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An Analysis On Digital Technology Integration In Tamil Nadu Grama Bank Coimbatore

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ABSTRACT

The integration of digital technology in rural banking has transformed financial accessibility, inclusion, and operational efficiency. This study analyses the digital transition at Tamil Nadu Grama Bank in Coimbatore, exploring its adoption level, impact on customer transactions, and financial implications. A mixed-method approach is employed, integrating statistical analysis of customer feedback and qualitative insights from bank employees. The findings reveal both advantages and barriers, highlighting key factors such as digital literacy, technological infrastructure, and customer adaptation. The study concludes with strategic recommendations to enhance digital banking adoption and financial accessibility in rural banking environments.

Key Words: Digital Banking, Rural Banking, Financial Inclusion, Tamil Nadu Grama Bank (TNGB), Banking Accessibility, Customer Transactions, Digital Literacy, Technological Infrastructure, Financial Technology (FinTech).

INTRODUCTION

Digital transformation has redefined financial services, particularly in rural banking. Tamil Nadu Grama Bank (TNGB), catering primarily to rural communities, has embraced digital banking to improve accessibility and efficiency. However, challenges such as digital illiteracy, infrastructure gaps, and cybersecurity risks continue to hinder seamless adoption. This study explores TNGB's digital integration, focusing on its effectiveness in increasing financial inclusion and customer satisfaction while identifying key challenges and potential solutions.

REVIEW OF LITERATURE

- Erlando et al. (2020) assessed the relationship among financial inclusion, economic growth, poverty, and inequality using panel data from Eastern Indonesia. Through the use of a bivariate causality model and dynamic panel estimation methods, the relationship between the variables was investigated. The bivariate model's findings suggested that economic progress, financial inclusion, infrastructure, and education were all closely related to poverty. Infrastructure development, financial inclusion, and economic expansion all have strong ties to inequality. The multivariate estimation model identified economic growth and poverty reduction were strongly affected by financial inclusion. Further, the findings revealed that economic progress has a considerable result on poverty reduction through financial inclusion. As a concluding point, the study of financial inclusion has a substantial impact on economic progress and poverty and a negative impact on inequality.

- Kling et al. (2022) carried out research to describe the role of financial inclusion on income inequality in China, one of the emerging economies, using China Household Finance Survey (CHFS). The authors empirically identified education and financial inclusion have substantially improved the income of the people. In addition to that, they observed that taking loans either formal or informal worsens financial well-being and whereas saving in bank accounts improves financial well-being. Further, they stipulated education improves the income of the people.

STATEMENT OF THE PROBLEM

Although digital banking has advanced financial inclusion in urban areas, rural banks face obstacles such as poor infrastructure, lack of digital literacy, and security concerns. This research aims to evaluate Tamilnadu Grama bank's digital integration, identifying key challenges and assessing its impact on customer transactions, banking accessibility, and financial performance.

OBJECTIVES

1. To assess the current state of digital technology adoption in rural banks.
2. To study the influence of digital banking on financial accessibility and inclusion.
3. To analyze the financial and operational impact of digital banking integration.

RESEARCH GAP

Most studies on digital banking focus on urban areas, leaving a gap in understanding the challenges of rural banking adoption. This study addresses the limited research on how Tamilnadu Grama Bank digital initiatives affect financial inclusion and banking efficiency in Coimbatore's rural regions.

RESEARCH METHODOLOGY

A mixed-method research design was adopted, incorporating both qualitative and quantitative data. Surveys were conducted among 130 bank customers, while interviews were conducted with 10 bank employees. The data was analyzed using statistical tools such as ANOVA, correlation analysis, and regression models to determine digital adoption trends and financial impacts.

RESULTS AND ANALYSIS

Demographic statistics

Objective 1: To assess the current state of digital technology adoption in rural bank

Table 1

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	130	1	5	2.32	1.207
Gender	130	1	2	1.37	.484
Do you think digital banking has improved accessibility to banking services in rural areas?	130	1	3	1.70	.813
How frequently do you use digital banking services?	130	1	4	2.06	.904
What digital banking services are most commonly used in rural areas?	130	1	4	2.25	1.100
What challenges do you face or observe in accessing digital banking services?	130	1	4	1.88	1.012
Does your bank actively promote digital banking services to rural customers?	130	1	3	1.52	.729
Which digital technology solutions are currently available in your branch?	130	1	3	1.84	.805

What is the current level of digital literacy among your rural customers?	130	1	4	1.78	.838
How 2 are you with the current digital technology infrastructure in your bank branch?	130	1	4	1.71	.811
Do you think more training on digital banking usage would benefit rural customers?	130	1	3	1.44	.715
Has digital banking led to increased customer transactions in your branch?	70	1	3	1.71	.854
Do you think digital banking adoption has reduced operational costs in your branch?	130	1	3	1.50	.760
Has digital integration affected the bank's overall customer satisfaction?	130	1	3	1.35	.669
Valid N (listwise)	70				

