LeadSci

Journal of Management, Innovation and Social Sciences (JMISS)

RESEARCH ARTICLE **ISSN(e): 3105-4935, ISSN(p): 3136-2040** **OPEN ACCESS**

Financial Literacy and SME Performance in Pakistan: The Mediating Role of FinTech Adoption

Majid Mumtaz[1], Muhammad Tahir Khan[2]

[1]*Account Assistant, Office of Manager TR(D) Pakistan Wapda Foundation Nowshera, Pakistan, Email: majidphd8049@gmail.com*

[2]*Lecturer, Abdul Wali Khan University Mardan, Pakistan, Email: mtahir@awkum.edu.pk*

Abstract

Small and medium-sized enterprises (SMEs) play a key role in employment and economic development in developing economies, but are often characterized by poor financial management and insufficient capacity to utilize modern financial tools. This study aimed to explore the impact of financial literacy on SME performance and to explore the mediating effect of FinTech. A quantitative cross-sectional design was used and data was gathered by using a structured questionnaire from 250 SME owners/managers in Peshawar District, KPK, Pakistan. Mediation analysis in a structural equation modeling framework was performed and bootstrapping was used to test the indirect effect. The findings indicated that financial literacy significantly improved the performance of SMEs and the adoption of FinTech, while the adoption of FinTech significantly improved the performance of the SMEs. The relationship between financial literacy and SME performance was partially mediated by the adoption of FinTech, meaning that the financially literate SME owners had a better performance, partly due to their higher probability to adopt FinTech. The study connects various literatures on financial literacy and digital finance and proposes that the financial education and digital financial inclusion should be pursued jointly to improve the performance of SMEs.

Keywords: *financial literacy; FinTech adoption; SME performance; mediation; Pakistan*

Introduction

SMEs are referred to as the backbone of national economies due to their employment generation, income distribution and contribution to local innovative initiatives. But, access to finance is often a constraint on their growth, as is their own financial ability to do so (Beck & Demirgüç-Kunt, 2006). For this reason, knowledge and skills associated with financial literacy the knowledge and skills that people need to understand and apply concepts like interest, inflation, risk diversification, and financial planning have become increasingly important and central to decisions and outcomes in the financial world, and to the economy more broadly (Lusardi & Mitchell, 2014). Evidence from abroad indicates that, in many countries and groups, financial literacy is low, and that this is a concern for entrepreneurs who have to make complex financial decisions without the assistance of specialists (Lusardi & Mitchell, 2011).

Entrepreneurship research indicates that financial ability is an important factor in the outcome of the enterprise. Research on the owners of small businesses indicates that increased financial literacy leads to better record keeping and financial practices (Drexler et al., 2014), and training experiments on

*Corresponding Author: mtahir@awkum.edu.pk

Received: 28 July 2026; Received in revised form 04 September 2026; Accepted: 11 September 2026; Available Online: 16 September, 2026

© 2026 The Authors, Published by Scholar Club. This is an Open Access Article under the Creative Common Attribution 4.0 (CC-BY 4.0)

entrepreneurs suggest that financial training leads to better business practices and, in some instances, to better business performance (Bruhn & Zia, 2013). Financial education evidence from SME managers shows that financial education correlates to firm performance (Eniola & Entebang, 2017) but there is evidence in the synthesis of financial education programs that effects depend on program design and context (Kaiser & Menkhoff, 2017; Kurniasari et al., 2025). The mixed results indicate that the relationship between knowledge and outcomes needs to be explored further.

Meanwhile, financial services is undergoing a transformation driven by FinTech technology-driven innovation in financial services like mobile payment, digital lending, and online banking (Gomber et al., 2017, 2018). Digital finance can reduce transaction costs, increase access, and enhance the velocity and visibility of financial processes (Ozili, 2018). Mobile money, for instance, demonstrates that digital financial services can have a positive impact on economic outcomes among households in developing countries (Suri & Jack, 2016). Digital financial tools can simplify payments, credit availability and record keeping in SMEs and technology related financial innovations has been linked to firm performance (Eniola & Entebang, 2015).

