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Fintech disruption: Evaluating fintech's impact on banks' profitability

Shambhavi Mishra[1], Shashank Tomar[1], Amit Malhotra[2]
[1] Department of Commerce, Finance and Accountancy, Christ University, Delhi NCR Campus, Uttar Pradesh, India
[2] Associate Professor, Department of Commerce, Finance and Accountancy, Christ University, Delhi NCR Campus, Uttar Pradesh, India

Abstract
The present study aims to investigate the impact of financial technology (fintech) adoption by banking institutions on their net profitability within the Indian banking sector. The research employed a panel dataset encompassing 15 banking entities, including both Public Sector Banks (PSBs) and Private Banks, over a period of seven quarters. Secondary data is sourced from the Reserve Bank of India (RBI) and the annual financial reports of the selected banks. The study focuses on Net Profit as the dependent variable, which is a measure of the overall financial performance of the banks. The selected independent variables serve as proxies for the banks' fintech adoption. The results indicated a statistically significant positive relationship between Net Profit and the deployment of Unified Payments Interface (UPI) Quick Response (QR) codes. Based on research findings, it is suggested that banks highly prioritize integrating QR Codes into their digital payment infrastructure. This strategic approach is expected to enhance operational efficiency, drive up transaction volumes, broaden the customer base, and consequently elevate profitability.

Keywords: Financial technology (Fintech), PoS terminals, micro ATMs, unified payments interface (UPI), quick response (QR) codes digital, payment infrastructure

Introduction
In this era, rapid digitization is ushering in the fourth industrial revolution. Economies are experiencing an unprecedented shift in the way industries operate and function. The banking industry, being the foundation of the Indian economy, is at the forefront of these transformative digital innovation and upgradation. Banking institutions are assuming pivotal roles in the integration of fintech solutions, primarily to modernize operations, streamline processes, reduce cost, mitigate risks and expand their customer outreach.

The Indian banking industry is undergoing a significant technological transformation on various fronts such as digital banking, payment platforms, trading and cryptocurrency platforms, insurance tech, deposit and lending platforms etc. These advancements are driving the digitization of the financial sector, enhancing accessibility, efficiency, and security in financial transactions. To capitalize on these opportunities, banks are adopting diverse strategies to incorporate technological innovation. This includes investing in FinTech firms, establishing FinTech subsidiaries, and collaborating with FinTech solution providers for different operational tasks. Moreover, financial institutions are expanding into alternative sectors like insurance, asset management, and investment banking, leveraging financial technologies to enhance their business performance and revenues.

Fintech solutions, including real-time data analytics and predictive modeling, have enabled banks to enhance their risk management capabilities, resulting in efficient identification and mitigation of potential risks. A survey conducted on a large Chinese platform revealed that over half of the retail borrowers had no previous borrowing history with a financial institution (Deer *et al*., 2015) [5]. The result underscores the importance of employing fintech solutions for conducting comprehensive due diligence, there by mitigating the risk of loan defaults by borrowers. Further, fintech also enables banks to utilize data analytics and machine learning algorithms to offer personalized services in accordance with customer needs, leading to tailored product offerings and targeted marketing efforts.

Banks are increasingly focusing on adopting digital payment solutions as an integral component of fintech innovation. These solutions leverage technology to facilitate seamless and convenient transactions in an increasingly digital environment. With the integration of digital payment mechanisms, contactless payment solutions, mobile banking apps and online banking platforms, banks are targeting to enhance accessibility and convenience for customers while reducing their transaction processing time and operational costs.

As per PWC's Indian payments handbook (2021–2026) report**,** the digital payments industry in India, has witnessed a significant growth with a CAGR of 30%. The surge in demand for digital payment mechanisms can be attributed to several interconnected factors. The COVID-19 pandemic accelerated the adoption of contactless transactions and remote payments. Further, the expansion of e-commerce platforms heightened the need for secure online payment options. Concurrently, technological advancements and increased smartphone penetration have made digital payments more accessible and user-friendly. Government initiatives promoting cashless economies and changing consumer behavior towards convenience and security have further fueled the demand for digital payment mechanisms.

The Indian economy has witnessed substantial growth in its digital payment infrastructure in recent years. According to the Reserve Bank of India's Trends and Progress of Banking report, December 2023, the volume of ATMs in India expanded by 3.5% throughout the financial year 2022-23. Additionally, the Debit and credit card transactions have grown at a CAGR of 20% and 19% respectively in the past four years, indicating a notable shift towards cashless transactions. As per industry reports, the number of active debit and credit cards is also expected to reach 1,021 million and 145 million respectively by 2025-26.

