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Dr. Pradeesh NM
Associate Professor of
Commerce, CKG Memorial
Government College,
Perambra, Kozhikode, Kerala,
India

Dr. Navya AH
Assistant Professor of
Commerce, Panampilly
Memorial Government College,
Chalakudy, Thrissur, Kerala,
India

Problems encountered during the process of digital banking services: A customer centric study in the banking sector of Kerala

Pradeesh NM and Navya AH

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Abstract
The transition from traditional banking to digital platforms has revolutionized the delivery of financial services globally. In India, Digital Banking has been extensively adopted across both public and private sector banks. While it offers substantial benefits such as cost efficiency, convenience, and improved customer service, many users continue to face notable challenges in its usage. This study seeks to examine the issues encountered in the delivery of Digital Banking services in Kerala and evaluate their impact on customer satisfaction. Adopting a customer-centric perspective, the research focuses on retail banking clients of selected scheduled commercial banks in the state. The findings provide valuable insights into the factors impeding the adoption of Digital Banking, emphasizing the need for stronger security measures, robust infrastructure, and enhanced customer support. The outcomes are expected to inform strategies aimed at increasing the uptake of Digital Banking services and to contribute to the existing literature, particularly within the framework of the Technology Acceptance Model (TAM).

Introductions
1.1 Background of the Study
Banking is a highly information-intensive sector that increasingly relies on Information and Communication Technology (ICT) to deliver services. The evolution from traditional to technology-enabled banking has been driven by financial liberalization and technological advancements. The adoption of Digital Banking enables customers to conduct transactions through online platforms, mobile applications, and other digital interfaces. The Reserve Bank of India (RBI) and the Government of India have implemented policies to promote digital payments, ensuring their security and encouraging customer migration from cash to electronic modes. Globally, ICT has reshaped the structure of banking by fostering innovation, efficiency, and customer-centric service delivery. In India, especially post-economic liberalization, banks have automated their operations to meet the needs of a digitally literate population. With increasing internet penetration and mobile usage, banks have introduced Digital Banking to offer real-time services such as fund transfers, bill payments, account management, and investment handling.

1.2 Statement of the Problem
While Digital Banking has emerged as a revolutionary alternative to traditional banking, offering customer's convenience, accessibility, and speed, several persistent challenges continue to hinder its optimal adoption and usage. A significant proportion of customers, particularly those with limited digital literacy, encounter difficulties in navigating complex online banking platforms and mobile applications. This lack of familiarity often leads to errors, frustration, and a lack of confidence in using digital financial services. Moreover, security concerns remain a major deterrent to the full-scale adoption of digital banking. Issues such as phishing attacks, identity theft, data breaches, and online fraud create a sense of vulnerability among users, undermining their trust in digital transactions. These fears are intensified by frequent media reports of cybercrimes targeting financial institutions and customers alike. In addition to security risks, technical challenges also contribute to customer

Corresponding Author:
Dr. Pradeesh NM
Associate Professor of
Commerce, CKG Memorial
Government College,
Perambra, Kozhikode, Kerala,
India

dissatisfaction. Problems such as system downtime, delayed transactions, poor mobile app performance, and slow website loading often interrupt the smooth functioning of digital banking services. Such disruptions not only affect transaction efficiency but also reduce the perceived reliability of the digital platforms. Furthermore, inadequate customer support remains a critical issue. Many users face difficulties in receiving timely assistance when encountering problems with digital banking systems. The lack of personalized guidance and limited responsiveness of customer service channels further alienate less tech-savvy users. Consequently, despite the widespread availability and promotion of digital banking services by both public and private sector banks, a considerable portion of customers remain hesitant to fully rely on these platforms. Understanding the underlying issues affecting user experience and satisfaction is therefore essential to improve digital banking adoption and to ensure that technological advancements translate into real benefits for customers.

1.3 Objectives of the Study
- To explore the problems faced by customers during the use of Digital Banking.
- To analyze the impact of these problems on customer satisfaction in Kerala's banking sector.

1.4 Hypothesis
H_0: There is no significant effect of problems encountered during the delivery of Digital Banking on customer satisfaction in public and private sector banks.

