

-RESEARCH ARTICLE-

FINTECH AND BANKS PERFORMANCE: ROLE OF CORPORATE GOVERNANCE AND TECHNOLOGY INFRASTRUCTURE

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—Abstract—

Banking sector digital transformation has been raised a major concern on the importance of Fintech adoption to increase the bank performance. With this significance of Fintech, Saudi Arabian banks are far behind in the digital finance and still has limited attention towards the Fintech adoption to improve bank performance. In this regards, study objective was to test the influence of Fintech adoption on Saudi Arabia banking sector performance. Moderating role of corporate governance and technological infrastructure also analyzed. Longitudinal quantitative data was collected for the period of 2017 to 2025 and it was analyzed using the STATA software. Regression pooled, random and fixed models were analyzed for the hypothesis testing. The findings highlighted that Fintech significantly improves the Saudi Arabia bank performance. Further both of the moderating effect also strengthen the impact of Fintech on bank performance. The study contributed that Fintech delivers maximum performance benefits when supported by effective governance frameworks and robust technological capabilities, offering significant implications for the practitioners for seeking sustainable growth and competitiveness in the Saudi banking sector.

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INTRODUCTION

Banking sector played an important role in supporting the national economic growth, which emphasis the financial inclusion, and country economic growth (Al Mamun et al., 2025). Therefore, monitoring and improving bank performance becomes an important for both of individual institutions and overall financial system (Fares et al., 2022). It is also further enforced that banks with high performance contribute towards the financial stability, and to promote the efficient allocation of capital in the economy (Kayed et al., 2025). With the dynamic changes in the global financial environment, Saudi banks face increased competition, customer demands for innovative services, and technological disruptions, which makes continuous improvement in bank performance (Dasilas & Karanović, 2025). To improve the bank performance, financial technology (fintech) becomes an integral transformative tool which helps to improve the bank performance through increasing operational efficiency, service delivery, and profitability (Samara et al., 2025). Fintech encompasses digital platforms, mobile banking applications, AI-based lending, blockchain, and automated payment systems, which reduce operational costs and accelerate financial transactions (Suryanto et al., 2022). By leveraging fintech, banks can provide faster, more personalized, and convenient services, leading to higher customer satisfaction and loyalty, which ultimately drives profitability (Elia et al., 2023). Furthermore, fintech allows to the banks in analyzing large volume of data which enables to the banks in better decision making which contribute to improved performance (Elia et al., 2023). Several studies have confirmed that fintech adoption positively influences bank efficiency, profitability, and competitive advantage, emphasizing its strategic importance in the modern banking environment (Al-Shari & Lokhande, 2023).

Previously discussed that Fintech becomes an integral factor to increase the banks performance, and literature argued that corporate governance is an important element to increase the investment opportunities towards the Fintech in enhancing bank performance (Najaf et al., 2024). An effective corporate governance enhances the better accountability, transparency, and strategic alignment which increase the initiatives towards the latest technologies to increase the banks performance (Al-Matari et al., 2022). Other studies also enforced that banks with the effective boards could allocate resources effectively, monitor Fintech projects, and minimize operational and agency risks (Arena et al., 2023) which leads to improve the banks performance. It is highlighted in the literature that companies with stronger corporate governance can manage digital innovations prudently, mitigating potential misuse, fraud, or technological failure (AlHares & AlBaker, 2023). In other perspectives, corporate governance also enhances the ability of banks in fully leveraging technological innovations which is ensuring that Fintech adoption significantly contributes towards banks performance and stability (Nie & Jiaqi, 2023). Without

proper governance structures, the benefits of Fintech may be limited, as investments may not be strategically aligned or properly monitored (Al-Matari et al., 2022). Therefore, this study used the corporate governance moderating as a moderating variable between Fintech and bank performance.

With respect to corporate governance, technology infrastructure is also factor to improve the impact of Fintech on the bank performance (Fraihat & Al-Afeef, 2022). Good technology infrastructure enables banks in implementing Fintech initiatives to increase the bank performance (Alzghoul & Al-kasasbeh, 2024). Other study also suggested that banks with the stronger technological infrastructure could provide a better digital services which improves customer satisfaction and operational efficiency (Chuc, 2023) which leads to improve the banks performance. In other words, banks investing more in technology infrastructure to support Fintech initiatives and meet the needs of a technologically advanced customer base increases the performance (Chuc, 2023). Technology infrastructure integration along with the Fintech not only minimizes the disruptions in the services and operational risks but it also helps to enhance the scalability of banking services, which helps to the banks to increase their performance (Salman, 2025). Therefore, technology infrastructure is an essential enabler that ensures Fintech investments are effective, secure, and capable of contributing to sustainable bank performance. In this regard, technology infrastructure served as a moderating variable in the current study between Fintech and bank performance.