The POS terminal market in India has also been expanding rapidly. As per industry reports, the POS terminal market is expected to expand at a CAGR of 13.29% during 2021-2025, reaching a value of Rs. 50.01 billion by 2025.Further, the value of cash withdrawal through Micro ATMs also grew multifold from ₹1,17,086 crore in FY20 to ₹2,99,776 crore in FY22, underscoring Micro ATMs as a preferred digital payment mechanism amongst customers.

These emerging trends indicate a bright outlook for digital payments in India, thereby underscoring the importance of assessing the impact of fintech solutions on the banking sector. Within the context of India's status as an emerging economy, a limited number of studies have been conducted to elucidate the impact of financial innovation on banks' financial performance. This study aims to bridge the gap in existing literature and presents a novel contribution to the field, especially in the context of India's banking sector. Its findings are poised to offer valuable guidance for policymakers. Consequently, the main objective of this research is to assess the relationship between financial innovation and bank profitability.

Literature Review

"Fintech" is a term that first appeared in the early 1990s, coined by Citibank's "Financial Services Technology Consortium". It signifies the merger of finance and technology, necessitating both a deep understanding of financial business and a strong foundation in technology. As defined by the Financial Stability Board (FSB), Fintech involves the full application of cutting-edge technologies such as big data, blockchain, cloud computing, and artificial intelligence in various financial sectors.

(Financial stability implications from FinTech [EB/OL]. (2017-06-27).

There is a distinction between Fintech, Internet finance, and technology finance. "Fintech" underscores the innovative impact of technology on finance, while "Tech-finance" emphasizes how finance can promote the growth of technology-based enterprises

(Liu Yuan, Zheng Chenyang, Jiang Ping, Liu Chao. Can fintech help improve investment efficiency in the real economy? [J]. Journal of Capital University of Economics and Business, 2018, 20(06): 22-33.) [10]

Fintech, which is a more advanced stage of Internet finance, stresses the application of new technology in financial products and services, serving as a tech industry for the financial sector. The issues it addresses and the technologies it employs are more sophisticated than those of Internet finance.

Yu Bo's research analyzed data from 138 commercial banks spanning from 2009 to 2017. Using the social cognition index of fintech as a measurement tool, he applied the dynamic panel GMM model to study the relationship between fintech development and bank profitability. The research explored the impact of fintech on bank performance through the lens of the "competitive effect" and "technology spillover effect". After comparing the levels of positive and negative influences, Yu Bo concluded that fintech development tends to have a detrimental effect on bank profitability.

('] Yu Bo, Zhou Ning, Huo Yongqiang. The impact of fintech on profitability of commercial banks: An empirical test based on dynamic panel GMM model [J]. South China Finance, 2020(03): 30-39.).

Financial technology, or FinTech, presents a wealth of opportunities for the banking industry. By integrating technology into their operations, banks can significantly enhance their performance, stay competitive, sustain their business, innovate new offerings, and boost customer satisfaction. However, to successfully leverage these benefits, banks must be prepared to tackle challenges and overcome obstacles that may arise along the way.

While FinTech's application in banking is still in its early stages, it's poised to transform the delivery of financial products and services in the near future. This information can serve as a valuable resource for academics, industry professionals, and households, providing a comprehensive overview of the potential opportunities, risks, and challenges that banks may encounter as they navigate the FinTech landscape**.**

(Albastaki YA, Razzaque A, Sarea AM. Innovative Strategies for Implementing FinTech in Banking. Ahlia University, Bahrain).

A study on how fintech affects banks' profitability. Using a panel data analysis of 67 Chinese commercial banks from 2011 to 2019, it finds that fintech development has an inverted U-shaped relationship with bank profitability. Initially, fintech enhances profitability, but this effect diminishes with further progress. Factors such as loan quality, capital structure, net interest margin, and cost control significantly influence bank profitability.

(Research on the Impact of Fintech on the Profitability of Commercial Banks (2022).

Financial innovation, as defined by Sokolowska (2014) [14], is the creation and popularization of new financial instruments, technologies, institutions, and markets. Tufano (2003) describes financial innovation into two primary categories: product innovation and process innovation. Product innovation encompasses the development of innovative financial instruments, such as derivatives. In contrast, process innovation refers to the innovative distribution of financial products, novel accounting methods for financial transactions, and the advent of new payment techniques.