The use of these tools is not automatic, however. The research on technology acceptance highlights the importance of perceived usefulness, ease of use, and user capability and habits in determining technology use (Venkatesh et al., 2012). Owners with knowledge of budgeting, interest and risk should be better equipped to assess digital financial products, trust them accordingly, and effectively utilize them. Technological change is also a method for rejuvenating the means by which firms generate and capture value (Teece, 2010; Hussain et al., 2025). Therefore, it is logical to assume that financial literacy enhances the SME performance through increased adoption of FinTech, among other factors.

These arguments notwithstanding, a few studies have been undertaken which combine financial literacy, the adoption of FinTech and performance of SMEs in a single model of mediation, especially in the SME sector of KPK, Pakistan. This study filled this gap by testing (a) direct relationship between financial literacy and SME performance (b) financial literacy and relationship with the adoption of FinTech (c) mediation of FinTech adoption between financial literacy and SMEs in Peshawar District. It adds to it through the linkage of two largely distinct literatures and from its evidence in an undocumented regional context.

Literature Review

Financial literacy is defined as the ability to understand economic information and make decisions regarding financial planning and building wealth, debt and pensions (Lusardi & Mitchell, 2014). In the SME context, it refers to the skill of the owner in understanding and applying budgeting, saving, borrowing funds, interest rates, financial planning and financial risk. Small firms' owner managers are typically both owners and managers and hence their personal financial capacity directly influences the financial policies of the firm (Eniola & Entebang, 2017). FinTech is a term for financial service innovations that involve technology and potentially the development of new business models, applications, processes or products (Gomber et al., 2018). In SMEs, it manifests itself in mobile payments, online banking, digital lending, electronic transactions, and other technology-based financial tools (Gomber et al., 2017; Waqar et al., 2025). In this study, SME performance is considered as a multi-dimensional indicator that encompasses sales growth, profitability, customer growth and business improvement.

Financial Literacy and Financial Outcomes

Owners who are financially literate can better plan cash flow, manage costs, price products, consider a borrowing plan and manage risk, leading to greater profitability and growth (Lusardi & Mitchell, 2014). Financial training for microentrepreneurs was found to have a positive effect on financial practices (Drexler et al., 2014; Qazi et al., 2025), while business training for young entrepreneurs resulted in enhancements of business practices (Bruhn and Zia, 2013). SME managers' financial literacy is associated with the SMEs' performance as reported by Eniola & Entebang (2017). Kaiser and Menkhoff (2017) warned that the impact of financial education is not uniform, but that meaningful improvements in financial knowledge and behavior can be achieved with good financial education programs. Access to finance is a known growth challenge to SMEs (Beck & Demirgüç-Kunt, 2006) and literate entrepreneurs can better access and utilize finance productively. Accordingly:

H1: The financial literacy is significantly positively related to the SME performance.

The expectations of performance, effort and conditions that facilitate the use of an information technology, along with the habit and the perceived value of the technology are critical factors in adoption (Venkatesh et al., 2012). Financial education should boost their capacity to understand the financial products, to be able to compare the costs and risks of using them, and to know how useful they are, thereby improving the adoption rate. Basic financial concepts are essential for using digital finance (Ozili, 2018), while lack of financial knowledge has been identified as a constraint to using new financial services (Lusardi & Mitchell, 2011). Hence:

H2: Financial literacy makes a significant positive contribution to the adoption of FinTech.

SME Performance and FinTech adoption

FinTech can help lower the transaction costs, accelerate payments, increase access to credit and provide transaction data to assist in decision making (Gomber et al., 2017, Ozili, 2018). In developing context, mobile money has been proven to yield long-term economic benefits (Suri & Jack, 2016) while financial innovation positively associated with SME performance (Eniola & Entebang, 2015). Strategically speaking, new technologies enable firms to rethink their value creation and capture strategies (Teece, 2010), and the FinTech revolution has impacted the way financial services are provided (Gomber et al., 2018). Thus:

H3: FinTech adoption has a significant positive effect on SME performance.

FinTech Adoption as a Mediator

Part of the impact of being literate on performance should be via the usage of technology, which should be related to the adoption of FinTech, if financial literacy can foster the adoption of FinTech and the use of technology improves the performance. The digital tools, in turn, broaden the opportunities for financial knowledge beyond its direct benefits, such as using the tools to automate records, expand access to credit, and lower transaction costs, that literate owners can select and use to make these tools more productive and effective (Gomber et al., 2018; Ozili, 2018; Venkatesh et al., 2012). The indirect is composed of two coefficients, and the sampling distribution of the coefficient is

typically asymmetrical, thus bootstrapped confidence intervals are more appropriate for testing mediation as opposed to normal-theory tests (Preacher & Hayes, 2008). Therefore:

H4: There is mediation between the financial literacy and the performance of SMEs by the adoption of FinTech.