With the extant literature on fintech and bank performance, several gaps remain, particularly in the context of Saudi Arabia. At first, most of the prior researches conducted on direct effects (Baig et al., 2025; Hidayat-ur-Rehman & Hossain, 2025; Liu et al., 2026). This highlighted a gap to conduct a future study with a moderating effect to increase the effectiveness of Fintech on the bank performance. Therefore, this study contributed a moderating role of technology infrastructure and corporate governance. Secondly, existing research often emphasizes developed countries while studies on Saudi Arabia, remain underexplored despite their rapid adoption of fintech and regulatory reforms (Beltrame et al., 2022; Campanella et al., 2025; Ferilli, 2025; Izzo et al., 2022). Thirdly, there is limited empirical evidence combining both corporate governance and technology infrastructure as moderators in the Fintech–bank performance relationship, which restricts understanding of the contextual and organizational factors that maximize fintech’s impact (Agostino & Costantini, 2022; Cirillo et al., 2023; Labban & Rousset, 2025). Because prior studies were limited either on one moderating variable of corporate governance or technology infrastructure with a limited attention on both of the moderating effects in one model. Fourthly, prior studies also majorly focused on the cross-sectional data with a limited attention on the ability to examine performance dynamics over time. Finally, there is a need to investigate how fintech, governance, and technology infrastructure interact to enhance sustainability, competitive advantage, and profitability in banks operating in emerging economies. Addressing these gaps is essential for both theory and practice, as it

provides insights into effective strategies for leveraging fintech within a structured, technology-supported, and well-governed banking environment. Therefore, this study aim to address the impact of Fintech adoption on bank performance of Saudi Arabia with the moderating of corporate governance and technology infrastructure.

After fulfilling the identified gaps in the literature, study contributed in the Saudi Arabian banking sector. Study only contributing the direct effect of Fintech on the bank performance, this study contributes to a deeper understanding of how and under what conditions fintech creates value, particularly through the moderating roles of corporate governance and technology infrastructure. On the other hand, study also contributed geographical and contextual gaps in the context of Saudi Arabian banks because this country is contributing a rapidly transforming emerging market with strong regulatory reforms and high fintech adoption under Vision 2030. Furthermore, a panel data which is not relying on the cross sectional data also increases the ability to capture performance dynamics over time, which is providing more robust and generalizable evidence. Furthermore, study with the combined interaction effect also contributed that Fintech, governance, and technology infrastructure offers novel insights into how banks can achieve sustainable performance and long-term competitive advantage in emerging economies.

LITERATURE REVIEW

Theoretical Foundation

Current study research framework has been established based on organization and information system levels theories for explaining the Fintech and bank performance along with the moderating role of governance system and technology infrastructure (Fadhul & Hamdan, 2020). From Resource Based View (RBV) theory perspective, it posits that firm performance is driven by valuable, rare, inimitable, and non-substitutable resources (Madhani, 2009). Within the banks, capabilities related to Fintech shown important strategic resource which could increase the competitive advantage represent strategic resources that can enhance operational efficiency and competitive advantage (Maqsood et al., 2025). Financial institutions employing more on these resources are being able to provide better positioned to improve profitability, service quality, and market performance (Madhani, 2010). This theory underpins the direct relationship proposed between Fintech and bank performance. On the other hand, agency theory that is being provided a strong evidence on the role of governance structure in shaping organizational outcomes (Jensen & Meckling, 1979). Fintech adoption consisted of complex investment decisions, increased technological risk, and heightened regulatory scrutiny (Jensen & Meckling, 2019). Organization with better governance mechanism help to align managerial actions along with shareholders' interests which ensuring that digital initiatives contribute positively to performance (Arenas et al., 2023). On the other hand, better governance quality

influences how effectively Fintech resources are utilized to achieve performance improvements (Najaf et al., 2021). Thirdly, information system success which emphasizes that organizations with better technology infrastructure provided a better organizational performance (Delone & McLean, 2003). Technology infrastructure constitutes the foundational system quality that enables Fintech applications to function reliably and efficiently (Ujam & Ofor, 2025). Without companies' better infrastructure, Fintech companies may fail to deliver their benefits which is limiting their contribution towards the bank performance (Saba et al., 2025). This theoretical lens explains why the effectiveness of Fintech initiatives depends heavily on the technological environment within which they operate (Yadav, 2025). The study based on above theories emphasizes a strong theoretical base to explain not only whether Fintech affects bank performance, but also under what organizational and technological conditions this effect becomes more pronounced. The above variables are depicted in Figure.1 below,

