Journal DOI: 10.36713/epra1013 | SJIF Impact Factor (2026): 8.748 ISSN: 2347-4378
EPRA International Journal of Economics, Business and Management Studies (EBMS)
Volume: 13 | Issue: 8 | August 2026 -Peer-Reviewed Journal

ADOPTION, SECURITY PRACTICES, AND CHALLENGES OF DIGITAL BANKING PRODUCTS AND SERVICES: A STUDY WITH REFERENCE TO BALLARI DISTRICT

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ABSTRACT
Digital banking has become an important part of the modern banking system because it allows customers to access banking services quickly and conveniently without visiting a bank branch. Services such as internet banking, mobile banking, Unified Payments Interface (UPI), debit cards, credit cards, Automated Teller Machines (ATMs), mobile wallets and QR-code payments have changed the way customers conduct financial transactions. The present study examines the adoption of digital banking products and services, customers' security practices and the challenges experienced while using digital banking services in Ballari District.

The study adopted a descriptive research design. Primary data were collected from customers through a structured questionnaire, while secondary information was obtained from books, journals, research articles, RBI publications, bank reports and reliable websites. The study used convenience sampling with a sample size of 102 respondents. Percentage analysis, mean, standard deviation, ANOVA and Chi-square tests were used for analysing the data. Microsoft Excel and SPSS were used for data analysis.

The findings indicate that respondents generally have a positive opinion about digital banking. Digital banking is considered useful because it saves time, reduces visits to bank branches and provides faster transactions. Customers also reported awareness of security practices such as maintaining password and PIN confidentiality, checking transaction details and using OTP and security alerts. At the same time, cyber fraud, phishing, hacking, poor internet connectivity, server problems and technical failures continue to create concerns among customers.

The study concludes that digital banking has become an essential part of banking in Ballari District. Banks need to strengthen cybersecurity, improve customer awareness, upgrade digital banking applications, provide faster customer support and improve digital infrastructure. These measures can increase customer confidence and encourage wider adoption of digital banking services.

KEYWORDS: *Digital Banking, Cyber Security, Phishing, UPI, Perceived Use, Perceived Risk.*

1. INTRODUCTION

The banking sector has undergone significant changes because of the rapid development of information and communication technology. Traditionally, customers had to visit bank branches to deposit or withdraw money, transfer funds and make payments. Digitalisation has changed this process by allowing customers to access banking facilities through internet-based systems at convenient times and locations. Digital banking includes internet banking, mobile banking, UPI, debit cards, credit cards, ATMs, IMPS, NEFT, RTGS, mobile wallets, QR-code payments and digital loan services. These facilities enable customers to transfer money, pay bills, recharge mobile phones, check account information and perform other banking activities without visiting a branch.

The growth of smartphones, internet facilities and digital-payment infrastructure has contributed to the increased use of digital banking. National initiatives such as Digital India, Pradhan Mantri Jan Dhan Yojana and Aadhaar-based authentication have also supported the development of electronic banking services. The COVID-19 pandemic further encouraged customers to use online and mobile banking because physical movement and branch visits were restricted.

Digital banking provides several benefits. Customers can access banking services throughout the day, transfer funds quickly and reduce the time and cost associated with traditional banking. Banks can also improve operational efficiency by providing more services through digital platforms.

However, digital banking also creates challenges. Cybercrime, phishing, identity theft, online fraud, data breaches, unauthorised access, poor internet connectivity, software problems and limited digital literacy can affect customers' willingness to use digital banking. Security mechanisms such as OTP, two-factor authentication, biometric authentication, encryption, transaction alerts and continuous monitoring are therefore important.

Ballari District has experienced increasing use of smartphones, internet services and digital banking facilities. However, customers differ in their internet knowledge, economic position, awareness of cybersecurity and confidence in digital banking. Therefore, understanding customer adoption, security practices and challenges is important for improving digital banking services in the district.