2. Significance of the Study
Digital Banking holds transformative potential for customer engagement and banking performance. The findings of this study are expected to assist bank managers in identifying challenges and implementing strategic interventions. It will also inform the design of customer training programs to foster digital literacy and promote Digital Banking usage. The study contributes to theoretical frameworks, particularly the Technology Acceptance Model (TAM), by identifying factors affecting Digital Banking adoption. It serves as a diagnostic tool to evaluate customer preferences, offering insights for practitioners and researchers alike.

3. Scope of the Study
This study is confined to Digital Banking services offered by selected scheduled commercial banks in Kerala. It focuses on understanding customer perceptions while excluding the viewpoints of service providers. The research analyzes individual usage patterns across various digital banking channels, including internet banking, mobile banking, e-wallets, card transactions, and digital investment services. Geographically, the study is limited to Kerala, a state recognized for its advanced ICT infrastructure and strong digital governance framework. The investigation further explores key challenges faced by customers in the digital banking environment specifically customer support-related issues, service problems, web-based problems, and password-related issues and examines how these factors influence overall customer satisfaction. Kerala was chosen as the research site due to its status as India's first digital state and its emphasis on e-governance. Despite having a strong digital infrastructure and growing internet

penetration, the pace of Digital Banking adoption in Kerala remains modest compared to other advanced states. Cultural, technological, and trust-related factors play a role in shaping customer behavior. Understanding these local dynamics provides valuable insights into the applicability of global models like TAM within regional contexts.

4. Limitations of the Study
This study acknowledges the following limitations:
1. **User Group Focus**: The research targets current Digital Banking users in scheduled commercial banks. Findings may not be generalizable to non-users or institutional clients.
2. **Sampling Methodology**: A non-probabilistic convenience sampling method was employed due to confidentiality constraints, which may limit the representativeness of the sample.
3. **Cross-Sectional Design**: Data were collected at a single point in time. Longitudinal studies are recommended for understanding evolving customer behavior.
4. **Voluntary Participation**: Data were gathered in a voluntary setting. Therefore, findings may not translate directly to contexts where Digital Banking use is mandatory or incentivized.

5. Challenges in Digital Banking
Digital Banking has significantly reshaped the financial services sector in India by enhancing convenience, accessibility, and transaction speed. Despite these advantages, several barriers continue to affect the smooth adoption of digital financial services, including issues related to cybersecurity, technical performance, customer literacy, and service accessibility. This study also reviews the existing literature on the challenges encountered by Indian banking customers in adopting Digital Banking services, focusing on themes such as security risks, operational inefficiencies, literacy barriers, customer service inadequacies, and regulatory constraints.

5.1 Security Concerns and Fraud Risks
One of the most pressing concerns in Digital Banking is cybersecurity. Gupta and Sharma (2021) noted that the rise in cyber fraud incidents such as phishing, hacking, and data breaches is largely attributable to weak authentication protocols and a lack of customer awareness. Similarly, Reddy *et al.* (2022) found that identity theft and phishing attacks have eroded consumer trust in online banking platforms. The increasing sophistication of digital fraud highlights the urgent need for banks to strengthen security frameworks and implement robust customer education programs.

5.2 Technical and Operational Issues
Digital Banking systems frequently face technical disruptions, such as transaction failures, server downtime, and poor internet connectivity. Patel (2020) reported that system malfunctions during high-traffic periods negatively impact customer satisfaction and trust. Moreover, Kumar and Singh (2021) emphasized that rural regions in India suffer from inadequate digital infrastructure, resulting in reduced access to seamless banking services and widened inequality in digital inclusion.

5.3 Lack of Financial and Digital Literacy
Digital and financial literacy remain critical barriers to the effective utilization of Digital Banking platforms. Mehta and Verma (2022) revealed that a significant proportion of customers, especially those in rural and semi-urban areas, struggle to navigate Digital Banking interfaces, leading to transactional errors and increased vulnerability to scams. These findings underscore the necessity for comprehensive financial literacy programs tailored to different demographic segments.

5.4 Customer Service and Redressal Mechanisms
Efficient and responsive customer support is essential for fostering user confidence in Digital Banking. However, research by Choudhury and Das (2023) highlighted that delays in complaint resolution and the impersonal nature of automated support systems frequently leave customer issues unresolved. Such inefficiencies diminish customer satisfaction and trust, especially when dealing with complex technical or financial problems.