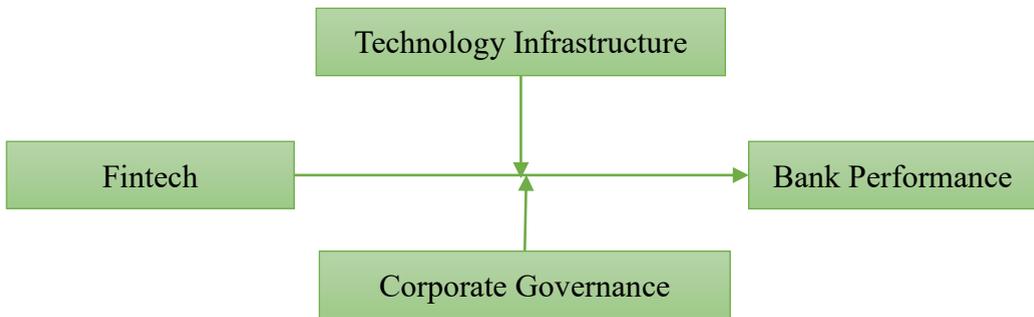


Figure.1: Research Framework

Hypothesis Development

In this section study hypothesis has been formulated where both of theoretical and empirical studies relationship has been discussed.

Fintech and Bank Performance

Fintech referred towards the application of digital innovations like as mobile banking, big data analysis and financial services in the financial sector (Oyedokun et al., 2025). Within the banking industry, Fintech shown the shifts from traditional operations to technology driven services (Adeyokunnu et al., 2025). Such kind of transformation allows to the financial institutions in redesigning their business process to increase their decision making system through real-time data analysis (García, 2025). The relevance of Fintech for bank performance is rooted in its ability to improve efficiency, profitability, and customer satisfaction (Kayed et al., 2025). Fintech system reduces the company's operational costs through proper automating routine processes and minimizing human error, while advanced analytics enhance credit assessment and risk management (Campanella et al., 2025). It also enables to the

banks in expanding their customer bases through offering faster, more personalized services, which strengthens competitiveness in increasingly digital financial markets (Baig et al., 2025). Consequently, Fintech adoption is closely linked to improvements in performance (Baig et al., 2025).

Further, empirical study supported the view that banks investing in digital technologies experience significant improvements in return on assets and operational efficiency (Baig et al., 2025). In the same vein, Baig et al. (2025) reported that Fintech adoption enhances productivity and cost efficiency in European banks. However, some studies highlight mixed results, suggesting that performance gains depend on implementation quality and organizational readiness (Arena et al., 2023). This studies also found that Fintech has strong potential to increase bank performance and its impact is not automatic and requires effective integration into banking operations. Ng and Pan (2024) empirical study also found that banks with strong Fintech capabilities increases the profitability as compare to other digital peers. Ng and Pan (2024) study also documented that digital payment technologies significantly improve revenue growth and customer acquisition in commercial banks. Ben Bouheni et al. (2023) study also found that technology-driven financial services contribute to performance gains by improving lending efficiency and expanding credit access, particularly in digitally mature banking systems. Al-Shari and Lokhande (2023) study also emphasized that companies performance which is gained from Fintech is entirely depends on effective implementations, strategic alignment, and organizational readiness. Some banks experience delayed or insignificant performance improvements due to high initial investment costs, legacy system integration challenges, and regulatory constraints (Dasilas & Karanović, 2025). These prior studies emphasizes that Fintech has a strong potential to increase the bank performance and accordingly hypothesis is,

H1: *Fintech has a significant effect on bank performance.*

Fintech, Corporate Governance, and Bank Performance

Corporate governance is being referred to system of rules, and process through which companies are directed and controlled which is being consisted of board structure, managerial oversight, transparency, and accountability mechanisms (Almubarak & Aljughaiman, 2024; Shehadeh et al., 2025). Within the Fintech adoption, governance frameworks played an integral role in guiding strategic decisions which is being related to digital investment to increase the bank performance (Shehadeh et al., 2025). On the other hand, strong governance ensured that technology driven changes align along with the organizational goals which increase the company's performance (AlHares & AlBaker, 2023). Because a better digital transformation often involves high investment costs, cybersecurity risks, and regulatory challenges (Najaf et al., 2024). Better governance structure helps to the banks innovations along with risk

management through monitoring management actions and ensuring prudent allocation of resources (Najaf et al., 2024). Companies with the better functioning boards are being well equipped to leverage Fintech in a way that enhances performance rather than increasing operational vulnerabilities (Najaf et al., 2024).

Najaf et al. (2024) also demonstrated that companies' boards who have better competency in technology could achieve better superior technology to increase banks performance. Further study found that digital banking initiatives contribute more strongly to profitability in institutions characterized by strong governance practices (Najaf et al., 2024). Conversely, weak governance has been associated with inefficient technology investments and diminished performance gains (Hamed, 2025). Further study also found that companies who have better governance structure are able to increase the better investment in the new digital technologies which increase the company's performance (Hamed, 2025). In various studies, corporate governance has been tested a moderating variable where they found the significant positive effect and they also recommended in future studies, corporate governance could be used a moderating variable (Al-Matari et al., 2022). These findings suggest that corporate governance plays a decisive role in shaping how Fintech translates into improved bank performance and accordingly hypothesis is,