2.RESEARCH PROBLEM (STATEMENT OF THE PROBLEM)

Digital banking has become an important means of conducting financial transactions. Customers increasingly use mobile banking, internet banking, UPI, ATMs, cards and digital wallets because these services provide convenience and save time.

Despite these benefits, digital banking customers may face security and operational problems. Cybercrime, hacking, phishing, online fraud and other security threats can reduce customers' confidence in digital banking. Poor internet connectivity, technical problems, server failures and power interruptions can also affect the successful completion of digital transactions.

There is therefore a need to understand how customers in Ballari District use digital banking services, what security measures they follow, how much they know about digital banking security and what problems they experience while using online banking services.
The present study attempts to address these issues by examining digital banking adoption, customer security practices and the major challenges faced by digital banking users in Ballari District.

Objectives of the Study

Primary Objective

- To study the usage and safety measures associated with electronic money-transfer products and services in Ballari District.

Secondary Objectives

- To understand customers' use of online banking services.
- To identify the measures taken to protect customers' data while banking online.
- To analyse the problems experienced by customers while using online banking.
- To study customers' knowledge of online banking systems.
- To provide suggestions for improving online banking products and services.

Scope of the Study

The study focuses on customers living in Ballari District who use digital banking services such as internet banking, mobile banking applications and UPI. The study covers customer acceptance, security practices, awareness and problems related to digital banking. The findings may help banks understand customer requirements and improve the quality and safety of online banking services.

3.REVIEW OF LITERATURE

The literature reviewed in the project shows that digital banking adoption is influenced by convenience, perceived usefulness, ease of use, trust, accessibility and familiarity. Customers are more willing to use online banking when services are easy to operate, reliable and useful for managing financial activities.

The theoretical background of the study identifies the importance of security and privacy in digital banking. Strong passwords, two-factor authentication, biometric authentication, OTP, encryption and transaction monitoring are identified as important security mechanisms. At the same time, poor internet connectivity, software problems, low computer skills, hacking and phishing remain important challenges.

The study uses the **Technology Acceptance Model (TAM)** as part of its theoretical framework. TAM explains technology acceptance through perceived usefulness and perceived ease of use. In the context of digital banking, customers are more likely to use banking applications when they believe that the services are useful and easy to operate.

Previous studies reviewed in the project include:
1. Tesfaye T. (2016) : Tesfaye T. (2016) studied the **opportunities and challenges of e-banking services in Robe Town**. The study examined e-banking adoption, implementation problems and customer opinions using questionnaires, interviews and descriptive analysis.
2. Cho Latt Yadanar : Cho Latt Yadanar studied **access to banking services in rural areas of Nyaungdon**. The study focused on accessibility and barriers to banking services using data collected from 310 respondents.

