.139*** (0.040)
LEV	−0.028** (0.012)	−0.011* (0.006)	−0.027** (0.011)	−0.011* (0.006)
Tier-1 Ratio	0.018** (0.008)	0.009* (0.005)	0.017** (0.008)	0.009* (0.005)
ROA	0.214*** (0.059)	0.097** (0.043)	0.209*** (0.058)	0.094** (0.042)
GDP Growth	0.041** (0.018)	0.022** (0.010)	0.040** (0.018)	0.021** (0.010)

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Variable	(1) MBV	(2) TQ	(3) MBV + Int.	(4) TQ + Int.
Inflation	−0.019** (0.009)	−0.008* (0.005)	−0.019** (0.009)	−0.008* (0.005)
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	140	140	140	140
R^2 (within)	0.412	0.387	0.439	0.411
F-statistic	18.64***	16.22***	19.08***	17.41***

*Notes: Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.10. MBV = Market-to-Book Value; TQ = Tobin's Q; FTAI = FinTech Adoption Index; ESG = Composite ESG Score; LEV = Leverage; ROA = Return on Assets; GDP Growth = Annual real GDP growth rate; Inflation = Consumer Price Index growth rate.*

4.3 Robustness Checks

4.3.1 Two-Stage Least Squares (2SLS) Estimation

Table 3, to achieve endogeneity concerns, reports the 2SLS results of using lagged ESG scores, industry-median ESG scores as the instruments. F-statistic of the first stage of all the models is greater than the number 10, which proves the relevance of the instrument. The resolutions of the 2SLS test optimize H1 and H2: FTAI remains to have negative and significant coefficient on MBV (b = 0.231, p < 0.01), and ESG interaction is noteworthy to be negative (b = [?]0.010, p < 0.05). The null hypothesis that measures instrument validity by the Sargan-Hansen test of over identifying restrictions (p = 0.34) additionally confirms the 2SLS methodology.

Table 3: 2SLS Robustness Results

Variable	2SLS – MBV	2SLS – TQ	FE – ROA
FTAI	−0.231*** (0.056)	−0.118** (0.047)	−0.142** (0.061)
ESG Score	−0.006** (0.003)	−0.003** (0.001)	−0.004* (0.002)
FTAI × ESG	−0.010** (0.004)	−0.006** (0.003)	−0.007* (0.004)
Controls	Yes	Yes	Yes
Bank & Year FE	Yes	Yes	Yes
Observations	140	140	140
1st stage F-stat	14.83***	14.83***	14.83***
Sargan–Hansen p	0.341	0.298	0.412

*Notes: Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.10. Instruments: lagged ESG score (t−1) and industry-median ESG score.*

4.3.2 Heckman Selection Correction

The estimation of a Heckman two-stage model is used to address the possible sample selection bias caused by the self-selection of banks into ESG reporting. The first-stage probit model

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distinguishes between a high and a low ESG score of a bank, beyond the industry median, wherein the age of the bank, and the ownership (public or private) is an exclusion criteria. In the second stage, the Inverse Mills Ratio (IMR) is included. The coefficient of the independent meaning of statistics (IMR) is significant ($p < 0.05$), which proves the existence of the selection bias. More importantly, the principal results are identical following Heckman correction: FTAI still has a negative and significant coefficient, and the moderation effect of ESG is retained, which dispels the fears that the baseline results were an artefact of selection.

4.3.3 Propensity Score Matching

A matched-comparison sample of high- and low-ESG banks is used to form a sample using PSM in which observable characteristics are alike. The sample size is 96 bank-year observations that have been matched after one to one nearest-neighbor matching in terms of bank size, leverage and Tier-1 ratio and annuality. The direction and significance of the core findings are subsequently supported by OLS regression on the matched sample, which enhances their resistance to selection bias.

4.4 Summary of Hypothesis Tests

Table 4: Summary of Hypothesis Test Results

H	Statement	Direction	Outcome
H1	FinTech adoption → Financial performance	Negative	Supported ($p < 0.01$)
H2	ESG moderates FinTech → Financial performance	Negative moderation	Supported ($p < 0.05$)

5. Discussion

The empirical results of the research have multiple theoretically and practically important implications. The adverse overarching impact of FTAI on financial performance (supported H1) is consistent with the hypothesis of the transitional cost: Pakistani commercial banks investing in Fintech infrastructure incur initial expenses regimes-on-technology platforms, retraining, cybersecurity, regulatory compliance- to suppress the short-run profitability and market values. This finding echoes cross-national statistics of similarly placed emerging markets (Kayed et al., 2024; Dicuonzo et al., 2024) and refutes the belief that digitalization is always seen as producing short-term financial returns.

