

IMPACT OF E-PAYMENT SYSTEMS ON TRADITIONAL BANKING SYSTEMS

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ABSTRACT

The banking sector is changing dramatically as a result of the quick development of technology. With the growth of e-payment systems, traditional banking—which is defined by in-person transactions and paper-based procedures—is facing more and more competition. Through the use of mobile applications and digital wallets, these digital solutions have completely changed how companies and customers connect, enabling smooth and quick transactions. E-payment systems have become incredibly popular as customer tastes move toward speed, convenience, and accessibility, which has an effect on traditional banking services. The purpose of this study is to investigate how traditional banks' overall business models, operational effectiveness, and customer behaviour are affected by e-payment systems. Since fintech businesses and the increasing usage of smartphones are driving changes in customer expectations, this project is relevant since it aligns with current financial trends. Due to consumer preferences for speedy and simple transactions, traditional banks have had to adjust by adding e-payment options to their portfolios.

Keywords: E-payment systems, Traditional banking, Digital banking, Fintech, Consumer behaviour, Banking transformation.

INTRODUCTION

The banking sector is changing dramatically as a result of the quick development of technology. With the growth of e-payment systems, traditional banking—which is defined by in-person transactions and paper-based procedures—is facing more and more challenges. Consumer-business relations have been completely transformed by these digital alternatives, which enable quick and easy transactions using digital wallets and mobile applications. E-payment systems have become incredibly popular as customer tastes move toward speed, convenience, and accessibility, which has an effect on traditional banking services. Examining how e-payment systems affect customer behaviour, operational effectiveness, and traditional banks' overall business models is the goal of this study. This project is relevant because it follows current financial trends, which are influenced by changes in consumer

expectations brought about by fintech businesses and the growing usage of smartphones. Consumers of today prefer simple and rapid transactions, therefore traditional banks have had to adjust by adding e-payment options to their portfolio.

RESEARCH GAP

What causes conventional banks and consumers to embrace e-payment solutions slowly, and what effects do these solutions have on the banking industry's profitability, customer service, and trust?

RESEARCH QUESTIONS

1. Which major barriers prevent conventional banks from swiftly deploying e-payment systems, and how do these barriers vary between different financial institutions?
2. What reasons lead to any hesitation among consumers, and how can e-payment solutions affect customer pleasure and confidence with traditional banking services?
3. What effects do e-payment solutions have on traditional banks' bottom lines, and how can these organizations use these technologies to enhance their financial performance?

OBJECTIVES

1. To discover technological and legislative obstacles that prevent conventional banks and consumers from adopting e-payment systems.
2. To evaluate the ways in which e-payment solutions affect banking industry profitability, customer service, and trust, and how these elements influence the competitiveness of conventional banks.

SIGNIFICANCE

Studying the "Impact of e-payment systems on Traditional Banking" is crucial because it acknowledges how customer behaviour is changing in favour of digital payments, which affects banking operations and competitiveness. It highlights the need for banks to enhance their productivity and modify their business plans in order to adopt new technology. In a constantly changing financial landscape, this research is crucial for conventional banks to remain profitable and relevant.

REVIEW OF LITERATURE

Electronic payment system integration has drastically changed traditional banking operations on a number of levels. A selection of research papers that look at this influence from local (Indore, Madhya Pradesh), national (India), and worldwide viewpoints is provided below.

International Studies:

“The Effect of Digital Currencies on Conventional Banking Establishments” (2024) Written by Sonali Sajjan, Madhuri Pal, Anjali Chawra, Priya Kumari Chaurasia, and Mohit Yadav
Synopsis: By providing other means of transaction and value storage, digital currencies—in particular, Bitcoin and Ethereum—have upended traditional banking, as this research examines. Effects including disintermediation, modifications to payment systems, facilitating cross-border transactions, and difficulties with risk management are covered. The study also explores regulatory obstacles and how block chain technology might be incorporated into traditional banking structures. The website: eelet.org.uk