3. Abdul-Rahim et al. (2022) : Abdul-Rahim et al. (2022) studied the **benefits and risks of FinTech adoption**. The study examined customer perceptions of FinTech services and used survey data from Malaysian bank customers.
4. Bolia and Verma (2024): Bolia and Verma (2024) examined the **adoption of digital payments** and the factors affecting their use. The study used survey data and analysed factors influencing digital-payment adoption.
5. Subedi et al. (2025): Subedi et al. (2025) studied **customer trust in online banking transactions**. The study focused on factors influencing customers' confidence and willingness to use online banking services.
6. Mobile Banking Study : This study examined the **development and use of mobile banking services**. It focused on the reasons for mobile banking adoption and technological developments in mobile banking.
7. Makarevic et al. (2014): Makarevic et al. (2014) studied **customers' perceptions of e-banking safety**. The study examined security problems and customers' knowledge of information technology using data from 203 bank customers.
8. E-Service Quality in Online Banking: This study examined **e-service quality in online banking** and customers' experiences. It focused on customer perceptions, service quality and loyalty using interviews with 20 participants.
9. Digital Banking Adoption in Namibia: This study examined **factors affecting digital banking adoption in Namibia**. It focused on customer attitudes, usage patterns and accessibility of online banking services.
10. Internet Banking Adoption in Pakistani Firms: This study examined **internet banking usage among firms in Pakistan**. It focused on credibility, safety concerns and problems affecting internet banking adoption.
11. Value of Digital Banking Services : This study examined the **value and customer preferences of digital banking services**. It focused on customer needs and differences in opinions across age groups.
12. IT Security in Online Banking : This study examined **customers' perceptions of IT security in online banking**. It compared customers from Serbia and Croatia and focused on trust and online banking safety.
13. Technology and Regulation on Banking: This study examined the **impact of technology and regulation on banking**. It focused on how technological changes and regulations influence banking operations and services.
14. Impact of Technology and Regulation on Banking : This study examined the **effect of technological innovation and regulation on banks**. It focused on banking operations, regulatory issues and opportunities for improvement.
15. Remote Banking Services in China: This study examined **internet banking adoption among Chinese customers**. It focused on the factors influencing customers to use, not use or stop using internet banking services.
16. Digital Banking and Customer Satisfaction: This study examined the **relationship between digital banking services and customer satisfaction**. It focused on customer experiences and perceptions of online banking services.
17. Digital Banking in Malawi : This study examined the **challenges and growth opportunities of digital banking in Malawi**. It focused on customers' and bankers' knowledge, usage and problems related to electronic banking.
18. Digitalisation and Indian Bank Performance : This study examined the **impact of digitalisation on Indian banks**. It focused on banking operations, employee productivity, cost-effectiveness and profitability.
19. Home Data Security Practices: This study examined **privacy and data-security practices of internet users at home**. It focused on how individuals protect their information and deal with cybersecurity issues.
20. Technology and Banking Performance: This study examined the **effect of technology on banking performance** at I&M Bank Gikomba Branch. It focused on ATMs, customer relationships and smartphone-based payments.
21. Consumer Rights and Digital Financial Services : This study examined **consumer rights and the intention to reuse digital financial services among Generation Z**. It focused on consumer attitudes and their intention to continue using digital financial services.
22. Digital Banking Adoption in Saudi Arabia : This study examined **digital banking adoption in Saudi Arabia**. It focused on customer behaviour, usability and reasons for using digital banking services, using data from 406 users.
23. Internet Banking Adoption in Portugal : This study examined **internet banking adoption among Portuguese customers**. It focused on customer behaviour, opinions, intentions and problems related to online banking.
24. Digital Banking Usage and Customer Acceptance: This study examined **digital banking usage and customer acceptance**. It focused on the factors influencing customers' decisions to use online banking services.
25. Digital Banking Acceptance in Vietnam : This study examined **customers' acceptance of digital banking services in Vietnam**. It focused on customer behaviour and factors affecting acceptance using data from 779 customers.
26. Online and Mobile Banking Adoption : This study examined **customer adoption of online and mobile banking services**. It focused on customer attitudes and the reasons for using smartphones for financial transactions.
27. Mobile Payment Services : This study examined **customer attitudes and intentions towards mobile payment services**. It found that convenience and usefulness influenced mobile-payment acceptance and that customer trust was important for wider usage.
28. Digital Financial Services Adoption: This study examined **the adoption and use of digital financial services**. It focused on customer behaviour, convenience and acceptance of digital financial products and suggested improving service quality and customer experience.
29. Consumer Protection in Digital Financial Services: This study examined **consumer protection in digital financial services**. It focused on customer rights, protection against fraud and the importance of customer awareness.

30. E-Banking Security and Customer Perception : This study examined **e-banking security, privacy and customer confidence**. It highlighted that security concerns can affect customers' willingness to use online banking and suggested stronger security systems and greater customer awareness.

Overall Summary of Literature

The reviewed studies show that **convenience, usefulness, accessibility, trust and ease of use** encourage customers to adopt digital banking. However, **security risks, fraud, privacy concerns, technical problems and poor connectivity** can create difficulties. The literature suggests that banks should improve security, customer awareness, service quality and digital infrastructure to increase customer confidence in digital banking.