H2: *Fintech has a significant effect on bank performance with a moderating effect of corporate governance.*

Fintech, Technology Infrastructure, and Bank Performance

Technology Infrastructure is being referred to foundational IT resource of the companies which consisted hardware, software system which supports to digital operations to increase the bank performance (Fraihat & Al-Afeef, 2022). Technology infrastructure increase the infrastructure of Fintech applications which enables the companies digital operations fast to increase company's performance (Al-Matari et al., 2022). Without adequate infrastructure, Fintech solutions may fail to operate efficiently or securely. The role of technology infrastructure in enhancing the impact of Fintech on bank performance is critical. Companies with the better technology infrastructure increase the culture of Fintech which supports to improves banks performance (Al-qararah, 2023). A better technology infrastructure also increase the advance analytical skills and real time processing that is important to manage the risks and decision making process in the organizations to increase performance (Alzghoul & Al-kasasbeh, 2024). On the other hand, financial institutions without adequate infrastructure may face system failure, cybersecurity threats, and customer dissatisfaction that minimizes the banks performance (Lin et al., 2022).

Additionally, empirical studies also found that company's better information technology capabilities could achieve a better efficiency for the digital banking services to improve banks performance (Fraihat & Al-Afeef, 2022). Similarly, Dhiaf

et al. (2024) study also found that investment in the cloud better technologies significantly improve financial performance in developed banking markets. On the other hand, study also found that insufficient infrastructure weakens the effectiveness of Fintech investments, leading to suboptimal performance outcomes (Alzghoul & Al-kasasbeh, 2024). Other empirical study also supported the view that IT infrastructure contributes significantly towards the organizational performance through enhancing process efficiency and supporting strategic initiatives. Al-qararah (2023) study also found that firms with advanced IT infrastructure extract greater value from digital technologies, resulting in superior financial outcomes. Equally, Chen (2020) study also enforced that a better IT infrastructure enabled to the companies to improve the technology infrastructure investments to enhance banks performance. Ben Bouheni et al. (2023) also enforced that weak technology infrastructure minimizes the effectiveness of Fintech adoption especially in the banks which are operating along with legacy systems and fragmented IT architectures. In other perspectives, Alsmadi et al. (2023) study also argued that insufficient cybersecurity and system interoperability reduce customer trust and increase operational risk which increases the banks performance.

Further empirical study of Wang et al. (2021) also enforced that a better IT infrastructure helps to increase the firm's performance through supporting a rapid innovations. In addition, Samara et al. (2025) study research also found that robust digital infrastructure improves service quality and customer satisfaction in banks, indirectly contributing to enhanced financial performance. Dwivedi et al. (2021) study also emphasized that weak infrastructure also increases the constrained on the Fintech adoption effectiveness especially in the banks operating with legacy systems and fragmented IT architectures. Al-Shari and Lokhande (2023) further argued that insufficient cybersecurity measures and limited system interoperability reduce customer trust and increase operational risk, thereby offsetting potential performance gains. In the same vein, Al-Shari and Lokhande (2023) study also supported that companies without proper investment on the technology infrastructure may fail to deliver expected performance benefits because their limited access towards the Fintech technologies could minimizes the opportunities to increase banks performance. These prior studies emphasizes that technology infrastructure is enabling Fintech to contribute meaningfully to bank performance and hence hypothesis is,

H3: *Fintech has a significant effect on bank performance with the moderating effect of technology infrastructure.*

Research Methods

Research investigate the influence of Fintech adoption on Saudi Arabia banking sector performance. Moderating role of corporate governance and technological infrastructure also analyzed. For this objective quantitative longitudinal research

design was used. As the longitudinal research design helps to strengthen the findings validity through capturing changes across time, rather than relying solely on cross-sectional snapshots (Neiva & Martins, 2023). Furthermore, this approach also minimizes the biases linked which provides a stronger understanding of dynamic interactions within firms. Furthermore, the quantitative method enhances objectivity through statistical analysis, ensuring generalizability of results (Yom et al., 2022). In this regard, researchers employed a quantitative research approach. Research covered the financial sector of Saudi Arabia over the period 2017 to 2025, as this timeframe captures a critical phase of economic transformation under Saudi Vision 2030, which emphasizes transparency, governance, and accountability in corporate practices. Financial sector were selected because they represent a diverse set of industries because it is regulated more as compare to financial institutions which is providing a more accurate picture of how Fintech adoption could improve the bank performance of Saudi Arabia with the moderating of corporate governance and technology infrastructure.

Research models and measurements

Table.1 presents the variable measurements and their proxies. Fintech is the independent variable, technology infrastructure is a moderating variable and corporate governance is also moderating variable. While, bank performance is the dependent variable. While the control variables are the bank size and leverage (Lennox & Wu, 2022). This structure ensures a comprehensive model that captures Fintech, corporate governance and technology infrusture influences on bank performance.

