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The effect of financial technology on the financial performance of national Saudi banks

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A B S T R A C T

Fintech, characterized by the intersection of finance and technology, has globally transformed the financial landscape, reshaping traditional banking models as its innovations continue to unfold. The current study seeks to provide a comprehensive examination of the impact of fintech on the financial performance of Saudi banks. Nine Saudi national banks were investigated. The data were gathered from the annual reports from 2017 to 2022. The study followed multiple regression to test the relationship between factors. The study found that there was no notable impact of FinTech tools, such as Banking messages, Internet banking, Mobile applications, and Digital transfers, on return on assets (ROA) and return on equities (ROE) when looking at each tool individually. Nevertheless, when considering all these tools collectively, there is a considerable influence of 93.2% on ROA, and 84.2%, on ROE.

1. Introduction

The concept of Fintech is new, gaining significant attention in recent years. Fintech stands out as a crucial phenomenon for the financial industry, intersecting with information technology and innovation. Technology advancement has recently shifted practices in every aspect of operations. The banking sector is among the impacted, and automated technologies have been adopted based on the positive impacts on performance (Schindler, 2017)**.** The financial services industry has seen exponential change because of the fourth industrial revolution. The financial system began to rethink its procedures and practices through technical advancements with the introduction of information technology. Fintech oversees using technology to automate financial services, which boosts the effectiveness of the financial system (Campos & Gamarra, 2022). Fintech originated in the UK with a peer-to-peer lending platform named Zopa. Zopa saw a chance to offer finance in the form of easily obtainable products with affordable interest rates. Subsequently, the finance circle extended over forty thousand loans to SME. Fintech gained popularity in Europe and was subsequently adopted by many other nations (Zhou et al., 2018). Digital payments and digital cash collections are just a few of the new financial products and services that have been made possible using fintech in new business models (Gomber, Koch & Siering 2017). The banking sector within Saudi Arabia's Fintech industry has experienced rapid growth and transformation, driven by supportive regulations and a rising demand in the market. Despite existing challenges, the prospects for Fintech innovations in the kingdom appear promising, suggesting an upcoming era of enhanced financial services delivery. The Fintech literature on Saudi Arabia is rapidly developing, expressing the importance of this industry. Demir et al., (2022) think that Fintech can change Saudi Arabia regarding financial inclusion and operation efficiency. Examining the Fintech industry in Saudi Arabia demonstrates significant growth, evidenced by the growing number of startups and investments (Al-Matari et al., 2023; Alnsour, 2023). To develop a culture of Fintech innovation and create

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awareness around financial services technology the Saudi nation's central bank (SAMA), has established the 'Fintech Saudi' program and wants to set up a ‘sandbox’ regulatory environment to establish the country as a regional Fintech hub (FSDP, 2020). Due to initiatives led by the government, the Saudi Vision 2030, and the launch of regulatory sandboxes, the financial services industry has immensely stimulated innovation and entrepreneurship (Al-Matari et al., 2023). While data about Fintech adoption rates and the economic impact is limited, quantitative evidence presents a positive trend for the Fintech sector.

The impact of Fintech on banks is less clear. Frame and Wall (2018) argued that FinTech forces banks to evaluate and alter the business plans that they utilize. Li et al. (2017) investigated how FinTech affected bank stock prices and discovered a favorable correlation between rising FinTech funding or transactions and rising bank stock returns. Phan et al. (2019) discovered through study that the rise of list FinTech firms in India has a detrimental impact on bank profitability, with the effect being more obvious in state-owned banks. Acar and Citak (2019) stated that Fintech businesses and commercial banks want to strengthen their collaboration due to the benefits of FinTech enterprises. Based on previous studies, there is insufficient evidence to conclusively link Fintech to the banking sector's financial performance, particularly in the Middle East.

This study looks at how FinTech has affected banks' financial results in Saudi Arabia, which is regarded as one of the top nations for technological innovation and corporate digitalization. Additionally, a substantial percentage of consumers use Internet banking.

2. Literature Review

2.1 Concept of FINTEC

Although Fintech disrupts traditional financial systems, it is often hailed as the future epoch of the financial industry due to its status as the most innovative approach to banking (Milian, Spinola & Carvalho, 2019). KPMG's Fintech report (2021) highlights the growing trend within the financial sector to collaborate with Fintech firms, aiming to facilitate digital transformation for enhanced product offerings and to sustain market presence. The financial service sector leverages Fintech solutions to meet customer needs more effectively by incorporating these innovative offerings. The burgeoning expansion of Fintech services across various sectors is exerting a profound influence on the economy, society, employment landscape, and banking operations. As highlighted by Manatt (2016), primary concerns and risks encountered by banking industries during Fintech implementation revolve around legal and regulatory hurdles in risk management, cybersecurity threats, substantial investment risks, and the intricate technical integration of Fintech functionalities (Oghuma et al., 2016). The evolution of technology has significantly impacted conventional banking systems, compelling most banks worldwide to face considerable pressure from consumers, competitors, and the swiftly changing economic milieu to digitize financial services (Shim & Shin, 2016). Moreover, with the emergence and expansion of non-bank Fintech lending entities, banks confront a reduction in their customer base, thereby experiencing diminished profits. Consequently, return on investment remains a considerable challenge for many banks, with profitability being consistently low and contested (Baba, 2012).