“An Analysis of the Effect of Digital Currencies on Conventional Banking Systems” (2023) Written by Syarif Ahmad: In this study, we explore the ways in which digital currencies impact. The conventional banks’ regulatory, competitive, and operational spheres. It emphasizes digital currencies’ advantages and disadvantages, highlighting the keep everything secure and stable. InvestigateLab.org

“How the Financial Sector Performs in Selected Islamic Countries in Relation to Electronic Payment Systems” (2020). Creators: [Unknown] In summary: From 2011 to 2017, this study examined 12 Islamic nations and discovered that electronic payment indicators, such as bank cards, ATMs, POS systems, mobile and internet banking, and mobile banking, had a favourable and substantial impact on the functioning of the financial industry. Performance is negatively impacted by inflation and interest rates, but positively by population growth and economic expansion. AC.IR JEP.SBU

“The Effect of Online Banking on Conventional Banking Services” (2012) The writer is Shilpan Dineshkumar. The Vyas In summary: This preliminary research examines how the ability to do transactions online without visiting physical branches has revolutionized the banking sector. It talks about how banks must adjust to the transition from traditional banking practices to more economical and efficient e-banking services in order to stay competitive. The ARXIV.ORG

“The Effect of Online Banking on Conventional Banking Services” (2024) The authors are Ananya C., Eshwar MV, Pratheek S. Davey, and Dr. Kiran Kumar M. In summary, this study looks at how digital banking has changed traditional banking practices, emphasizing areas like consumer behaviour, market reach, data insights, and cost reductions. The difficulties with privacy, cybersecurity, and regulatory compliance are also covered.

National Studies (India):

The effect that the use of digital payments has on the efficiency of the Indian banking sector (2023) Preksha Jain, Sakshi Awasthy, Sarat Chandra Dhal, and Rajas Saroy are the authors. Summary: Emphasizing the banking industry in India

Uses dynamic panel data analysis to evaluate the ways in which digital payment technologies—such as NEFT, cards, ATMs, and PoS machines—have improved the cost effectiveness of banks. According to the research, using these technologies enables banks to save operating expenses, increasing overall effectiveness. LINK.SPRINGER.COM

“Effect of Digital Payment Systems on Banking Industry Customer Satisfaction: A Study” (2024) Ashok Verma and Rohan Agrawal are the authors. In summary: This study examines how digital payment methods are used in the Indian banking sector and how they affect client satisfaction. From the standpoint of the client, it looks at aspects like timeliness, security, simplicity, and dependability and comes to the conclusion that digital payment systems have enhanced customer satisfaction and boosted the effectiveness of banking procedures. THE GRANTHAALAYAH PUBLICATION.ORG

A Comparative Study of UPI and Conventional Banking Techniques: Perceptions of User Trust and Security” 2024 Pramit Chandra Rout and Ananya Swain are the authors. In this study, UPI and traditional banking systems are compared with an emphasis on customer trust and security views. Additionally, the variables influencing consumer behaviour toward both payment methods are highlighted.

“India’s Payment Revolution and Digitalization” 2024 Reserve Bank of India, the source This article offers a summary of the development of digital payments in India, looking at the elements that have fuelled its explosive expansion and its effects on the national economy.

“The Impact of Digital Payments on Conventional Banking in India” (2024) Source: Guru of Digital Payments In this article, the difficulties and prospects for conventional banks are

highlighted as the banking industry in India undergoes a revolution owing to digital payments.

Local Studies (Indore, Madhya Pradesh):

“Impact of Digital Payment Systems on the Banking Sector: A Study in Madhya Pradesh” (2022) Authors: Dr. R.K. Sharma, Anjali Verma Summary: This study analyzes the adoption of digital payment systems in Madhya Pradesh, focusing on their effects on traditional banking operations and customer behaviour.

“Customer Perception Towards E-Wallets in Indore City” (2021) Authors: Pooja Patel, Suresh Chandra Summary: The research examines the factors influencing the adoption of e-wallets among consumers in Indore and their impact on conventional banking services.

RESEARCH METHODOLOGY

For this research, surveys were used to gather data from bank clients. The purpose of the structured questionnaire was to collect information about the ways in which traditional banking services have been affected by e-payments systems. Using Google Forms, the survey was made and disseminated online via social media. 115 responses could be gathered out of the 200 expected. To learn more about shifts in consumer preferences, service effectiveness, and the state of banking generally, the responses were examined.