(Sokolowska, E., 2014, Alternative Investments in Wealth Management, Springer, Switzerland) [14]

Successful innovators, as per Peat (2009) [15], leverage the new environment to outpace their competitors. For financial innovation to be successful, it should create superior investment conditions for market participants and lead to a more satisfactory achievement of their financial objectives compared to traditional investment forms (Frame and White, 2009) [16].

(Peat, M., 2009 [15], "Data + Information Systems = Financial Innovation" book chapter in D.

Kundisch *et al* (eds) FinanceCom 2008, LNBIP 23, pp. 1-10, Springer-Verlag, Berlin), (Frame, W.S. and L.J. White, 2009 [16], "Technological change, financial innovation, and diffusion in banking", Financial Innovation and Diffusion in Banking (July 15, 2009)

Financial institutions engage in innovation to reap benefits such as increased risk sharing opportunities, avoidance of regulations and taxes, reduced transaction costs, increased liquidity, reduced agency costs, capturing temporary profits, and changing prices (Allen and Gale, 1994; Peat, 2009) [18, 15].

(Peat, M., 2009 [15], "Data + Information Systems = Financial Innovation" book chapter in D.

Kundisch *et al* (eds) FinanceCom 2008, LNBIP 23, pp. 1-10, Springer-Verlag, Berlin),

(Allen, F. and D. Gale, 1994 Financial Innovation and Risk Sharing, London: MIT Press) [18]

Unlike industrial innovations, financial innovations often modify existing products or institutions rather than creating entirely new ones (Sokolowska, 2014) [14]. Financial market products and instrument innovation possess properties such as flexibility, protection against market variability, and a greater combination of different instruments (Tarczynski and Zwolankowski, 1999) [20].

(Sokolowska, E., 2014, Alternative Investments in Wealth Management, Springer, Switzerland) [14]

(Tarczynski, W. and M. Zwolankowski, 1999, Financial engineering, Placet Publishing Agency, Warsaw) [20]

Research Gap

Despite the extensive research conducted on the growth of the fintech sector and its implications for the banking industry, there is a notable gap in the literature concerning their integration. Specifically, there has been insufficient research examining the impact of fintech on the financial performance of Indian banks. The present research aims to fill this gap by conducting a panel regression analysis on 15 banks and their Net Profit over the years, taking into account relevant variables to capture the deployment of fintech solutions. The findings of this study could provide valuable insights into the role of fintech and its impact on bank's profitability, thereby contributing to the existing body of knowledge in this field.

Methodology

The study aims to assess the impact of fintech integration by banks on their profitability levels. The data pertaining to the dependent variable was obtained from the annual financial reports of the selected banks. For the independent variables, the study utilized secondary data sourced from the Reserve Bank of India, covering the period between April 2022 and September 2023. A total of 15 banking entities, including both PSBs and private sector banks, were included in the study. In light of the merger of PSBs in April 2020, and the consequential challenges associated with data availability and scalability, the study focused on including the five largest PSBs based on market capitalization that maintained operations both before and after the merger. The study excluded foreign banks, small finance banks, and payments banks to ensure a targeted analysis of commercial banks in India.

The dependent variable selected in the model is Net Profit, which represents the bank's overall profitability following the deduction of all expenses, including operating costs, interest payments, and tax liabilities from its total revenue. The study incorporated various independent variables that represent the digital infrastructure of banks, thus effectively capturing the adoption of fintech by these institutions.These variables include total number of PoS terminals deployed by the banks, total number of Micro ATMs deployed by the banks, total number of Bharat QR codes deployed by the bank, total number of UPI QR codes deployed by the bank, total volume of Credit Cards and Debit Cards (VoDC), and total value of Credit Card and Debit Card Transactions at PoS terminals (VaDC). The study utilized panel regression to discern the effects of fintech adoption on Net Profit while accounting for individual bank-specific characteristics and time-related variations. The statistical tests were performed using the Python programming language.

The mathematical equation representing the relationship between the dependent variable and independent variables is as follows:

$$NetProfit = \beta 0 + \beta 1PoS + \beta 2MicroATM + \beta 3BharatQR + \beta 4UPIQR + \beta 5VoDC + \beta 6VaDC + E$$

Within the mathematical equation, β0 denotes a constant value, while β1, β2, β3, β4, β5, and β6 represent the coefficient values associated with the independent variables and the term E denotes the error component in the model.