5.5 Digital Divide and Accessibility Issues
Despite the growing popularity of Digital Banking, disparities in digital access continue to persist. Roy and Bhattacharya (2021) argued that individuals from economically weaker sections, senior citizens, and rural populations often lack access to smart phones, stable internet connections, and digital training. These limitations contribute to a widening digital divide, restricting financial inclusion for vulnerable groups.

5.6 Regulatory and Compliance Challenges
Frequent changes in banking regulations and compliance protocols can confuse customers and lead to unintentional errors. Mishra (2023) pointed out that inconsistent policy updates and evolving compliance requirements create friction in customer engagement, especially for those with limited exposure to digital environments. There is a growing need for user-friendly regulatory communication and simplification of compliance procedures.

6. Literature Review
- In addition to issue-based studies, several researchers have examined broader customer perceptions of Digital Banking adoption in India:
- Adams, Nelson, and Todd (1992) [1] evaluated the applicability of the Technology Acceptance Model (TAM) across five different application contexts, including word processors, graphics, spreadsheets, and email systems. Their findings confirmed that TAM maintained its consistency and validity in explaining users' acceptance of information technologies.
- Segal and Grover (1993) observed that perceived usefulness (PU) and perceived ease of use (PEOU) may vary across technologies and organizational contexts. They cautioned against overgeneralizing TAM constructs and recommended incorporating moderating variables to address its limitations.
- Igbaria and Iivari (1995) [3] proposed an extended TAM by including computer self-efficacy as an external variable, along with organizational support and user experience. Their study involving 450 microcomputer users revealed that PU had a strong direct effect on usage behavior, while PEOU influenced usage indirectly through PU.
- Igbaria, Guimaraes, and Davis (1995) [3] explored the influence of individual, organizational, and system characteristics on TAM constructs. Their findings confirmed that these external variables significantly affected both PU and PEOU.
- Seddon and Kiew (1996) [5] emphasized the role of system quality in determining perceived usefulness. They argued that system ease of use and convenience enhanced the likelihood of system adoption.
- Agrawal and Prasad (1999) [6] examined the mediating effects of individual differences such as education, experience, and training on TAM constructs. Their findings indicated that three of the five external variables had significant effects on PEOU, while training and tenure had no notable influence.
- Venkatesh and Davis (2000) [7] extended TAM by integrating output quality as an external variable and established it as a significant predictor of perceived usefulness.
- Gefen, Straub, and Boudreau (2000) [8] identified trust as a critical factor influencing users' adoption of web-based commercial transactions. They underscored the impact of perceived risk on technology acceptance.
- Chau (2001) [9] investigated the influence of computer self-efficacy and attitude on usage behavior among business students. Structural equation modeling results validated PU as a strong predictor of behavioral intentions and showed that including self-efficacy enhanced TAM's explanatory power.
- Suh and Han (2002) [10], in a South Korean context, expanded TAM by integrating trust and perceived credibility. Their study concluded that PU, PEOU, and trust were significant determinants of internet banking acceptance.
- Liao and Cheung (2002) [11] found that customers were hesitant to use online banking due to data security concerns and uncertainty in the virtual environment.
- Wang *et al.* (2003) [12] extended TAM with credibility and computer self-efficacy as constructs among Taiwanese internet banking users. They discovered that PEOU was the most influential predictor of behavioral intention, followed by PU and credibility.
- Venkatesh, Morris, Davis, and Davis (2003) [13] analyzed eight technology acceptance models and found that incorporating moderating variables significantly improved predictive validity.
- Gefen, Karahanna, and Straub (2003) [14] integrated trust with PU and PEOU in an online shopping context. Their field study revealed that trust, PU, and PEOU were all significant determinants of behavioral intention, with PU being the most dominant factor.
- Sabherwal, Jeyaraj, and Chowa (2004) [15] analyzed system and information quality and found both dimensions to be positively related to system usage and user satisfaction.
- McPhail and Fogarty (2004) [16] combined constructs from the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) with TAM to study older consumers in New Zealand. Results showed that self-efficacy influenced both PU and PEOU, whereas subjective norms had limited impact.

