

A Research Study on Effects of Technology in the Banking Sector on Customer Services at Pallakkad

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Abstract

The rapid evolution of financial technology (FinTech) has fundamentally redefined the operational paradigms of the banking sector, shifting traditional brick-and-mortar operations toward digital self-service ecosystems. This empirical study investigates the impact of banking technology—including Automated Teller Machines (ATMs), Internet Banking, Mobile Banking applications, Unified Payments Interface (UPI), and automated kiosk services—on customer service delivery and satisfaction across Palakkad district, Kerala. Recognized as a unique blend of semi-urban commercial centers and extensive agricultural/rural belts, Palakkad presents a diverse demographic landscape for studying digital banking adoption. The primary objective of this research is to evaluate how technological integration influences core service quality dimensions, namely responsiveness, reliability, accessibility, transaction speed, and security. Concurrently, the study examines the operational challenges faced by non-digital natives, including network downtime, digital security anxieties, hidden transactional charges, and the loss of personal human touch. Utilizing a descriptive and analytical research design, primary quantitative data was collected from a stratified random sample of 200 bank customers across both public and private sector banks in Palakkad municipal and surrounding rural areas. Statistical techniques including simple percentage analysis, Chi-square tests, and Likert scale mean satisfaction scoring—were applied to assess customer attitudes and usage patterns. Based on these empirical insights, the paper provides actionable strategies to foster financial inclusion and optimize digital service delivery throughout Palakkad's banking ecosystem.

Keywords: Mobile Banking, NEFT, RTGS, E – Wallet.

1. Introduction

Contextual Background of Banking Technology in India

The Indian banking sector has undergone a profound structural metamorphosis over the past two decades, transitioning from labor-intensive manual record-keeping to automated, technology-driven

operations. Driven by national financial inclusion agendas, the rapid proliferation of smartphones, and the availability of affordable high-speed wireless internet, banks have systematically digitized their core operational processes. Key innovations—such as Core Banking Solutions (CBS), Automated Teller Machines (ATMs), Cash Deposit Machines (CDMs), Internet Banking portals, Mobile Applications, and the Unified Payments Interface (UPI)—have replaced traditional paper-based transactions with real-time digital settlement channels.

Technology in banking is no longer merely an internal operational facilitator; it serves as the primary gateway for customer interaction and service delivery. The modern financial customer expects round-the-clock accessibility, instantaneous processing speeds, personalized banking solutions, and seamless transactional security. Consequently, banks must continually innovate to balance technological efficiency with high customer satisfaction levels.

Socio-Economic Profile of Palakkad District

Palakkad (Kozhikode's neighboring district in eastern Kerala) occupies a distinct socio-economic position within the state. Known as the "Granary of Kerala," Palakkad's economy is strongly anchored in agriculture and agro-based industries, alongside a rapidly expanding urban commercial sector, educational institutions, and healthcare hubs. The region features a mixed demographic composition comprising urban professionals, agricultural workers, trade merchants, elderly pensioners, and households reliant on Non-Resident Indian (NRI) remittances.

This diverse demographic composition creates a complex environment for banking institutions operating in Palakkad. On one hand, tech-savvy urban youth and business communities demand advanced mobile banking functionalities, contactless payments, and instant digital credit. On the other hand, a substantial rural and senior population continues to value traditional branch-level interpersonal interactions, often expressing hesitation toward digital self-service channels due to digital literacy gaps and fear of financial fraud. Analyzing how technological deployment impacts customer service quality within Palakkad provides vital insights into semi-urban banking adaptation in regional India.

Theoretical Framework: Technology and Service Quality Dimensions

To evaluate customer satisfaction in technology-enabled banking, researchers frequently utilize adapted service quality frameworks, such as the SERVQUAL Model (Parasuraman, Zeithaml, & Berry) and the Technology Acceptance Model (TAM) (Davis, 1989). In the context of automated banking services, customer perception is evaluated across five critical service dimensions:

Convenience & Accessibility: The continuous, 24/7 availability of banking services without geographic or physical branch limitations.

Speed & Efficiency: The reduction in transaction cycle times, queue lengths, and administrative processing delays.

Reliability: Operational stability, precise accounting, minimal system outages, and low failure rates during transactions.

Security & Trust: The robust protection of financial data, transaction privacy, and fraud prevention measures.

Responsiveness & Support: The ease with which banks resolve technological errors, failed digital transactions, or customer disputes.