Conceptual Framework

The conceptual model suggests that financial literacy is considered as the independent variable, SME performance as the dependent variable, and that part of the effect of financial literacy is mediated by the adoption of FinTech.

Methodology

Research Design

This research used a cross sectional quantitative design to investigate the effect of financial literacy on small and medium size enterprises' performance with investigating FinTech adoption as a mediator in between the effect. Since the aim was testing theory-related hypotheses and estimating the numerical sizes and significance of direct and indirect effects, a quantitative design was chosen. The cross sectional method enabled data collection from a large number of firms at a similar time.

Population, Sampling, and Sample

The study was carried out with the SMEs of Peshawar District, Khyber Pakhtunkhwa, Pakistan. The intended beneficiaries were the financial decision makers and business managers of SMEs. The study employed a purposive sampling method because it was necessary to have a group of respondents with first-hand knowledge of their firms' financial practices and technology use. They were approached by local business networks and SME related organizations and volunteers only. The data have been gathered by using a structured questionnaire and 250 completed questionnaires were received. Hair et al., (2019) suggested that the sample size is sufficient to test the mediation effect, which included three latent constructs.

Instrument and Measurement

Financial literacy consisted of items that assess the respondent's knowledge and application of budgeting, saving, borrowing, interest rate, financial planning, and financial risk. The instruments used consisted of knowledge-based measures and self-assessment measures, consistent with the typical approach to measuring financial literacy (Lusardi & Mitchell, 2011, 2014). The adoption of FinTech was assessed by the extent of the adoption of the digital financial services (DFS) (e.g., mobile payments, online banking, digital lending, electronic transactions, and other technology-based financial services) by the SMEs. The SME performance was assessed through various indicators such as sales growth, profitability, customer growth and overall business improvement. The major indicators of FinTech adoption and performance of SMEs were evaluated with the use of scaled statements, while the existing attitudinal ones were rated on a 5-point response scale (SD to SA). The questionnaire was piloted and pre-tested to enhance clarity and reliability, as well as re-wording items when respondents were unclear about them.

Collecting Data and Possible Common Method Bias

Participants were told that the study is for academic research and that their responses were guaranteed to be anonymous and confidential. To prevent inflated relationships, procedural measures like anonymization, precise wording of the questions, and separating the predictor from the outcome sections of the questionnaire were implemented (Podsakoff et al., 2012).

Data Analysis

The mediation analysis was carried out using structural equations modeling within the data analysis. The respondents' and business characteristics were summarized using descriptive statistics. The reliability of the measurement scales was tested by Cronbach's alpha and composite reliability, and the convergent and discriminant validity were tested by factor loadings and average variance extracted (AVE), respectively, while the ratio of square root of AVE with respect to inter-construct correlations and in addition the heterotrait–monotrait (HTMT) ratio (Hair et al., 2019; Henseler et al., 2015) were used to support the results. The direct relationship of financial literacy to SME performance was first explored. Financial literacy of the SME owners was subsequently included as a mediator to explore whether financially literate SME owners perform better due to their greater likelihood of using DFTs. The bootstrapping procedure (5000 resamples) was used to assess the indirect effect, and 95% confidence intervals were calculated to determine if the mediation effect was statistically significant (Preacher & Hayes, 2008).

Analysis and Results

The characteristics of the 250 people who responded to the survey and their businesses are summarized in Table 1. The respondents have a high education level, with most being owner-managers and most of the firms in operation for more than five years, which facilitates the respondents' reporting of financial practices and technology use.

Table 1: Profile of respondents and firms

Characteristic	Category	Frequency	Percentage
Gender	Male	201	80.4
	Female	49	19.6
Role	Owner	148	59.2
	Manager	102	40.8
Education	Secondary or below	52	20.8
	Bachelor’s	124	49.6
	Master’s or above	74	29.6
Firm age	Less than 5 years	78	31.2
	5–10 years	103	41.2
	More than 10 years	69	27.6
Sector	Trade/retail	109	43.6
	Manufacturing	67	26.8
	Services	74	29.6

Reliability and Convergent Validity

The results from the measurements are presented in Table 2. In order to ensure the reliability and convergent validity, all Cronbach's alpha, factor loadings and AVE values were found to be greater than 0.70, 0.60 and 0.50 respectively (Hair et al., 2019).