- Pikkarainen *et al.* (2004) [17] concluded that privacy, security, and PU significantly influenced internet banking adoption.
- Shih and Fang (2004) [18] applied a hybrid model of TRA and TAM in Taiwan and found PU and PEOU to be significant predictors of attitudes toward technology use.
- Ong, Lai, and Wang (2004) [12] examined engineers' acceptance of e-learning systems and found that computer self-efficacy strongly influenced PU and PEOU. All three constructs PU, PEOU, and perceived credibility positively affected behavioral intention.
- Yang, Jun, and Peterson (2004) [20] proposed a conceptual framework for online service quality and identified responsiveness as the most critical determinant of customer satisfaction in online banking.
- Kenneth (2004) applied TAM to study mobile commerce adoption in Singapore, finding that innovativeness, past behavior, and demographics (age, gender) significantly influenced adoption.
- Lai and Li (2005) [22] demonstrated that TAM remained valid across different demographic and technological profiles, supporting its applicability in internet banking.
- Lichtenstein and Williamson (2006) [23] studied Australian internet banking users and found that convenience, self-efficacy, usability, and bank support were major factors influencing adoption, while perceived risks and costs also played crucial roles.
- Paranjpye *et al.* (2020) [24] conducted a study on 200 participants and reported that users below 30 years were the most active Digital Banking users, particularly for fund transfers. They emphasized the importance of 24/7 accessibility and highlighted barriers such as financial illiteracy, technological complexity, and security concerns.

Patil and Pawar (2025) [27] examined the challenges students face while using Digital Banking services at KBC North Maharashtra University, Jalgaon, through a structured questionnaire of 100 participants. The study identified ten key challenge areas, including navigation, security, technical issues, and user awareness, and found gender-based differences, with female students experiencing more security and technical problems and male students reporting internet connectivity issues. The findings highlight the need for banks to make digital platforms more user-friendly for young users.

Krishnan and Sheeja (2020) [26] explored the status, challenges, and prospects of e-banking in Palakkad district, Kerala, using a qualitative case study approach. They noted that e-banking, including internet, mobile, and telephone banking, has transformed traditional banking practices and offers benefits such as convenience, cost-effectiveness, and time efficiency. Despite some technological and security challenges, the study concluded that the prospects of e-banking are positive due to increasing digital literacy and improved communication infrastructure.

Kamalasaravanan and Vigneshwaran (2024) [25] investigated issues faced by Axis Bank customers in Tirupur City using a sample of 120 participants across demographics and digital literacy levels. The study revealed challenges such as login problems, transaction errors, and security concerns, but found no significant relationship between age and efficiency or income. The authors recommended improvements in user interface design, security measures, and customer support to enhance trust and usability of online banking services.

Patil and Pawar (2025) [27] emphasized the importance of understanding customer difficulties in Digital Banking to improve platform usability and security. Their study highlighted that technical and security barriers, particularly for students, can affect adoption and satisfaction levels. The authors suggested that addressing these challenges through policy and design improvements can make Digital Banking systems more inclusive and efficient.

The reviewed literature reveals that while Digital Banking has modernized financial services in India, it remains burdened by several critical challenges. These include cybersecurity threats, operational issues, digital illiteracy, inadequate customer service, accessibility limitations, and regulatory confusion. To enhance Digital Banking adoption and user satisfaction, stakeholders including banks, regulators, and policymakers must adopt a multi-pronged strategy focusing on infrastructure development, digital literacy, robust support systems, and transparent compliance processes.

The research enhances existing literature on Digital Banking and TAM by operationalizing key constructs such as perceived ease of use, trust, and security. Drawing from Davis's (1989) TAM framework, the study offers a validated model for understanding Digital Banking adoption behavior in Kerala. The results are expected to influence both academic inquiry and managerial decision-making, offering a foundation for future empirical studies.