Among the most common banking services in Saudi banks:

-SMS Banking: Customers have the option to engage in a range of activities through SMS channels without the necessity of an internet connection. These activities encompass inter-account and inter-bank transfers, bill payments, and account status checks. The expanding user base of various SMS banking services has the potential to enhance banks' financial performance by elevating their utilization rates (Siska et al., 2021).

-Mobile Application: The proliferation of smartphones has led to the rise of mobile banking applications. These apps allow customers to perform various banking transactions, from checking balances to transferring funds, at their convenience. Mobile banking apps have become essential tools for banks, allowing customers to manage their finances on the go (Sharma, 2019).

-Internet Banking: Internet banking platforms have become an integral part of modern banking operations. They enable customers to manage their accounts and carry out transactions conveniently from their residences or workplaces., 24/7 (Wewege, Lee, & Thomsett, 2020). These web-based interfaces provide a user-friendly experience, enabling users to transfer funds, review transaction history, and manage accounts. Internet banking has significantly reduced the need for physical branch visits, making banking more accessible and efficient (Jayawardhena & Foley, 2000).

Digital Transformation: Digitization represents a fundamental shift in how financial transactions are conducted. Digital payment methods have gained significant ground, reducing reliance on cash-based transactions and checks. These methods encompass various options, including electronic funds transfers and online bill payments (Pazarbasioglu et al., 2020).

2.2. Fintech And Financial Performance

Many studies have been conducted to focus on the topic of fintech and financial performance. (Putri et al., 2019) compares the profitability of businesses in Indonesia before and after FinTech products became popular. The return on assets (ROA) was shown to be significantly impacted, but the return on equity (ROE) did not significantly differ. Also, Ntwiga, (2020) found that using Fintech led to improved bank efficiency. Matei et al. (2021) aimed to test the utilization of financial technology and its influence on the FP of banking institutions. The findings suggest that fintech has a major and favorable impact on

ROE. (Siska, 2022) The aim is to explore the impact of Fintech services on the FP of Islamic banking. The study demonstrates that Fintech services have an impact on banks' financial performance and profitability. The purpose of (Almashhadani et al., 2023) is to investigate the connection between Fintech and UAE banking performance. The findings indicate that Fintech had a positive significant impact on ROE and ROA. On the other hand, Frederica et al., (2021) examine the impact of bank and fintech cooperation on banking performance in Indonesia. The results do not demonstrate that bank and fintech collaboration improves banking financial performance. Basdekis et al. (2022) aims to examine the FinTech industry's explosive growth and assess its effects on the Greek banking sector. The findings show that while consumers of all ages trust traditional banks more than FinTech firms, the number of mobile transactions that each customer engages in varies depending on their age and educational background. When it comes to using FinTech companies' financial services, security is their top concern. The purpose of the (Radwan, 2023) investigation of fintech is to affect Jordanian Islamic banks. The study found that online and mobile banking have a positive impact on the FP of Islamic banks. Furthermore, it was shown that SMS did not impact the FP of Islamic banks.

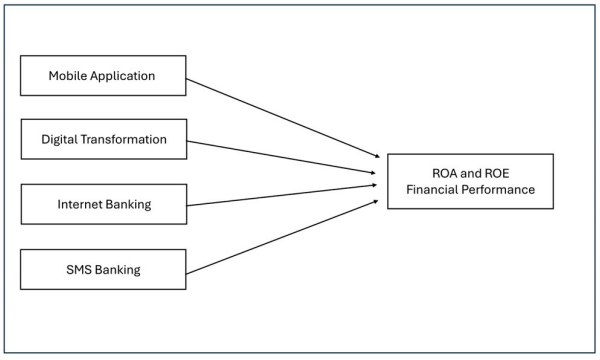

Fig. 1. Research Conceptual Framework

3. Research Methodology

The research seeks to assess how fintech affects the financial outcomes of Saudi national banks. Nine national banks that are currently located in Saudi Arabia made up the study's population (Al Rajhi Bank, Riyad Bank, Saudi National Bank, Al Jazira Bank, First Saudi Bank, Saudi Investment Bank, Arab Bank, Al Bilad Bank, and Alinma Bank). Annual data from banking organizations' annual reports between 2017 and 2022 were collected and utilized in this study. The independent variables were divided into four sub-variables: banking messages, internet banking, mobile applications, and digital transfers. The dependent variable is banking financial performance, which is also divided into return on assets (ROA) and return on equities (ROE). ROE is another financial metric that may be used to assess a corporation's performance about the total amount of capital that shareholders own. A business that has a high return on equity is going to succeed. A corporation is considered more lucrative if it creates a higher profit margin on equity. We can calculate the return on equity by using this formula: (Radwan, 2023).