Table 1: Variables measurements

Variable	Proxy/Measurement	References
Dependent Variable		
Return on Assets	Net income to Total assets	(Heikal et al., 2014)
Independent variable		
FIntech Index	1. Technology (2. technologies) 3. internet 4. Web 5. database (6. databases) 7. telephone 8. Mobile 9. cyber 10. FinTech (11. data 12. AI 13. cloud 14. blockchain 15. chain)	(Wang et al., 2024)
Moderating Variable		
Coporate Governance Index		
Board Size	Total board members	(Garg, 2007)
Board Independence	Board independent directors	(Garg, 2007)
Board Diversity	female directors' percentage in board	(Nahar et al., 2022)
Board Skills and Experience Diversity	Index capturing directors' education, industry experience, and professional background	(Alam et al., 2025)
Board Audit Committee	Presence of audit committee (dummy: 1 = present, 0 = absent) / Number of members	(Zhou et al., 2018)
Audit Quality	Audit firm size (Big 4 = 1, otherwise = 0) / Audit tenure / Auditor industry expertise	(Zhou et al., 2018)

Table 1: Variables measurements (cont...)

Technology infrastructure	Percentage of individuals using the Internet, and mobile cellular subscriptions per 100 people	(Wang et al., 2024)
Control Variables		
Banks size	“total assets natural log”	(Doğan, 2013)
Financial Leverage	Total debt to Total assets	(Zaman, 2021)

Below are the econometrics models of the study. Model 1 represents the direct effect, while Model 2 and Model 3 represents the moderating effect in the three equations.

$$BP_{it} = \beta_0 + \beta_1 Fintech_{it} + \beta_2 BSIZE_{it} + \beta_3 LEV_{it} + \epsilon_{it} \dots (M-1)$$

$$BP_{it} = \beta_0 + \beta_1 Fintech_{it} + \beta_2 CG + \beta_3 Fintech_{it} * CG + \beta_4 BSIZE_{it} + \beta_5 LEV_{it} + \epsilon_{it} \dots (M-2)$$

$$BP_{it} = \beta_0 + \beta_1 Fintech_{it} + \beta_2 TI + \beta_3 Fintech_{it} * TI + \beta_4 BSIZE_{it} + \beta_5 LEV_{it} + \epsilon_{it} \dots (M-3)$$

Where,

- i = firm, t = year
- BP_{it} = “bank performance”
- CG_{it} = corporate governance
- TI_{it} = Technological infrastructure
- B_{SIZE}_{it} = bank size size
- LEV_{it} = Leverage
- ε_{it} = idiosyncratic error

RESULTS AND INTERPRETATION

Descriptive Statistics

Table.2 shown Saudi Arabia banks descriptive studies. fintech and performance. The descriptive statistics indicate that Saudi Arabian banks exhibit moderate and stable profitability, with an average ROA of 1.87%, reflecting a relatively sound and resilient banking sector supported by strong regulation from SAMA. The high mean value of Fintech (0.64) suggests that Saudi banks have substantially adopted digital financial technologies, consistent with the country’s Vision 2030 agenda and rapid growth in digital payments and Fintech ecosystems. A better score of corporate governance 0.7 highlighted a better board structure along with stronger transparency, and regulatory compliance in Saudi banks following recent governance has reforms in improving performance. On the other hand, stronger technology infrastructure mean value (0.68) also indicated a considerable investment in IT systems, digital platforms, and cybersecurity, which is essential for supporting fintech-driven services. The average bank size (16.82) also reflected a larger dominance on the banks long term assets to increase the banks performance. Above results in Table.2 below,

Table 2: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
ROA	1.87	0.62	0.55	3.10
FINTECH	0.64	0.18	0.20	0.95
CG	0.71	0.14	0.35	0.92
TI	0.68	0.16	0.30	0.94
Bank Size (LNTA)	16.82	0.91	15.10	18.45
Leverage	0.82	0.07	0.65	0.92

Correlation Matrix

This sections shown correlation matrix of results. All variables correlation values were than 0.90 which indicating that there is no issue of multicollinearity in the models. Fintech has positive and significant correlation with the bank performance (ROA). On the other hand, corporate governance (0.42) and technology infrastructure (0.45) also has positive and significant relationship with bank performance which is suggesting that higher digital adoption, stronger governance practices, and advanced technological capabilities improved effectively profitability in Saudi banks. This results is also suggesting that banks investing in digital innovation often simultaneously strengthen governance structures and IT capabilities, reflecting the integrated reform agenda to improve banks stability. Bank size shows a modest positive association with ROA (0.31). Importantly, all correlation coefficients remain below the critical threshold of 0.80, indicating no serious multicollinearity issues and supporting the suitability of the variables for regression analysis in the Saudi banking sector. Correlation results are in [Table.3](#).