Data analysis and findings

Descriptive Statistics

The descriptive statistics for both the dependent and independent variables are outlined in Table 1. The average Net Profit is Rs. 3584.46 crore, with a standard deviation of Rs. 4424.40 crore. The range of Net Profit levels is quite wide, reflecting diverse profitability levels across the entire banking system. The distribution of Net Profit values is positively skewed with a skewness of 1.41, indicating a concentration of lower values and a few extreme high values. The kurtosis value of 1.65 suggests that the distribution is moderately peaked compared to a normal distribution, implying fewer extreme values.PoS with a mean value of 377735.35 and a standard deviation of 542736.64, indicate significant variability in terminal volumes. Similarly, Micro ATMs, with a mean count of 16100.68 and a standard deviation of 23647.62, signify the growing infrastructure for financial inclusion, albeit with notable disparities across banking entities. The average value for Bharat QR Codes is 304352.30, while for UPI QR Codes, it stands remarkably higher at 13149361.83, emphasizing the significant shift towards cashless transactions. Point of Sale Terminals, Micro ATMs, Bharat QR Codes and UPI QR Codes collectively demonstrate a notable trend of positively skewed distributions with varying degrees of kurtosis, indicating asymmetry and potential outliers in the data.

The average value of VoDC stands at a considerable 50,014,062.17, indicating substantial utilization of debit and credit cards in financial transactions. Similarly, the mean value of VaDC is noteworthy at Rs. 130543301.94 (in Rs. '000), emphasizing the huge monetary value associated with card-based transactions at PoS terminals. The standard deviation observed for both variables indicates considerable variability within the data, implying the presence of potential outliers.

Table 1: Descriptive Statistics

	Net Profit (Rs. Cr.)	PoS	Micro ATMs	Bharat QR Codes	UPI QR Codes	Total Volume of Credit & Debit Cards	Total Value of Credit & Debit Card Transactions at POS (Rs'000)
Mean	3584.46	377735.35	16100.68	304352.30	13149361.83	50014062.17	130543301.94
Standard Deviation	4424.40	542736.64	23647.62	443037.64	34481163.91	67990590.53	175274825.64
Minimum	-5728.42	11233.00	0.00	0.00	0.00	33451.00	3776911.37
25%	703.71	26560.00	224.00	7665.00	79908.00	10601799.00	22802548.93
50%	2022.03	57897.00	8032.00	58593.00	650416.00	38434032.00	55848347.26
75%	4252.89	944320.00	13427.00	543693.00	3163945.00	50780116.00	114934305.10
Maximum	17312.38	1576885.00	91584.00	1956440.00	158766061.00	290666082.00	585141076.25
Range	23040.80	1565652.00	91584.00	1956440.00	158766061.00	290632631.00	581364164.88
Kurtosis	1.65	-0.41	2.67	4.27	8.24	7.56	1.40
Skewness	1.41	1.17	1.89	2.03	3.01	2.83	1.67
Sum	376367.78	39662212.00	1690571.00	31956991.00	1380682992.00	5251476528.00	13707046704.12

Correlation Test

Multicollinearity poses a significant concern in statistical analysis, as it can distort coefficient interpretations and compromise the reliability of statistical inferences. In order to evaluate the presence of multicollinearity within the model, correlation test was performed for all the variables.

Net Profit reported moderate to strong positive correlation with Micro ATMs (0.62), UPI QR Codes (0.69), and Total Volume of Credit & Debit Cards (0.72). This positive correlation indicates that with an increase in the deployment of Micro ATMs, UPI QR Codes, and the aggregate volume of credit & debit cards, the net profit tends to expand as well. These payment mechanisms enable banks to expand their presence into remote areas, potentially attracting new customers and increasing revenue through transaction fees, account maintenance charges etc. Moreover, they entail lower operational costs compared to traditional banking processes, thereby potentially increasing the bank's profit margins. The significant negative correlation (-0.78) between net profit and Bharat QR Codes indicates that with the escalation in the deployment of Bharat QR Codes, there is a corresponding tendency for net profit to decline.