Table 2: Reliability and Convergent Validity

Construct	Items	Loadings range	Cronbach's α	CR	AVE
Financial literacy	9	0.68–0.83	0.88	0.91	0.56
FinTech adoption	8	0.70–0.84	0.89	0.91	0.58
SME performance	8	0.69–0.82	0.88	0.90	0.57

Descriptive Statistics and Discriminant Validity

Means, standard deviations, correlations with the square root of AVE on the diagonal, and HTMT values are shown in Table 3. The mean scores were above the scale mean. Determining discriminant validity, the square root of each construct was larger than the correlations with the other constructs, and all the HTMT values were less than 0.85 (Henseler et al., 2015).

Table 3: Descriptive statistics, correlations, and discriminant validity

Construct	Mean	SD	1	2	3	HTMT range
1. Financial literacy	3.61	0.67	0.75			0.62–0.63
2. FinTech adoption	3.52	0.72	0.56	0.76		0.63–0.68
3. SME performance	3.68	0.63	0.55	0.60	0.75	0.62–0.68

Note. Diagonal values are the square roots of AVE. All correlations are significant at $p < 0.01$.

Direct and Mediation Analysis

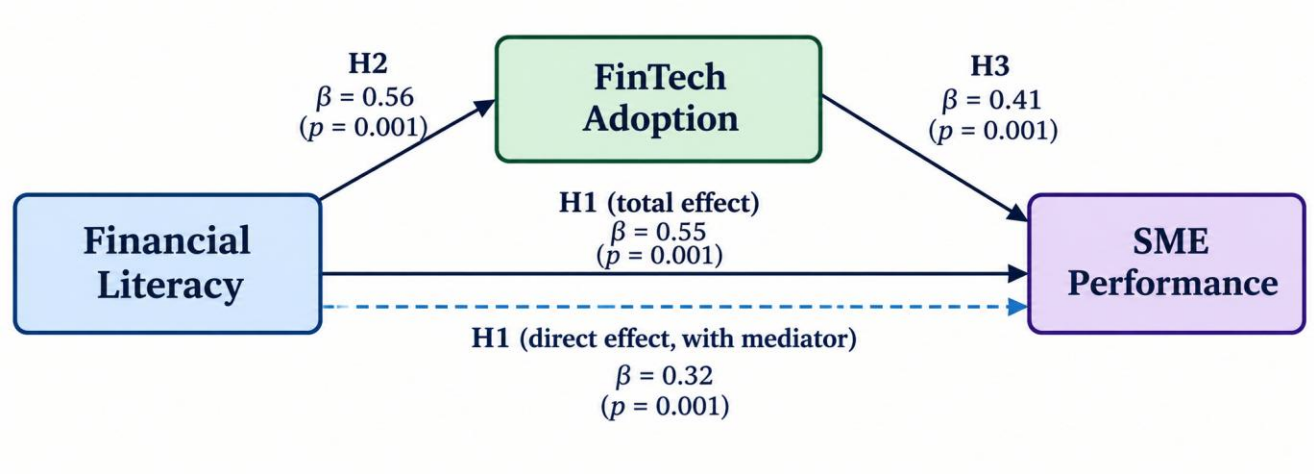
Table 4 shows the results for the 5,000 bootstrap samples. In the first step, the financial literacy construct had significant positive total effect on the SME performance ($\beta = 0.55$, $p< 0.001$) and supported H1. Furthermore, financial literacy had a significantly positive impact on FinTech adoption ($\beta = 0.56$, $p < .001$), in support of H2, and FinTech adoption was significantly related to SME performance ($\beta = 0.41$, $p < 0.001$), in support of H3. The financial education mediator was introduced and the direct effect of financial education on performance decreased from 0.55 to 0.32 but remained significant, with an indirect effect of financial education on performance being significant ($\beta = 0.23$, 95% CI [0.15, 0.31]). The indirect effect via the mediation of FinTech adoption was thus an additional support for H4 and accounted for approximately 42% of the total effect. The model accounted for 31% of the variance in the adoption of FinTech and 52% of the variance in SME performance.