The most theoretically novel fact in the study is that the negative moderating effect of ESG scores is supported (H2). In addition to boosting returns to FinTech, increased ESG scores in Pakistani environment instead of alleviating financial performance limits seem to make matters worse. This aligns with the compliance cost mechanism developed by the ESG-performance literature (Drempetic et al., 2020): having acquired both FinTech and aimed to improve their ESG when banks do it at once, they encounter two sources of compliance spending that in the short/medium term have the effects of destroying market values. Moreover, the greater ESG banks can choose a more risk-averse stance with regard to the implementation of disruptive FinTech solutions, limiting their capacity to achieve first-mover benefits in digital banking.

According to Stakeholder Theory, the negative moderation will also imply that the aspect of ESG-related stakeholder anticipations such as the green banking mandate by SBP and the governance codes by SECP introduce the institutional frictions, which can charge the transformation of FinTech investment into financial achievement. This discovery builds upon

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the framework by Freeman (1984), by showing that stakeholder pressures may be a short-term drag on financial returns, despite creating a long-run legitimacy and robustness.

The RBV interpretation is also educative. This is a negative interaction that suggests that ESG assets and FinTech capabilities are not complementary yet in the banking industry of Pakistan: either ESG-intensive banks do not have the resource orchestration capacity to utilize FinTech effectively, or FinTech-intensive banks are constrained in their governance to adopt ESG-aligned digital innovation. This emphasizes the need of sequencing: banks can have to develop underlying FinTech capacity first and overlay ESG governance frameworks, or the reverse and establish synergistic resource configurations.

The results have practical implications on three critical groups of stakeholders. To the Pakistani bank managers, results indicate that the adoption strategies of FinTech must come in stages and sequences and that investments on the other governance capabilities are needed in tandem, but not isolation, of the ESG frameworks. The negative interaction term is an indicator that concurrent digital transformation and sustainability transition program can cause resources bottleneck; a less aggressive, more integrated strategy would help defuse the strain. To the regulators, especially, SBP and SECP, the findings demonstrate the significance of offering a sufficient level of transition support, such as capacity-building initiatives, regulatory sandboxing of ESG-oriented FinTech, and incentive systems that would address the reduction of the compliance burden on banks that must go through both transitions simultaneously. To investors, the negative ESG moderation effect advises against giving rewards to high ESG scores blindly in banks with heavy finance technology implication; a more detailed evaluation scale, which separates transitional ESG expenses and long-term ESG value generation should be created.

6. Conclusion

The research leads to the initial systematic empirical demonstration of the moderating role of ESG scores in the FinTech-financial performance linkage of commercial banks in Pakistan. Using a panel dataset of 28 PSX-traded commercial banks between 2018-2022, and doing so under the banners of robustness (fixed effects regression, 2SLS, Heckman correction, and PSM) the study concludes that the implementation of FinTech is associated with a negative impact on market-based financial performance, and the effect is stronger at a higher level of ESG scores. These findings highlight the interim character of the digitalization of the banking sector in Pakistan: FinTech creates short-term cost pressure, and the demands of ESG compliance only increase such limitations.

The article is relevant to the new body of literature in FinTech-ESG nexus in South Asian emerging markets- a setting that is mostly unfamiliar in existing literature. It further builds upon Stakeholder Theory and RBV by illustrating that when under nascent institutional circumstances, ESG-related stakeholder pressures and resource limitations can decrease, and not increase, the financial payoff to digital innovation. These lessons are especially topical because Pakistani regulators consider required ESG disclosure models, and banks develop faster plans on digital transformation.

There are some limitations, which should be mentioned. The five-year sample window is not adequate to best represent the benefits of long-term performance of ESG and FinTech, which returns on these investments usually perk in the long term. The composite characteristic of the FTAI and ESG scores comes with trade-offs of measuring these variables as such and it would be desirable to conduct future studies based on fine-grained and component-based data. The research is also limited to Pakistan and findings of the research will not be a direct analysis to other South Asian banking marketplaces. The future research might go further with this study

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and consider the sector-level heterogeneity introduced into Banking industry focusing on time-series analysis to capture lagged performance outcomes and make a comparison between Pakistan and other countries that include Bangladesh, India, and Sri Lanka.

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