6.1 Problems Encountered During Digital Banking
6.1.1. Customer Support-Related Issues
Customer support is a critical component of digital banking, but many users face challenges when trying to resolve issues. Long response times often frustrate customers who need immediate assistance. Automated chatbots, though helpful, sometimes provide generic or irrelevant answers. Lack of access to human representatives can make complex problems harder to solve. Customers frequently report difficulty reaching support through email, phone, or app channels. Miscommunication or unclear guidance from support staff can lead to errors in banking transactions. Many banks have limited support hours, creating inconvenience for users in different time zones. Slow problem resolution reduces customer satisfaction and trust in digital services. Some customers experience repeated follow-ups without effective solutions. Overall, inadequate customer support can negatively affect the perception and adoption of digital banking.

6.1.2. Service Problems
Service problems are common in digital banking and can disrupt financial activities. Transaction failures, such as unsuccessful fund transfers or delayed payments, are frequent issues. Users may encounter errors while paying bills or using online banking features. System downtimes or maintenance can prevent access to essential banking services. Many digital banking apps experience glitches when handling large transaction volumes. Poor integration between mobile apps and core banking systems can create inconsistencies in account information. Unauthorized transactions and errors in account statements cause worry and inconvenience. Customers often face difficulties in

reconciling discrepancies due to service lapses. Slow updates of account balances reduce confidence in digital platforms. Continuous service interruptions discourage users from relying entirely on digital banking.

6.1.3. Web-Based Problems

Web-based problems include technical difficulties faced while accessing banking websites or mobile apps. Slow website loading times affect usability and customer experience. Browser compatibility issues can prevent customers from logging in or performing transactions. Security warnings or frequent timeouts create anxiety and reduce trust. Some websites may crash or freeze during peak hours, especially during high traffic periods. Navigational problems make it difficult for users to locate key functions or perform tasks. Poorly designed interfaces contribute to user frustration and errors. Inadequate support for multiple devices, such as tablets or smartphones, limits accessibility. Frequent updates without proper guidance can confuse users. Web-based problems reduce the overall efficiency and convenience of digital banking services.

6.1.4. Password Problems: Password-related issues are a common challenge in digital banking, impacting both security and accessibility. Many users forget their passwords due to complex requirements or infrequent logins. Resetting passwords often involves multiple verification steps, which can be cumbersome. Weak passwords make accounts vulnerable to hacking and fraud. Forgotten passwords can temporarily block access to accounts, causing inconvenience. Users may struggle with OTP (one-time password) delivery failures or delays. Complex password policies can confuse less tech-savvy customers. Some platforms require frequent password changes, which increases the likelihood of errors. Security breaches related to password compromise pose serious risks to users' funds. Overall, password management is a key concern for customer satisfaction and trust in digital banking.

7. Analysis and Interpretation

7.1 Descriptive Statistics on Customer Support Problems

Table 1 presents the descriptive statistics for customer support-related issues during the delivery of Digital Banking.

Table 1: Descriptive Statistics on Customer Support Problems (N = 1627)

Item	Mean	SD
Lack of training and guidance on the use of DIGITAL BANKING	3.80	1.144
Inadequate support from bank employees	3.19	1.227
Poor response from bank on complaints	3.90	1.041
Delayed support from complaints redresser agencies	3.92	1.100
Total Mean Score	3.70	1.128

Source: Computed from Primary Data

The total mean score for customer support problems is 3.70, indicating that customers generally "agree" with these issues. The highest customer support problem identified is the "Delayed support from complaints redresser agencies," with a mean score of 3.92.

7.2 Descriptive Statistics on Service Problems

The table below outlines the descriptive statistics for service-related problems:

Measuring Items of Service Problems	Mean	SD
Transaction failed but amount deducted	3.45	1.341
The service I want is not available through Digital Banking	3.25	1.323
The option I want is not working properly	3.39	1.417
Non-delivery of cheque book ordered online in time	3.20	1.341
Unsuccessful transaction but service charge deducted	3.48	1.260
Lengthy procedure to finish transaction	3.19	1.017
Occurrence of transaction errors	3.62	1.347
Mean Score	3.36	1.292

Source: Computed from Primary Data

The total mean score for service problems is 3.36, indicating that customers "agree" with these issues. The most significant problem identified is the "Occurrence of transaction errors," with a mean score of 3.62.