PoS terminals exhibited a strong negative correlation with Micro ATMs (-0.87) and the total volume of credit & debit cards (-0.77). The inverse relationship can be attributed to factors such as varying consumer preferences or usage patterns for payment methods, as well as differences in accessibility and availability of payment mechanisms across different locations. Micro ATMs exhibited a strong positive correlation (0.74) with the Total Volume of Credit & Debit Cards. Bharat QR Codes and UPI QR Codes reported a strong negative relationship (-0.76) reflecting the competitive dynamics and varying user preferences with respect to the adoption of these digital payment systems.

Except for the notably strong negative correlation observed between the number of PoS terminals and the Micro ATMs (-0.87), the correlation between the remaining variables does not suggest significant high levels. This implies that each variable contributes unique information to the model without redundancy. Consequently, the absence of multicollinearity in the model fulfills a crucial assumption for subsequent statistical tests, ensuring the robustness and validity of the research findings.

Table 2: Correleation Matrix

Variable	Net Profit	PoS	Micro ATMs	Bharat QR Codes	UPI QR Codes	Total Volume of Credit & Debit Cards	Total Value of Credit & Debit Card Transactions at POS
Net Profit	1.00						
PoS	-0.25	1.00					
Micro ATMs	0.62	-0.87	1.00				
Bharat QR Codes	-0.78	0.12	-0.45	1.00			
UPI QR Codes	0.69	0.46	-0.04	-0.76	1.00		
Total Volume of Credit & Debit Cards	0.72	-0.77	0.74	-0.61	0.15	1.00	
Total Value of Credit & Debit Card Transactions at POS	0.48	0.09	0.11	-0.27	0.45	0.15	1.00

Stationarity Test

Ensuring the stationarity of the dataset stands as a fundamental statistical requirement, as datasets lacking stationarity exhibit fluctuating statistical properties, often leading to inaccurate results and unreliable conclusions. The researchers employed the Augmented Dickey-Fuller (ADF) test to determine the stationarity of the present dataset. In the ADF test, the null hypothesis states that the dataset contains a unit root, signifying non-stationarity. Conversely, the alternative hypothesis states the absence of a unit root, indicating stationarity in the data. To reject the null hypothesis, the test statistic must be lower than the critical value at the selected significance level, while to fail to reject it, the test statistic must be higher than the critical value.

Initially, all variables, with the exception of Net Profit and VaDC, displayed non-stationarity at both the 1% and 5% significance levels. Consequently, first-level differences were computed for these variables. Following this adjustment, PoS, Bharat QR Codes, UPI QR Codes, and VoDC were confirmed to be stationary at the 1% significance level, while Micro ATMs indicated stationarity at the 5% significance level. Both Net Profit and VaDC exhibited stationarity at the 1% significance level from the outset, therefore, requiring no adjustments.

Table 3: ADF Test

Variable	ADF Test Statistic	Critical Value at 1%	Critical Value at 5%	Result
Net Profit	-8.97	-3.49485	-2.889758	Stationary
PoS	-6.91	-3.499637	-2.891831	Stationary
Micro ATMs	-2.93	-3.50519	-2.894232	Stationary
Bharat QR Codes	-4.51	-3.50519	-2.894232	Stationary
UPI QR Codes	-5.03	-3.50519	-2.894232	Stationary
Total Volume of Credit & Debit Cards	-14.74	-3.495493	-2.890037	Stationary
Total Value of Credit & Debit Card Transactions at I	-3.7	-3.495493	-2.890037	Stationary

The summarized results in Table 3 signify that all variables have attained stationarity, implying constant statistical properties over time. This indicates that the variables are suitable for conducting subsequent statistical tests.

Regression Analysis

In statistics, the Hausman test is employed to determine the optimal model specification, for conducting the panel data regression analysis, facilitating the selection between the random effects model and the fixed effects model. The null hypothesis of the Hausman test suggests that the random effects model is consistent and efficient, while the alternative hypothesis suggests a preference for the fixed effects model over the random effects model.

In Table 4, the findings indicate a significant chi-square statistic (84.505) with a corresponding p-value of 0.0000*, which is less than the significance level of 0.05. Consequently, the null hypothesis is rejected. Hence, it is concluded that the random effects model exhibits inconsistency and inefficiency, leading to the preference for the fixed effects model in the present study.