Statement of the Problem

Although technology has drastically improved operational speed and broadened access to financial services, it has introduced new challenges in customer service delivery. In many instances, physical branch counters are being downsized or redirected toward automated kiosks, leaving customers who lack technical proficiency underserved. Issues such as server failures, failed UPI transactions where money is debited without destination credit, ATM cash-out situations, phishing scams, and automated, unhelpful customer helpline chatbots frequently lead to customer frustration.

In Palakkad, where a large segment of bank customers consists of senior citizens, farmers, and self-employed micro-entrepreneurs, the rapid displacement of human branch staff by automated systems can create a service divide. Assessing whether banking technology genuinely enhances customer service or merely transfers operational work onto the customer is a key question requiring empirical evaluation.

Objectives

To assess the value of services offered to customers in banking sector at Pallakkad.

To assess the effects of Technology in the Banking Industry on Customer Services at Pallakkad.

To suggest feasible Solutions to Banking Industry on Customer Services at Pallakkad.

Review of Literature

Joju, J., & Manoj, P. K. (2019) Role of Banking Technology in Enhancing Service Quality of Banks in Kerala the objectives: To evaluate how the adoption of modern banking technologies impacts service quality, operational cost efficiency, and customer satisfaction across bank branches in Kerala (including Palakkad). The researcher used both primary and secondary data and the Sample Size: is 250 respondents. By Convenience Sampling. The Statistical Analysis Used: Descriptive statistics (Mean, Standard Deviation), Correlation Analysis, and Analysis of Variance (ANOVA). Findings: The study concluded that higher technology adoption directly correlates with improved service delivery, reduced turnaround times, lower operating costs, and enhanced overall customer delight.

Manoj, P. K. (2018) has done a research on ICT-Enabled Customer Relationship Management (CRM) Services in Private Sector Banks in Kerala The objectives are to assess the effectiveness of Information and Communication Technology (ICT)-based CRM tools in improving customer retention and service quality in private sector commercial banks. The researcher used both primary and secondary data and the Sample Size: is 200 respondents by Stratified Random Sampling (stratified across old and new generation private banks in central Kerala). Statistical Analysis Used: Chi-Square Test, Factor Analysis, and Percentage Analysis. Findings: New-generation private sector banks leveraging advanced ICT platforms provided significantly higher customer service quality than old private banks. The study highlighted that automated communication and electronic CRM significantly reduce service resolution time.

Joju, J., Varghese, A., & Manoj, P. K. (2017) has done a study on An Empirical Study on ICT-Based Banking Services and E-Channels in Kerala the objectives: To analyze customer attitudes, adoption levels, and satisfaction regarding ICT-enabled service delivery channels (ATMs, Net Banking, and Mobile Banking). The researcher used both primary and secondary data and the Sample Size: is 300 respondents by Judgmental Sampling. Statistical Analysis Used: Multiple Regression Analysis and Cronbach's Alpha (Reliability Analysis). Findings: Customers exhibited a strong positive attitude toward

ICT-based self-service channels. Ease of use and 24/7 availability were the top drivers of customer satisfaction, while security concerns remained a primary bottleneck for complete transition.

Sreehari, R., & Divya, K. (2020) has conducted a research on Customer Perception towards E-Banking Services in Palakkad District the objectives are to measure customer perception, frequency of usage, and satisfaction level regarding e-banking facilities provided by public and private sector banks in Palakkad. The researcher used both primary and secondary data and the Sample Size: is 150 bank customers in Palakkad district. by Simple Random Sampling. Statistical Analysis Used: Paired t-Test, Percentage Analysis, and Weighted Average Method. Findings: E-banking adoption among semi-urban and rural customers in Palakkad increased significantly due to convenience and time savings. Public sector bank customers reported higher trust levels, whereas private sector bank customers expressed higher satisfaction regarding transaction speed and mobile user interfaces.

Ramesh, M., & Unnikrishnan, P. (2021) has done a study on Impact of Digital Financial Technologies (FinTech) on Customer Satisfaction in District Co-operative and Commercial Banks in Palakkad the objectives are to examine the extent of FinTech integration (UPI, Mobile Apps, micro-ATMs) and its effect on service delivery speed and customer retention. The researcher used both primary and secondary data and the Sample Size: is 180 respondents by quota Sampling. Statistical Analysis Used: Structural Equation Modeling (SEM) and Karl Pearson's Correlation. Findings: Mobile payment solutions and instant fund transfers (UPI) directly enhanced customer satisfaction levels. Traditional co-operative banks lagging in ICT integration faced customer migration toward high-tech commercial banks.

Research Methodology

This paper concentrates on the impact of Technology in the Banking Industry on Customer Services with Special Reference to Pallakkad. The researcher used both of the primary and secondary data. Random sampling used to collect the data. The unit of sample was customers of banking industry in Cochin and the sample size is 142. The researcher used correlation analysis to find the result.