$$ROE = Net\ Income\ after\ Tax / Total\ Equity \times 100.$$

A company's profitability can be measured by its ability to generate earnings from its assets, shareholder capital, and total resources. According to Setiawan and Hermanto (2017), profitability reflects a company's capacity to produce profits from its available resources. The return on assets (ROA) is a vital metric for assessing the profitability of banks, as stated by Siska (2022). To calculate ROA, the following formula is used:

$$ROA = Profit\ Before\ Tax\ Total\ Assets \times 100\%$$

The study utilizes a multiple regression model based on the review of existing literature and research objectives. This model is designed to represent the expected connection between the independent and dependent variables. The structure of the study model can be seen in Table 1:

$$CC_{it}=\beta_0+\beta_1 SMS_{it}+\beta_2 IB_{it}+\beta_4 MA_{it}+\beta_2 DT_{it}+U_i$$

Table 1
The Study Variables' Definitions

Symbol	Definition	Symbol	Definition
SMS	Banking messages	DT	Digital transfers
IB	Internet banking	ROA	Return on assets
MA	Mobile application	ROE	Return on equity

4. Results

4.1 Descriptive Statistics

According to Table 2 descriptive analysis provides a comprehensive summary of the research variables. The initial variable being studied, ROA, had an average value of 2.021, with a variation of 0.427, and ranged from a minimum of 1.43 to a maximum of 2.69. The ROE, as the second dependent variable, showed an average of 14.01 and a variability of 4.433. Its range spanned from a low of 9 to a high of 23.

Table 2
Descriptive Statistics of Variables

	Mean	Max	Min	Standard Deviation
SMS	4.04	16	1	5.703
IB	.78	11	1	1.641
MA	5.78	13	2	3.866
DT	.44	22	2	.882
ROA	2.021	2.69	1.43	0.427
ROE	14.01	22.68	8.69	4.433

4.2 Regressions Analysis for First Hypotheses

The initial hypothesis aimed to assess the relationship between SMS compatibility and ROA levels. Findings from the multiple regression analysis reveal a statistically insignificant negative correlation (β1=-.043, t-statistic=-1.134), Suggesting that the SMS has no significant impact on the independent variable's degree. Since the p-value is 37.4, which is above 5%, the hypothesis is rejected. The second hypothesis aimed to examine how the IB affects the extent of ROA. The multiple regression results indicate a significant negative correlation (β_2= -0.189, t-statistic= 1.342), suggesting that the IB has an impact on the independent variable to some extent. However, with a p-value of 31.2%, which is higher than 5%, this hypothesis is not supported and is therefore rejected. The third hypothesis examined how the level of MA is connected to the extent of ROA. The findings from the multiple regression analysis indicate a nonsignificant slight positive link (β3= .062, t-statistic=1.984), suggesting that the MA is not impacted by the level of the independent variable. However, with a p-value of 18.6%, which exceeds the 5% threshold, this hypothesis is rejected. The fourth hypothesis examined how the DT relates to the extent of ROA. The multiple regression findings revealed a statistically insignificant and negative connection (β4= -0.082, t-statistic= -2.286), indicating that the DT does not have a significant impact on the independent variable. Additionally, the p-value of 15.1% exceeds the standard threshold of 5%. Therefore, this hypothesis is not supported. From Table 3 F=4.022 with p. value =0.212 the result showed that the overall model is insignificant. But the impact of all independent variables of fintech is 93.2%, this is an extremely high percentage.