Table 3: Correlation Matrix

Variable	ROA	FINTECH	CG	TI	Size	Leverage
ROA	1.00					
FINTECH	0.48	1.00				
CG	0.42	0.36	1.00			
TI	0.45	0.51	0.40	1.00		
Size	0.31	0.29	0.33	0.27	1.00	
Leverage	-0.34	-0.22	-0.18	-0.20	0.41	1.00

Diagnostic Tests

This section shown the diagnostics tests of all variables namely variance inflation factor (VIF), and autocorrelation. The VIF values of each variable is below than 5 which is shown that there is no issue of multicollinearity ([Gujarati & Porter, 2009](#); [Hair et al., 2019](#)). Such kind of results highlighted the inclusion of Fintech, corporate governance, and technology infrastructure simultaneously in the random effects models for the Saudi banking sector without bias in parameter estimation. Above results are in [Table.4](#).

Table 4: Variance Inflation Factor (VIF)

Variable	VIF
FINTECH	2.31
CG	1.94
TI	2.46
Size	1.62
Leverage	1.58

For testing the autocorrelation, the Wooldridge test was conducted. The Wooldridge test shown that the p-values for all three models exceed the 5% significance level, which is confirming that there is no issue of serial correlation, which is ensuring unbiased and efficient random effects estimations. Therefore, all models indicated the robustness of the fintech–bank performance relationship and its moderating effects of corporate governance and technology infrastructure within the Saudi Arabian banking sector. Above results are in [Table.5](#).

Table 5: Autocorrelation Test (Wooldridge Test)

Model	Description	F-Statistic	p-value	Conclusion
Model 1	Fintech → Bank Performance	1.47	0.23	No autocorrelation
Model 2	Fintech × Corporate Governance	1.32	0.26	No autocorrelation
Model 3	Fintech × Technology Infrastructure	1.58	0.21	No autocorrelation

Furthermore, for the selection between the pooled and random effect brauch pagan test was conducted among three models. Each model values was less than 5% which indicated that the selected model is the random effect. On the other hand, Hausman test was conducted in the selection of random and fixed model. The Hausman test results for all three models report p-values greater than the 5% significance level, which is indicating a failure to reject the null hypothesis that the Random Effects estimator is appropriate. This suggests that bank-specific effects are uncorrelated with the explanatory variables, making the Random Effects model more efficient and suitable than the Fixed Effects alternative. Accordingly, Random Effects estimation is justified for examining the impact of fintech on bank performance and the moderating roles of corporate governance and technology infrastructure in the Saudi Arabian banking sector. Above results are in [Table.6](#).

Table 6: Random Effects Model Results

Model	Description	Chi-square	p-value	Model Selection
Model 1	Fintech → Bank Performance	4.181	0.382	Random Effects
Model 2	Fintech × Corporate Governance	5.022	0.293	Random Effects
Model 3	Fintech × Technology Infrastructure	4.613	0.332	Random Effects

Hypothesis Testing Results

The random effect model results shown that Fintech positively and significantly

increases the bank performance across all models. In Model 1, the coefficient of FINTECH ($\beta = 0.624$, $t \approx 6.12$) is highly significant at the 1% level, which is showing that greater fintech adoption significantly enhances bank profitability. This reflects Saudi banks' successful integration of digital banking, fintech partnerships, and payment technologies. Bank size also shows a weak but positive effect ($\beta \approx 0.214$, $t \approx 1.89$). While leverage has a significant negative effect ($\beta \approx -0.456$, $t \approx -2.38$), implying that higher reliance on debt reduces profitability under strict regulatory oversight.

On the other hand, Model 2 and Model 3 results provide the significant moderating role of corporate governance and technology infrastructure, which is supporting to H2 and H3. In Model 2, the interaction term Fintech \times CG is strengthen the relationship ($\beta = 0.287$, $t \approx 2.22$), which is showing that strong governance mechanisms enhance the positive impact of fintech on bank performance. Similarly, in Model 3, the interaction Fintech \times TI ($\beta = 0.301$, $t \approx 2.25$) demonstrates that advanced IT infrastructure strengthens fintech-driven performance gains. Furthermore, increase in the R² from 0.41 to 0.49 and 0.51 also further indentified the improved explanatory power when moderation effects are included. Direct and moderating tested results are depicted in [Table.7](#) below,

Table 7: Regression Results Table

Variables	Model-1	Model-2	Model-3
FINTECH	0.624*** (0.102)	0.412*** (0.118)	0.398*** (0.115)
CG	—	0.351** (0.141)	—
TI	—	—	0.372** (0.149)
FINTECH \times CG	—	0.287** (0.129)	—
FINTECH \times TI	—	—	0.301** (0.134)
Size	0.214* (0.113)	0.198* (0.109)	0.205* (0.110)
Leverage	-0.456** (0.192)	-0.438** (0.188)	-0.441** (0.190)
Constant	-1.832**	-1.541**	-1.608**
R ² (overall)	0.412	0.492	0.513