7.3 Descriptive Statistics on Web-Based Problems

The table below presents the descriptive statistics for web-based problems:

Measuring Items of Web-Based Problems	Mean	SD
Low speed of system	3.42	1.131
Connection lost while processing transaction	3.49	1.091
No access to Digital Banking website during the day	2.93	1.149
Account temporarily locked by banks	3.16	0.948
Unable to operate account	2.54	1.218
Mean Score	3.11	1.107

Source: Computed from Primary Data

The total mean score for web-based problems is 3.11, indicating customer agreement with the issues. The most significant problem encountered is "Connection lost while processing transaction," with a mean score of 3.49.

Measuring Items of Password Problems	Mean	SD
Problem of forgetting username/password	3.92	1.161
Unable to get OTP in time	4.12	1.291
Receipt of unknown e-mails asking for ID	3.56	1.149
Delay in getting new password after forgetting old password	3.79	1.948
Mean Score	3.84	1.387

Source: Computed from Primary Data

The total mean score for password problems is 3.84, indicating agreement with these issues. The most significant problem encountered is "Unable to get OTP in time," with a mean score of 4.12.

7.5 Effect of Problems encountered during Digital Banking Service delivery on Customer Satisfaction in Public and Private Sector Banks

H0: There is no significant effect of problems encountered during Digital Banking service delivery on customer satisfaction in public and private sector banks.

Multiple regression analysis was conducted to examine the effect of four independent variables (customer support problems, service problems, web-based problems, and password problems) on customer satisfaction (Y):

Regression Equation

$$Y = a_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4$$

Where,

- $a_0a_0a_0$ = constant value
- $b_1,b_2,b_3,b_4b_1, b_2, b_3, b_4b_1,b_2,b_3,b_4$ = unstandardized beta coefficients for each variable

7.4 Descriptive Statistics on Password Problems
The table below outlines the descriptive statistics for password-related issues:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.855	0.731	0.726	0.233

Source: Computed from Primary Data

The Adjusted R^2 value of 0.726 indicates that the four independent variables explain 72.6% of the variance in customer satisfaction. This confirms that the problems encountered during Digital Banking delivery have a significant effect on customer satisfaction.

ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	163.708	4	40.927	538.51
	Residual	123.479	1622	0.076	
	Total	287.187	1626		

Source: Computed from Primary Data
Significant at 5% level

The ANOVA results show that the p-value (0.000) is less than 0.05, indicating that the regression model is statistically significant. Hence, the null hypothesis is rejected, confirming a significant relationship between the variables.

Coefficients of Multiple Regression Analysis

Model	Variables	B	SE	Beta	t	Sig.
1	(Constant)	-2.642	0.107		-18.732	0.000*
	Customer Support Problems	-0.714	0.031	-0.735	-12.674	0.002*
	Service Problems	-0.666	0.041	-0.622	-9.840	0.000*
	Web-Based Problems	-0.594	0.041	-0.599	-5.814	0.000*
	Password Problems	-0.735	0.037	-0.766	-15.839	0.001*

Source: Computed from Primary Data
Significant at 5% level

The coefficient table reveals that all predictor variables (customer support problems, service problems, web-based problems, and password problems) have a significant negative effect on customer satisfaction. The highest negative effect is attributed to password problems, with a beta coefficient of -0.766 and a significance value of 0.001.

8. Summary
The study concludes that the problems encountered during the process of digital banking service delivery have a significant and negative impact on customer satisfaction in both public and private sector banks. Among the various problem dimensions examined customer support, service, web-based, and password-related issues all were found to

influence customer satisfaction adversely. The regression results revealed that these four factors together explain a substantial portion (72.6%) of the variation in customer satisfaction, emphasizing the critical role of efficient digital service management in banking. Password-related problems, particularly delays in receiving OTPs and difficulties in resetting credentials, emerged as the most severe deterrents to a satisfactory digital banking experience. Similarly, inadequate customer support, transaction errors, and technical issues such as connection failures further contributed to customer frustration. These findings underline the urgent need for banks to enhance their digital infrastructure, ensure timely redressal mechanisms, improve staff support and training, and strengthen cybersecurity and

authentication processes. Addressing these challenges will be essential for improving service quality, building customer trust, and sustaining satisfaction in the rapidly evolving digital banking environment.

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