Table 4: Direct, indirect, and total effects

H_o	Path	β	SE	t	p-value	95% CI	Decision
H_1	Financial literacy → SME performance (total, without mediator)	0.55	0.05	11.00	0.001	[0.44, 0.65]	Supported
H_2	Financial literacy → FinTech adoption	0.56	0.05	11.20	0.001	[0.46, 0.65]	Supported
H_3	FinTech adoption → SME performance	0.41	0.06	6.83	0.001	[0.29, 0.52]	Supported
	Financial literacy → SME performance (direct, with mediator)	0.32	0.06	5.33	0.001	[0.20, 0.44]	Significant
H_4	Financial literacy → FinTech adoption → SME performance (indirect)	0.23	0.04	5.75	0.001	[0.15, 0.31]	Supported (partial mediation)

Note: R^2 = 0.31 (FinTech adoption); R^2 = 0.52 (SME performance). Variance accounted for by the mediator = 41.8%.

Figure 1: Graphical View of Results



Discussion

The findings showed that financial literacy is indeed a predictor for the performance of SMEs in Peshawar. This aligns with the findings that financial capability has a significant positive effect on financial practices and business results (Bruhn & Zia, 2013; Drexler et al., 2014; Eniola & Entebang, 2017), and with the overall idea that the impact of financial literacy is far-reaching and extensive (Lusardi & Mitchell, 2014). Owners with a good grasp of the concepts of budgeting, interest, planning and risk seem better equipped to manage costs, working capital and undertake growth decisions. The result is also in line with the notion that effects are based on more than formal education alone, but on real-life financial ability and application (Kaiser & Menkhoff, 2017).

This importance of financial literacy for FinTech adoption aligns with technology-acceptance argument, which suggests that users who are aware of the value and risks of a service are more likely to adopt it (Venkatesh et al., 2012), and with the concerns about low financial literacy leading to the underuse of new financial services (Lusardi & Mitchell, 2011). The positive effect of the use of FinTech on performance is consistent with the evidence indicating that digital finance has impacts on lower transaction costs, improved access and economic gains (Gomber et al., 2018; Ozili, 2018; Suri & Jack, 2016) and the relationship between financial innovation and SME performance (Eniola & Entebang, 2015).

The partial mediation suggests that FinTech adoption is a pathway that is significant but not unique. Owners who have financial literacy directly benefit through improved budgeting, borrowing, and planning; the owners who are financially literate also benefit indirectly as they use digital tools (e.g., automated payments, expanded credit records) that benefit their bottom line. As with the size of the direct effect, the size of the indirect effect suggests that literacy is most effective when coupled with digital financial capability, lending credence to the notion that digital technology adoption is a way of creating and capturing value (Teece, 2010). It is acknowledged that access to finance is a key constraint facing SMEs (Beck & Demirgüç-Kunt, 2006) and digital channels could be useful for literate owners to help mitigate access to finance.

Conclusions and Recommendations

Based on the above context, this study aimed to find out the effect of financial literacy on the performance of SMEs in Peshawar District, Khyber Pakhtunkhwa, Pakistan and how financial literacy influences the performance of SMEs through the mediating variable of FinTech adoption among SMEs. The evidence indicated that financial literacy positively affected SME performance both directly and indirectly, that financial literacy enhanced the uptake of FinTech, and that the positive impact of financial literacy on uptake of FinTech is partially passed down to performance. The study makes a contribution to both the financial literacy and the digital finance literatures by bringing the two together under one umbrella model and offering evidence from a region where SMEs have been poorly studied.

Based on these findings, owners and managers of SMEs are encouraged to invest in their own financial literacy by taking short courses and financial literacy sessions for mentoring and business-network sessions, and to use appropriate digital financial tools and learn how to manage the risks that come with them. Financial education should be integrated into digital services provided by the financial sector, including banks, FinTech providers and SME support organizations, and packaged with products that cater to the needs of small businesses, including women-owned and first time digital users, via simple local-language interfaces. To complement these, policies can be designed to integrate financial literacy into SME development initiatives, increase the introduction of digital payment and credit services and improve the protection of consumers and data security for SME owners to ensure that they can use FinTech with confidence.