The study reveals that young customers aged 18-28 years constitute the largest group of digital banking users, accounting for 37.7% of respondents, while older customers above 58 years show the least adoption at 1.5%, indicating a digital divide. Males dominate digital banking usage at 63.1%, but females, despite making up 36.9% of users, exhibit a higher mean adoption score of 2.65 compared to 2.01 for males, suggesting a stronger inclination towards digital banking among women. Among the available banking services, ATM usage ranks highest at 28.2%, followed by internet banking at 26.4%. UPI transactions, while less frequently used, receive the highest satisfaction score of 2.43, reflecting a preference for seamless digital payments. Despite the benefits of digital banking, key barriers remain. The most significant challenge is a lack of digital literacy, affecting 50.4% of respondents. Limited network access (20.2%), restricted service availability (22.5%), and high transaction costs (7%) further hinder widespread adoption, emphasizing the need for targeted interventions.

ANOVA ANALYSIS

Objective 2: To study the influence on banking accessibility and financial inclusion

H0: There is no significant difference between banking accessibility and financial inclusion

H1: There significant difference between banking accessibility and financial inclusion

Table 2

		Has digital banking led to increased customer transactions in your branch			
		Mean	Std. Deviation	F	Sig.
Do you think digital banking has improved accessibility to banking services in rural areas?	Yes	1.76	.786		
	No	2.14	.949	3.592	.030
	somewhat	2.22	.878		
	Total	1.96	.859		
What is the current level of digital literacy among your rural customers?	High	1.76	.751		
	Medium	2.36	1.008	3.046	.051
	Low	2.17	.924		
	Total	1.99	.876		

The ANOVA test results revealed a significant difference in perceptions regarding digital banking's impact on accessibility ($p = 0.030$). This suggests that respondents' opinions about digital banking's role in improving accessibility vary significantly. Additionally, the analysis of digital literacy levels among rural customers showed a p-value of 0.051, which is slightly above the 0.05 threshold, indicating that while differences exist in digital literacy levels, they are not strongly statistically significant.

REGRESSION ANALYSIS

Objective 3: To analyse the financial impact of digital integration

H0: There is no significant difference between the financial impact and digital integration

H1: There is significant difference between the financial impact and digital integration

Table 3

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.621[a]	.835	.357	.684

Table 4

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.359	.230		1.565	.122
	Do you think more training on digital banking usage would benefit rural customers?	.437	.117	.397	3.727	.000
	Do you think digital banking adoption has reduced operational costs in your branch?	.210	.114	.204	1.847	.069
	Has digital integration affected the bank's overall customer satisfaction?	.235	.125	.202	1.883	.064
a. Dependent Variable: Has digital banking led to increased customer transactions in your branch?						

The regression analysis shows a moderate correlation (R = 0.621) between digital banking adoption and increased customer transactions. The R Square value of 0.835 suggests that approximately 83.5% of the variation in customer transactions is explained by digital banking adoption. The model is statistically significant (p = 0.000), indicating that digital banking adoption plays a crucial role in transaction growth.

Among the predictors, digital literacy training had the strongest impact on transaction growth (B = 0.437, p = 0.000), followed by operational cost reduction (B = 0.210, p = 0.069) and customer satisfaction (B = 0.235, p = 0.064), though these latter variables were not statistically significant at the 95% confidence level.

FINDINGS

The study found that young customers aged 18-28 years are the primary adopters of digital banking, while older demographics show limited engagement. Females demonstrated a stronger positive response to digital banking compared to males, indicating a growing trend of financial inclusion among women. ATM and UPI services emerged as the most favored digital banking options, highlighting customer preference for convenient and quick transactions. The most significant barriers to digital banking adoption were digital illiteracy and infrastructure limitations, necessitating immediate intervention. Statistical findings confirmed that digital banking enhances accessibility but does not significantly drive transaction increases, suggesting that other external factors, such as financial literacy and trust in digital platforms, influence usage patterns.

SUGGESTIONS

To improve digital banking adoption in rural areas, banks should implement targeted digital literacy programs to educate customers about online transactions and security measures. Strengthening banking infrastructure, including network connectivity and mobile banking applications, will enhance service delivery and accessibility. Lowering transaction fees for rural customers can incentivize frequent usage of digital platforms. Expanding digital loan offerings, particularly microfinance options, can provide financial support to rural entrepreneurs and small-scale businesses. Increasing awareness of cybersecurity risks and best practices will build customer trust in digital banking services. Encouraging collaboration between government agencies and fintech firms can facilitate the development of rural banking technology. Lastly, establishing dedicated customer support centers, including chatbot-assisted helpdesks, will ensure quick issue resolution and foster confidence in digital transactions.

CONCLUSION

Digital banking integration at TNGB has positively impacted financial accessibility in rural areas. However, challenges such as digital illiteracy and infrastructure constraints continue to hinder full adoption. While younger users are more inclined towards digital banking, older demographics require additional support. The study highlights the need for enhanced digital literacy programs, infrastructural improvements, and policy-driven incentives to foster broader digital banking adoption in rural Coimbatore. Strengthening digital integration efforts will lead to improved financial inclusion, greater operational efficiency, and sustained economic growth in rural communities.

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