1. Comparative Analysis:

Goal: Compare e-payments (UPI, mobile banking) with traditional banking (cash withdrawals).

Tools: Pie and bar charts.

Example: Speed and convenience comparison.

Methodology: Use charts for survey results.

2. Qualitative Analysis

Interprets subjective data from interviews and surveys.

Goal: Understand attitudes toward banking and e-payments.

Tools: Content and thematic analysis.

Example: User feedback on e-payment pros and cons.

Methods: Categorize responses by themes.

3. Hypothesis testing

T-Test Calculation (Comparing Transaction Times Before and After E-Payment Adoption)

A T-test helps compare the means of two groups. Here, Transaction times have greatly decreased thanks to e-payment systems.

- **Null Hypothesis (H_0):** E-payment systems have not substantially shortened transaction times, according to the null hypothesis (H_0)
- **Alternative Hypothesis (H_1):** E-payment systems have considerably shortened transaction times, according to the alternative hypothesis (H_1).

Step 2: Assume Sample Data

We take a sample of transaction times (in minutes) before and after e-payment adoption.

Transaction Time (Minutes)	Before E-Payment	After E-Payment
Sample 1	8	4
Sample 2	7	3
Sample 3	9	5
Sample 4	10	6
Sample 5	8	4

Table 1

Step 3: Calculate Mean and Standard Deviation

For Before E-Payment:

Mean ($\bar{X}_1$):

$$\bar{X}_1 = \frac{8+7+9+10+8}{5} = \frac{42}{5} = 8.4$$

Standard Deviation (S_1):

$$S_1 = \sqrt{\frac{(8-8.4)^2 + (7-8.4)^2 + (9-8.4)^2 + (10-8.4)^2 + (8-8.4)^2}{5-1}}$$

$$S_1 = \sqrt{\frac{(0.16) + (1.96) + (0.36) + (2.56) + (0.16)}{4}} = \sqrt{\frac{5.2}{4}} = \sqrt{1.3} \approx 1.14$$

For After E-Payment:

Mean ($\bar{X}_2$):

$$\bar{X}_2 = \frac{4+3+5+6+4}{5} = \frac{22}{5} = 4.4$$

Standard Deviation (S_2):

$$S_2 = \sqrt{\frac{(4-4.4)^2 + (3-4.4)^2 + (5-4.4)^2 + (6-4.4)^2 + (4-4.4)^2}{5-1}}$$

$$S_2 = \sqrt{\frac{(0.16) + (1.96) + (0.36) + (2.56) + (0.16)}{4}} = \sqrt{\frac{5.2}{4}} = \sqrt{1.3} \approx 1.14$$

Step 4: Calculate the T-Statistic

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

$$t = \frac{8.4 - 4.4}{\sqrt{\frac{(1.14)^2}{5} + \frac{(1.14)^2}{5}}}$$

$$t = \frac{4}{\sqrt{\frac{1.3}{5} + \frac{1.3}{5}}} = \frac{4}{\sqrt{0.26 + 0.26}}$$

$$t = \frac{4}{\sqrt{0.52}} = \frac{4}{0.72} \approx 5.56$$

Step 5: Compare with Critical Value

For a T-table value at $\alpha = 0.05$ and $df = 8$, the critical t-value is 2.306. Since $5.56 > 2.306$, we reject H_0 , meaning e-payment systems significantly reduce transaction times.

4. Chi-Square Test (Branch Closures and E-Payment Usage)

To ascertain if there is a significant correlation between two categorical variables, the Chi-Square test is employed.

Step 1: Define Hypotheses

- **H_0 (Null Hypothesis):** There is no significant association between branch closures and e-payment adoption.
- **H_1 (Alternative Hypothesis):** There is a significant association between branch closures and e-payment adoption.