There are a number of caveats to recognize. The cross-sectional design does not allow for causal inferences and purposive sampling in one district does not allow for generalizability. Although there are procedural controls in place (Podsakoff et al., 2012), self-reported data is subject to common method bias, and the performance was assessed perceptually, not after an audit. Further study could

employ longitudinal or experimental studies, include survey data and financial-statement data, compare regions, sectors, and test moderators like education, firm size, digital infrastructure, or regulatory support.

References

1. Beck, T., & Demirgüç-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, *30*(11), 2931–2943. https://doi.org/10.1016/j.jbankfin.2006.05.009
2. Bruhn, M., & Zia, B. (2013). Stimulating managerial capital in emerging markets: The impact of business training for young entrepreneurs. *Journal of Development Effectiveness, 5*(2), 232–266. https://doi.org/10.1080/19439342.2013.780090
3. Drexler, A., Fischer, G., & Schoar, A. (2014). Keeping it simple: Financial literacy and rules of thumb. *American Economic Journal: Applied Economics, 6*(2), 1–31. https://doi.org/10.1257/app.6.2.1
4. Eniola, A. A., & Entebang, H. (2015). SME firm performance-financial innovation and challenges. *Procedia – Social and Behavioral Sciences, 195*, 334–342. https://doi.org/10.1016/j.sbspro.2015.06.361
5. Eniola, A. A., & Entebang, H. (2017). SME managers and financial literacy. *Global Business Review, 18*(3), 559–576. https://doi.org/10.1177/0972150917692063
6. Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the Fintech revolution: Interpreting the forces of innovation, disruption, and transformation in financial services. *Journal of Management Information Systems, 35*(1), 220–265. https://doi.org/10.1080/07421222.2018.1440766
7. Gomber, P., Koch, J.-A., & Siering, M. (2017). Digital finance and FinTech: Current research and future research directions. *Journal of Business Economics, 87*(5), 537–580. https://doi.org/10.1007/s11573-017-0852-x
8. Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203
9. Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8
10. Hussain, S., Masood, K., Idrees, F., & Sohail, A. (2025). Enhancing competitive advantage in SMEs through FinTech: The mediating roles of technological innovation and financial agility in emerging economy. *Journal of Innovative Research in Management Sciences, 6*(2), 45-64.
11. Kaiser, T., & Menkhoff, L. (2017). Does financial education impact financial literacy and financial behavior, and if so, when? *The World Bank Economic Review, 31*(3), 611–630. https://doi.org/10.1093/wber/lhx018
12. Kurniasari, F., Abd Hamid, N., & Lestari, E. D. (2025). Unraveling the impact of financial literacy, financial technology adoption, and access to finance on small medium enterprises business performance and sustainability: a serial mediation model. *Cogent Business & Management, 12*(1), 2487837.
13. Lusardi, A., & Mitchell, O. S. (2011). Financial literacy around the world: An overview. *Journal of Pension Economics and Finance, 10*(4), 497–508. https://doi.org/10.1017/S1474747211000448

14. Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature, 52*(1), 5–44. https://doi.org/10.1257/jel.52.1.5
15. Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review, 18*(4), 329–340. https://doi.org/10.1016/j.bir.2017.12.003
16. Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology, 63*, 539–569. https://doi.org/10.1146/annurev-psych-120710-100452
17. Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879–891. https://doi.org/10.3758/BRM.40.3.879
18. Qazi, M. A., Bilal, K., & Arshad, U. (2025). Fintech Adoption Drivers for Innovation among SMEs in Pakistan a mediating role of Perceived Usefulness and User Innovativeness. *Social Science Review Archives*, *3*(4), 4012-4026.
19. Suri, T., & Jack, W. (2016). The long-run poverty and gender impacts of mobile money. *Science, 354*(6317), 1288–1292. https://doi.org/10.1126/science.aah5309
20. Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning, 43*(2–3), 172–194. https://doi.org/10.1016/j.lrp.2009.07.003
21. Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly, 36*(1), 157–178. https://doi.org/10.2307/41410412
22. Waqar, M., Masood, K., & Idrees, F. (2025). Digital financial literacy and fintech access driving sustainable SMEs performance through green innovation and entrepreneurial agility. *Gomal University Journal of Research*, *41*(2), 115-128.