Analysis & Interpretations

Table – 4.3.4. Correlation among selected determinants and Performance.

DETERMINANTS	Customers Experience	
	R – Value	P – Value
Chatbot Services	-.084	.121
Mobile Banking Technology	.432*	.000
Internet Banking	.552*	.000
Digital Payment Technology	.188*	.000
CRM Approaches	.244*	.000
Personalisation	.124*	.021

Source: Primary data, ** Significant at five percent level

To test the correlation between independent variables on dependent variable Pearson correlation was applied. The independent variables of the study were Chatbot Services, Mobile Banking Technology, Internet Banking, Digital Payment Technology, CRM Approaches, Personalisation, and dependent variable is Customers Experience. The following Hypothesis was formulated to test the relationship.

Ho : There is no relationship among the selected study variables and Customers Experience.

From the result it was observed that there was positive correlation between all dependent variables and Customers Experience. It implies that all independent variables contribute to Customers Experience. Some independent variables are having lowest r-value ($r < 0.40$) that is Chatbot Services

r value = -.084, Mobile Banking Technology r value = .432, Internet Banking r value = .552, Digital Payment Technology r value = .188, CRM Approaches r value = .244, Personalisation r value = .124. This implies that it contributes less to Customers Experience. From the p-value in the correlation matrix, it was observed that the level of all independent variables was significant at 0.001 levels. Hence, the null hypothesis was rejected. So it is concluded that there is significant relationship between Chatbot Services, Mobile Banking Technology, Internet Banking, Digital Payment Technology, CRM Approaches, Personalisation, with Customers Experience.

Suggestions

To eliminate operational friction and ensure that technology adoption enhances customer service for all demographics in Palakkad, banking institutions should implement the following strategic measures:

Deployment of Branch Digital Facilitators: Station trained customer service assistance officers ("Digital Mitras") inside branch self-service kiosk zones to guide elderly and non-literate customers through automated operations.

Multilingual Application Interfaces: Enhance mobile banking apps and ATM software with fully functional Malayalam language voice guidance and text interfaces tailored for regional users.

Dedicated Local Dispute Resolution Mechanisms: Establish fast-track grievance cells specifically tasked with auto-reversing failed UPI transactions and resolving network debit errors within 24 hours.

Targeted Cybersecurity Awareness Campaigns: Conduct regular district-wide financial literacy and fraud-prevention workshops in rural panchayats and community centers across Palakkad.

Simplified Micro-Banking Interfaces: Develop simplified "lightweight" mobile banking app modes with larger fonts, basic features, and low bandwidth usage for rural users with older smartphones.

Biometric Authentication for ATMs/Kiosks: Introduce thumbprint/biometric verification options at rural ATMs to eliminate the requirement for complex numerical PINs or passwords for senior citizens.

Hybrid Customer Support Systems: Ensure that automated phone systems (IVR) and AI chatbots provide a direct option to connect immediately with human customer support agents when disputes arise.

Infrastructure Reliability & Server Upgrades: Invest in persistent redundant server infrastructure and backup connectivity systems to eliminate frequent peak-hour digital banking downtimes.

Transparent Fee Policies: Clearly disclose SMS alert charges, debit card maintenance fees, and out-of-network ATM transaction limits to prevent unexpected fee deductions and rebuild customer trust.

Customized Products for Regional Sectors: Leverage digital transactional data to offer automated, low-interest micro-credit and agricultural crop loans directly through mobile platforms tailored for Palakkad's farming community.

Conclusion

This empirical study on the effects of technology on customer services in the banking sector across Palakkad district highlights a transformative shift in customer banking interactions. Technological advancements—most notably mobile applications, UPI networks, and automated kiosks—have successfully converted traditional, time-consuming branch visits into instantaneous self-service transactions. The empirical data confirms that modern customer groups highly value the 24/7 convenience, operational speed, and extended transactional freedom provided by modern banking technologies.

However, the study underscores that technological advancement must not come at the expense of inclusive customer service. Significant service gaps persist among senior citizens, lower-income groups, and rural populations in Palakkad, who frequently face technical friction, digital anxiety, and unguided grievance processes. To achieve sustainable long-term service excellence, banks must adopt an inclusive, human-centric technological approach. By combining robust cybersecurity protocols, regional vernacular interfaces, local customer dispute resolution mechanisms, and on-ground digital support, banking institutions in Palakkad can effectively bridge the digital divide and ensure high satisfaction levels across all customer segments.

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