Table 3
Regressions analysis

Symbol	Definition	Coef		t- statistic	P < t
Cons	Model Constant	β_0	3.008	5.697	0.029
SMS	Banking messages	B_1	-.043	1.134	0.374
IB	Internet banking	B_2	.189	1.342	0.312
MA	Mobile application	B_3	.062	1.984	0.186
DT	Digital transfers	B_4	-.082	-2.268	0.151

Additional Statistic
N = 9 F-value = 4.022 Prob F = .212 Overall R2 = .932
Adjusted R-squared = .694

4.3 Regressions Analysis for Second Hypotheses

The initial hypothesis aimed to examine the relationship between SMS and ROE. The findings from the multiple regression analysis reveal a non-significant, yet positive correlation (β_1=.571, t-statistic=1.041), indicating that SMS does not have a significant impact on the independent variable. Moreover, the p-value of 40.7% exceeds the standard threshold of 5%, leading to the rejection of this hypothesis. The second hypothesis aimed to assess the connection between the IB and the level of ROE. Findings from the multiple regression analysis reveal a notable adverse link (β_2= -1.594, t-statistic= -.759), suggesting that the IB impacts the extent of the independent variable. However, with a p-value of 52.7.2%, exceeding 5%, this hypothesis is not supported and is therefore rejected. The third hypothesis explored how the MA is connected to the level of ROE. The outcomes of the multiple regression analysis revealed a positive but not statistically significant relationship (β_3= .488, t-statistic=1.042), suggesting that the MA is not affected by the level of the independent variable. However, with a p-value of 40.7%, which exceeds the typical significance level of 5%, this hypothesis is rejected. The fourth hypothesis explored the correlation between the DT and the magnitude of ROE. The findings from the multiple regression analysis revealed a non-significant positive relationship (β_4= .327, t-statistic=.603), suggesting that the DT has no impact on the extent of the independent variable. Additionally, the p-value (60.8%) was greater than 5%, leading to the rejection of this hypothesis. From

Table 4 F=1.77 with p-value =0.404 the result showed that the overall model is not significant. But the impact of all independent variables of fintech is 84.2%, this is an extremely high percentage.

Table 4
Regressions analysis

Symbol	Definition	Coef		t- statistic	P < t
Cons	Model Constant	β_0	5.693	0.721	0.546
SMS	Banking messages	β_1	.571	1.041	0.407
IB	Internet banking	β_2	-1.594	-0.759	0.527
MA	Mobile application	β_3	.488	1.042	0.407
DT	Digital transfers	β_4	.327	0.603	0.608

Additional Statistic
N = 9 F-value = 1.770 Prob F =.404 Overall R2 = .842
Adjusted R-squared = .366

5. Discussion

According to research findings, there is no relationship between tools of fintech (banking messages, internet banking, mobile applications, and digital transfers) and financial performance (ROA & ROE). However, the impact of the concurrent use of Fintech tools on the FP of Saudi national banks is striking, with a 93.2% improvement in ROA and an 84.2% increase in ROE. This indicates an important impact of sum fintech tools together on the FP. The findings of the study diverge from Radwan (2023) in that they reveal no significant correlation between SMS banking services and the FP of Islamic banks, as measured by return on equity (ROE). Conversely, the study finds that mobile banking services have a considerable impact on the FP of Islamic banks, as evidenced by the ROE metric. The study's results are also endorsed by the literature, Ntwiga (2020) supported the study's findings, indicating an increase in bank efficiency when Fintech was utilized. Putri et al. (2019) highlighted a significant impact on ROA, while Matei et al. (2021) emphasized the influence of FinTech on ROE. Siska (2022) noted the impact of Fintech services on banks' financial performance and profitability, and Almashhadani et al. (2023) demonstrated the positive significance of Fintech on ROA and ROE. The outcomes of these studies contrast with those of Putri et al. (2019), who found no significant disparity in ROE. Frederica et al. (2021) did not discover any evidence that collaborating with fintech companies enhances bank performance. Additionally, Basdekis et al. (2022) revealed that consumers across all age groups have more faith in traditional banks than in FinTech firms.

6. Conclusion

This study has examined the impact of fintech on the FP of Saudi banks. Data were gathered from the annual financial reports of nine Saudi national banks, and a multiple regression model was used to ascertain how the research variables relate to one another. The study found that there was no significant effect between FinTech tools (Banking messages, Internet banking, Mobile applications, and Digital transfers) on ROA and ROE for each item separately. However, there is an important effect of the sum of these elements on the FP. Research to explore the connection between Fintech and the FP in the banking industry is essential for filling knowledge gaps, especially since there is insufficient evidence to conclusively link Fintech to the banking sector's financial performance, particularly in the Middle East. The study's main limitation is represented in the sample that applied to nine Saudi national banks and did not cover all banks operating in Saudi Arabia. The financial performance of banks was also measured using the ROA and ROE only. Future research can also use other financial indicators, such as activity ratios, liquidity ratios, and solvency ratios, to look at the effect on financial performance. Future research, particularly with a global sample size, may examine this topic from a variety of angles. To increase the scale's generalizability for evaluating fintech's impact on financial performance, more testing is needed. There are a few likely changes in the future that warrant further thought regarding their effects on the industry and banking services.

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