4. RESEARCH METHODOLOGY

Research Design

The study adopted a **descriptive research design** to understand digital banking adoption, security practices and challenges among customers in Ballari District.

Study Area

The study was conducted in **Ballari District**.

Sources of Data

Both primary and secondary data were used.

Primary Data:

Primary data were collected from customers using a structured questionnaire.

Secondary Data:

Secondary information was collected from books, journals, research articles, RBI publications, bank reports and reliable websites.

Sampling Technique

The study used **convenience sampling**.

Sample Size

The project specifies a sample size of **102 respondents**.

Tools Used for Analysis

The following statistical tools were used:

- Percentage analysis
- Mean
- Standard deviation
- ANOVA
- Chi-Square test

Software Used

- Microsoft Excel
- SPSS

The methodology details are based on the research design section of the project.

Limitations of the Study

- The study is limited to Ballari District.
- The study is based on 102 respondents.
- The findings depend on information provided by the respondents.
- Time and resource limitations affected the research.
- The findings may not represent the opinions of customers outside the study area.

5.HYPOTHESIS

The study formulated hypotheses relating to demographics, security measures and customer experiences with digital banking.

Hypothesis 1: Demographics and Digital Banking Usage

H_0: There is no significant relationship between demographic factors and the use of online banking products and services.
H_1: There is a significant relationship between demographic factors and the use of online banking products and services.

Hypothesis 2: Security Measures and Customer Experience

H_0: There is no significant relationship between security measures and customers' experience of online banking products and services.
H_1: There is a significant relationship between security measures and customers' perceptions of safety while using online banking.

Hypothesis 3: Problems with Digital Banking

H_0: Customers have similar opinions regarding problems associated with electronic banking products and services.
H_1: Customers have different opinions regarding problems associated with electronic banking products and services.

Hypothesis Testing – Major Results

The Chi-Square analysis produced the following important results:

Relationship Tested	p-value	Decision
Gender and digital banking usage	0.439	H_0 accepted
Education and digital banking usage	0.521	H_0 accepted
Occupation and digital banking usage	0.303	H_0 accepted
Income and digital banking usage	0.000000121	H_0 rejected

The results indicate that gender, education and occupation did not show a statistically significant association with digital banking usage in the tested relationships. Income, however, showed a statistically significant association with digital banking usage.

6. DATA INTERPRETATION – MAJOR SUMMARY

The study collected responses from customers and analysed them using frequency analysis, descriptive statistics, ANOVA and Chi-Square tests.

- **Major Demographic Results**
  The survey data show that the sample was predominantly young. Respondents aged **21–30 years represented 73.08%** of the sample. Postgraduate respondents formed the largest educational group at **55.34%**, followed by graduates at **27.18%**.
- **Digital Banking and Branch Visits**
  The mean score for the statement regarding whether digital banking reduced visits to bank branches was **4.08**. This indicates that respondents generally agreed that digital banking reduced their need to visit bank branches.
- **Speed of Transactions**
  The mean score for whether digital banking transactions are faster than traditional banking was approximately **4.07**. This indicates a high level of agreement among respondents that digital banking provides faster transactions.
- **Transaction Verification**
  The mean score for verifying transaction details before completing payments was **4.09**. This indicates that respondents generally follow the practice of checking transaction information before making payments.
- **OTP and Security Alerts**
  The mean score for receiving OTPs or security alerts from banks was **4.08**. This indicates that security notifications are commonly experienced by respondents.
- **ANOVA Result**
  The ANOVA analysis produced an **F-value of 57.29**, compared with a critical F-value of **1.63**, with a p-value of **0.00**. Since the p-value was below 0.05, the null hypothesis for the tested ANOVA comparison was rejected, indicating a statistically significant difference among the responses considered in the analysis.
- **Chi-Square Results**
  The Chi-Square results show that gender, educational qualification and occupation were not significantly associated with digital banking usage. Income, however, showed a significant association with digital banking usage, with a p-value of **0.000000121**, which is below 0.05.
- **Overall Interpretation**

Overall, respondents showed a positive attitude towards digital banking. Convenience, speed, accessibility and reduced branch visits were important benefits. Customers also demonstrated awareness of security practices such as maintaining PIN and password confidentiality, verifying transactions and using OTP-based security. However, cyber fraud, phishing, poor internet connectivity, server problems and technical failures remain important concerns.