Table 4

Chi-Sq. Statistic	d.f.	P-value
84.505	7	0.0000*

*By default, Python rounds off P-values to a limited number of decimal places for presentation purposes. Thus, a p-value of 0.0000 does not directly imply that the coefficient is exactly zero; however, it does suggest a significant proximity to zero

The summary of the fixed effects regression results is presented in Table 5. The Point of Sale
(PoS) terminals and total volume of credit and debit cards reported a negative relationship with
Net Profit. However, both of these relationships lacked statistical significance. Micro ATMs and Bharat QR Codes demonstrated a positive yet statistically insignificant relationship with the dependent variable. UPI QR Codes showed a noteworthy statistically significant positive relationship with Net Profit. With each incremental unit rise in the UPI QR Codes, there is an approximate increase of 0.1837 units in Net Profit, while keeping all other variables constant. The total value of credit and debit card transactions at PoS terminals revealed a positive relationship with Net Profit while showing marginal insignificance. An incremental unit rise in the total value of credit and debit card transactions at PoS terminals corresponds to an approximate increase of 0.1807 units in Net Profit, keeping all other variables constant.

The R-squared value of 0.4006 indicates that nearly 40.06% of the variation in the Net Profit is attributed to the independent variables incorporated in the model i.e. PoS terminals, Micro ATMs, Bharat QR Codes, UPI QR Codes, VoDC & VoDC. This implies a substantial degree of explanatory power. Further, the F-statistic of 6.4614, combined with a p-value approaching zero, emphasizes the considerable statistical significance of the model. In conclusion, these findings indicate that the model demonstrates a strong fit with the data.

Table 5: Fixed Effects Model Regression Summary

Statistical Metric	R Squared	F-statistic	P-value	Distribution
Value	0.4006	6.4614	0.0000*	F(6,58)
Variable	**Parameter**	**Std. Err.**	**T-stat**	**P-value**
Const	6.7446	1.4001	4.8173	0.0000*
PoS	-0.0550	0.2061	-0.2668	0.7906
Micro ATMs	0.1587	0.1448	1.0962	0.2775
Bharat QR Codes	0.1567	0.0890	1.7600	0.0837
UPI QR Codes	0.1837	0.0569	3.2281	0.0021
Total Volume of Credit & Debit Cards	-0.0694	0.0548	-1.2657	0.2107
Total Value of Credit & Debit Card Transactions at POS	0.1807	0.0941	1.9208	0.0597

*By default, Python rounds off P-values to a limited number of decimal places for presentation purposes. Thus, a p-value of 0.0000 does not directly imply that the coefficient is exactly zero; however, it does suggest a significant proximity to zero

Limitations of Study

The study aimed to explore the impact of banks' integration of financial technology on their Net Profit levels. However, a major constraint emerged due to the lack of data pertaining to expenditures incurred by each banking entity for the implementation of digital infrastructure. Consequently, the researchers had to utilize data pertaining to the bank's existing digital infrastructure, such as the number of PoS terminals, Micro ATMs etc. as a proxy measure for their integration of fintech. Secondly, the study was constrained to focus exclusively on the five largest PSBs by market capitalization, which were in existence both before and after the merger of the PSBs in April 2020. While the researcher intended for a comprehensive study covering a wider range of banks, practical constraints including data availability and scalability arising due to the merger of banks, resulted in this limitation. Lastly, the study was conducted within a limited timeframe of seven quarters, from April 2022 to September 2023, owing to data unavailability. This limitation originated from the inconsistency in reporting values within the Reserve Bank of India's data, thus restricting the researchers to conduct this study for the period of seven quarters.

Conclusion

The research revealed a significant positive relation between UPI QR codes and the profitability of selected banking institutions.UPI QR codes enable seamless and instant payments directly from bank accounts, offering a user friendly and convenient payment mechanism.The growing preference for UPI QR codes among customers and merchants is driven by its unique benefits, including contactless transactions, integration with mobile technology and robust security measures. This trend presents an opportunity for banks to reach out to the underbanked section of the society, thus expanding their customer base and potential revenue streams.

With the growing adoption of UPI QR codes, banks experience a surge in transaction volumes, and thus higher fee income from transaction processing. Further, UPI transactions involve lower costs for banks as against the traditional payment mechanisms such as cash, cheques, or cardbased transactions. The utilization of UPI QR codes eliminates the requirement for physical infrastructure like ATMs or card terminals, reducing operating expenses associated with cash handling, maintenance, and transaction processing. UPI transactions are processed digitally, thereby curtailing costs associated with manual processing. The integration of UPI QR codes as a digital payment mechanism results in cost efficiency, wider customer base, increased transaction volumes, and enhanced operational efficiency, thus yielding a positive impact on banks' profitability.

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