DISCUSSION

The study aim to address the impact of Fintech adoption on bank performance of Saudi Arabia with the moderating of corporate governance and technology infrastructure. The study results shown that Fintech has positive and positive effect on bank performance of Saudi Arabia banks. This result shown that Saudi Banks are adopting a better Fintech solution like as mobile banking, online payments, and digital customer services, which is being experiences a significant improvements in profitability. This results also shown that fintech adoption not only the technology updated but it becomes an effective tool which enhances operational efficiency and revenue generation. Furthermore, Fintech also increases the satisfaction of customers which is providing a convenient, and personalized banking services. In Saudi Arabia,

the banking sector is undergoing rapid digital transformation which is emphasizing modernization, financial inclusion, and innovation. This context supports the observed positive effect, as banks are encouraged to integrate digital technologies to remain competitive (Kayed et al., 2025) study also supported the view that fintech adoption also enhances efficiency which leads to increase performance. Nguyen et al. (2022) also noted that banks incorporating digital technologies achieve better performance due to improved risk management and customer engagement. These results suggested that Fintech in the current environment becomes a core driver to increase the financial performance which is enabling to the Saudi banks to maintain profitability in a rapidly evolving market environment. Therefore, the direct effect highlights Fintech as a critical factor for sustainable performance and long-term growth in the Saudi banking sector.

With the efficiency improvements, Fintech also enables to the banks in increasing the outreach system that could lead to improve the banks performance. Such improvements could increase the which is being significantly contributes to revenue growth and strengthens the overall financial ecosystem. Other study also highlighted that Fintech encompasses digital platforms, mobile banking applications, AI-based lending, blockchain, and automated payment systems, which reduce operational costs and accelerate financial transactions (Suryanto et al., 2022). By leveraging fintech, banks can provide faster, more personalized, and convenient services, leading to higher customer satisfaction and loyalty, which ultimately drives profitability (Elia et al., 2023). Furthermore, Fintech also allows to the banks in analyzing large volume of data which enables to the banks in better decision making which contribute to improved performance (Elia et al., 2023). Several studies have confirmed that fintech adoption positively influences bank efficiency, profitability, and competitive advantage, emphasizing its strategic importance in the modern banking environment (Al-Shari & Lokhande, 2023; Hamed, 2025). Subsequently, investing in fintech is both a financial and strategic imperative for Saudi banks aiming to achieve sustainable growth and maintain a competitive edge in both of national and international markets.

Indirect moderating effect results shown that corporate governance strengthen the moderated effect between Fintech and bank performance of Saudi Arabia. This results shown that Fintech in the Saudi Arabia banking sector is an integral factor to improve the bank performance when the companies have good governance structure. On the other hand, better governance structure also showing that board structure in the Saudi Arabia banking sector is more transparent, accountable which is ensuring that fintech investments are strategically aligned and efficiently executed to improve the bank performance. These arguments are supported the view with the study of Najaf et al. (2024), where they also demonstrated that companies' boards who have better competency in technology could achieve better superior technology to increase banks performance. Further study also found that digital banking initiatives contribute more strongly to profitability in institutions characterized by strong governance practices

(Najaf et al., 2024). Conversely, weak governance has been associated with inefficient technology investments and diminished performance gains (Hamed, 2025). These studies emphasized that Banks with the strong governance could monitor and increase the technological initiatives in mitigating potential operational or strategic risks. In the same vein, [Almubarak and Aljughaiman \(2024\)](#) study also found that well governed banks effectively leverage fintech to improve operational performance and profitability. Current study results and prior supported evidenced shown that governance acts as an integral factor in the banking sector which is enabling to provide an effective mechanism which is ensuring that Fintech adoption increasing the bank performance. This is enforcing that banking sector in the Saudi Arabia should enforced on the Fintech investments through improving their governance mechanism because without Fintech investment, banks could not reach their full potential of performance that could reduce effectiveness and competitive advantage in national and international market. In this regards, study results emphasizes the important role of corporate governance in maximizing the profitability and sustainability of Fintech adoption in the Saudi Arabian banking sector.

Lastly, study findings further highlighted that technology infrastructure significantly strengthen the impact of Fintech adoption on the bank performance of Saudi Arabia banks. This results is highlighting that banks with the stronger IT system can efficiently leverage solutions to increase the performance of the banks. In other words, technology infruscture also ensured that digital innovations also operates efficiently, securely, and at scale, which is enabling smooth delivery of services and reducing operational risks. The results is supported the view with literature that Saudi Arabian banks have their substantial investments in digital banking infrastructure support mobile banking, AI-driven analytics, and online financial services, allowing banks to meet the demands of tech-savvy customers. [Ananga \(2024\)](#) and [Frederica et al. \(2021\)](#) found the same results where they argued that strong technological infrastructure is critical for maximizing the benefits of fintech adoption, because it allows to the banks in the implementations of the digital solutions reliably and efficiently. These studies highlighting that Fintech alone is insufficient; banks must have the technical capacity to integrate, manage, and scale digital services. Advanced technology infrastructure also supports innovation, enhances customer satisfaction, and provides a competitive advantage, as banks can offer reliable and seamless digital experiences. In this regards, technology integration positive effect highlighting the importance of investing in the technological capabilities to ensure fintech adoption translates into sustainable profitability and long-term growth in the Saudi banking sector.