7. MAJOR FINDINGS AND SUGGESTIONS

Major Findings

1. The study found that respondents generally have a positive opinion about digital banking.
2. The **21–30 age group** represents the largest group of digital banking users in the study.
3. Digital banking reduces the need for customers to visit bank branches.
4. Respondents generally believe that digital banking transactions are faster than traditional banking transactions.
5. Mobile banking applications are regularly used for activities such as fund transfers, bill payments and mobile recharges.
6. Convenience, speed and 24-hour availability are major advantages of digital banking.
7. Customers showed awareness of security measures such as OTP, passwords and PIN protection.
8. Respondents generally reported careful practices such as verifying transaction details before completing payments.
9. OTP and security alerts are commonly experienced by respondents.
10. Cyber fraud and phishing remain important concerns that can affect customer confidence.

11. Poor internet connectivity, server failures and technical problems create difficulties while using digital banking.
12. Gender did not show a significant association with digital banking usage.
13. Educational qualification did not show a significant association with digital banking usage.
14. Occupation did not show a significant association with digital banking usage.
15. Income showed a significant association with digital banking usage.
16. The overall statistical analysis indicates that customers' experiences and opinions towards digital banking are generally favourable, although security and infrastructure issues remain.

Major Suggestions

1. **Strengthen cybersecurity:** Banks should improve security systems to prevent hacking, phishing, fraud and other cybercrimes.
2. **Conduct customer awareness programmes:** Banks should regularly educate customers about safe digital banking practices.
3. **Improve mobile banking applications:** Banking applications and websites should be made simple, user-friendly and secure.
4. **Provide regular system upgrades:** Banks should regularly update digital banking systems to improve security and service quality.
5. **Provide faster customer support:** Problems relating to online banking accounts should be resolved quickly.
6. **Guide new digital banking users:** Banks should provide basic instructions to customers who are using digital banking for the first time.
7. **Improve internet infrastructure:** Better internet and telecommunication facilities are needed, particularly in areas where connectivity is weak.
8. **Promote strong security practices:** Customers should use strong passwords and, where available, biometric authentication and two-factor authentication.
9. **Provide regular security alerts:** Banks should inform customers about new cybersecurity threats and ways of protecting their account information.
10. **Collect customer feedback:** Banks should regularly collect feedback about their applications and services and use it to improve digital banking facilities.

8. CONCLUSION

Digital banking has become an important part of the modern banking system because it provides customers with convenient and faster access to financial services. The present study examined the adoption of digital banking, security practices and challenges among customers in Ballari District.

The study indicates that customers generally appreciate digital banking because it provides convenience, speed, accessibility and reduces the need for frequent visits to bank branches. Mobile banking, internet banking, UPI, ATMs and other electronic payment facilities are increasingly used for everyday financial activities.

The study also shows that customers are aware of several security practices, including protecting passwords and PINs, verifying transaction details and using OTP and security alerts. However, cyber fraud, phishing, hacking, poor internet connectivity, technical problems and service interruptions continue to create challenges.

The statistical analysis further indicates that gender, educational qualification and occupation were not significantly associated with digital banking usage in the tested relationships, while income showed a significant association. The ANOVA analysis also indicated significant differences among the responses examined.

Therefore, the continued growth of digital banking depends not only on technological development but also on customer awareness, security, reliable infrastructure and effective customer support. Banks should strengthen cybersecurity, improve digital platforms, educate customers and provide reliable services. Such measures can improve customer confidence and encourage greater use of digital banking services in Ballari District.

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