IMPLICATIONS

Study contributed from both of theoretical and practical perspectives. Theoretically, study contributed with respect to theoretical understating of relationship between fintech and bank performance in Saudi Arabian banks context. Firstly, study

contributed the direct effect of Fintech on the bank performance which is being extended the Resource-Based View (RBV) theory through demonstrating that digital financial technologies could be considered a strategic resources that enhance operational efficiency, profitability, and competitive advantage. Secondly, moderating role of corporate governance also contributed towards the agency theory which is showing that strong governance mechanisms enable banks to utilize technological resources more effectively by reducing agency costs, ensuring transparency, and aligning managerial decisions with shareholder objectives. Thirdly, technology infrastructure moderating effect supported with the Dynamic Capabilities Theory, which is indicating that banks with strong IT capabilities can adapt and deploy fintech innovations effectively to achieve superior performance. Through the integrations of these theoretical perspectives, the study contributed literature on the digital transformation in the banks for highlighting that how Fintech, governance, and technological readiness interact to influence financial performance in a Middle Eastern context. Such integration is providing a strong understanding of how internal resources and organizational mechanisms shape the effectiveness of technological adoption in banking institutions.

Practically, firstly study contributed that banks sectors of Saudi Arabia should have proper investments towards the Fintech adoption that is an integral in enhancing the operational efficiency to lead bank performance which helps to increase banks long-term organizational goals. Secondly, study results also contributed to help to ensure that banking in Saudi Arabia should have proper governance structure maximize the benefits of fintech adoption to improve banks performance. Thirdly, study findings also contributed to helps that banking sector in Saudi Arabia should have a critical role on investment of improving technology infrastructure, which is including secure IT networks, cloud platforms, and data analytics systems to support the effective deployment of digital financial services. Fifthly, study results also helps to contribute to helps to the policy makers to make an effective regulatory frameworks that promote Fintech adoption, governance reforms, and digital infrastructure development to improve banks performance. Lastly, study results also contributed to guide Saudi banks in achieving sustainable profitability, operational resilience, and a competitive advantage in the rapidly digitizing financial sector. The study contributes to practice by providing evidence-based strategies for enhancing bank performance through a combination of technological, managerial, and infrastructural interventions.

CONCLUSION AND FUTURE DIRECTIONS

With the significance of Fintech, Saudi Arabian banks are far behind in the digital finance and still has limited attention towards the Fintech adoption to improve bank performance. In this regards, study objective was to test the influence of Fintech adoption on Saudi Arabia banking sector performance. Moderating role of corporate governance and technological infrastructure also analyzed. Longitudinal quantitative

data was collected for the period of 2017 to 2025 and it was analyzed using the STATA software. Regression pooled, random and fixed models were analyzed for the hypothesis testing. The findings highlighted that Fintech significantly improves the Saudi Arabia bank performance. Further both of the moderating effect also strengthen the impact of Fintech on bank performance. The study contributed that Fintech delivers maximum performance benefits when supported by effective governance frameworks and robust technological capabilities, offering important implications for bank managers and policymakers seeking sustainable growth and competitiveness in the Saudi banking sector. The study also contributed that Fintech delivers maximum performance benefits when supported by effective governance frameworks and robust technological capabilities, offering important implications for practitioners which are seeking competitiveness in the Saudi banking sector. Practically, study also highlighted that Fintech adoption must be complemented by strong corporate governance and strong technology infrastructure to achieve bank performance. The study also highlighted that quantitative and longitudinal methodology enhances the objectivity and reliability of the findings, making them useful for bank managers and policymakers.

Various limitations are still existed with significant findings. Firstly, study limited on financial sector of Saudia Arabia while ignore other non-financial sector which also contributed from both of social and economic perspectives. Therefore, to increase the generalizability of the findings, furher research could be conducted on the non-financial sector. Secondly, study limited on the longitudinal research design where data collected in different times frames, a future research could be conducted on cross sectional research design on survey based study to increase the study scope. Thirdly, study focused on the moderating effect with ignoring to the mediating effect which could increase the predictive power of the model. Therefore, future study could be conducted on adding one more mediating variable to increase the model predictive relevance. Laslty, study limited on Saudi Arabia economy which is a developing country and hence its findings could not be generalized on other developed nations where the structure of organization and their culture is entirely different from those of developing nations. Therefore, to overcome this limitation, a further research might be conducted on other developed nations to increase the research scope.

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