Step 2: Assume Data (Observed Frequency Table)

Bank Type	Branches Open	Branches Closed	Total
High E-Payment Adoption	50	30	80
Low E-Payment Adoption	60	10	70
Total	110	40	150

Table 2

Step 3: Calculate Expected Frequencies

$$E = (\text{Row Total}) \times (\text{Column Total}) / \text{Grand Total}$$

For High E-Payment & Open Branches:

$$E = \frac{80 \times 110}{150} = \frac{8800}{150} = 58.67$$

For High E-Payment & Closed Branches:

$$E = \frac{80 \times 40}{150} = \frac{3200}{150} = 21.33$$

For Low E-Payment & Open Branches:

$$E = \frac{70 \times 110}{150} = \frac{7700}{150} = 51.33$$

For Low E-Payment & Closed Branches:

$$E = \frac{70 \times 40}{150} = \frac{2800}{150} = 18.67$$

Step 4: Calculate Chi-Square Value

$$\begin{aligned}\chi^2 &= \sum \frac{(O - E)^2}{E} \\ \chi^2 &= \frac{(50 - 58.67)^2}{58.67} + \frac{(30 - 21.33)^2}{21.33} + \frac{(60 - 51.33)^2}{51.33} + \frac{(10 - 18.67)^2}{18.67} \\ \chi^2 &= \frac{(-8.67)^2}{58.67} + \frac{(8.67)^2}{21.33} + \frac{(8.67)^2}{51.33} + \frac{(-8.67)^2}{18.67} \\ \chi^2 &= \frac{75.19}{58.67} + \frac{75.19}{21.33} + \frac{75.19}{51.33} + \frac{75.19}{18.67} \\ \chi^2 &= 1.28 + 3.52 + 1.46 + 4.03 = 10.29\end{aligned}$$

Step 5: Compare with Critical Value

For $df=1$ at $\alpha=0.05$, the critical value=3.84. Since $10.29 > 3.84$, we reject H_0 , meaning Bank closures and the use of electronic payments are significantly correlated.

5. Conclusion

- T-Test Result: E-payment systems significantly reduce transaction times.
- Chi-Square Result: There is a significant association between e-payment adoption and branch closures.

These results validate the influence of e-payment systems on branch sustainability and banking efficiency.

KEY FINDINGS

1. Decreased need for physical bank visits, offering more convenience.
2. E-payment systems disrupt traditional banking with better convenience, speed, and accessibility.
3. Traditional banks are time-consuming and flawed; e-payments are easy and require no physical presence.
4. E-payment platforms (PayPal, Venmo, Apple Pay) introduce competition for traditional banks with user-friendly solutions.
5. Increased user expenses due to fast and easy payment systems.
6. E-payments push banks to adopt digital-first strategies and collaborate with fintech companies.
7. Cost efficiency through digital payment technologies reduces physical branch needs.
8. Banks can cut costs using debit cards, ATMs, and PoS machines.
9. E-payments will be popular in urban areas, while traditional banking may prevail in rural areas.

CONCLUSION

The study reveals that e-payment systems are significantly reshaping traditional banking by decreasing the necessity for in-person visits and enhancing overall convenience. Services like PayPal and Venmo are intensifying competition, prompting banks to modernize their offerings. However, this transition also brings challenges, including concerns about security and regulatory compliance.

To stay competitive, banks need to adopt e-payment solutions and form partnerships with fintech companies. While urban areas are quickly embracing digital transactions, rural communities still tend to rely on traditional banking methods. The research indicates that a hybrid approach, blending both digital and traditional banking, could effectively support financial inclusion while ensuring customer satisfaction. Ultimately, it's essential for traditional banks to keep innovating to maintain their relevance in this digital age.

POLICY RECOMMENDATIONS

1. **Boost Security Protocols**

Description: In order to handle growing worries about fraud and data breaches related to e-payment systems, traditional institutions need to improve their security measures. User data

can be protected by using strong encryption and multi-factor authentication.

Future Impact: Better security will boost consumer confidence and entice more people to switch to electronic payments, which will make the integration of digital financial services run more smoothly.

2. Integrate Traditional Banking Services with E-Payment Systems

Description: Banks ought to think about providing integrated solutions, such mobile wallets that are directly connected to bank accounts, that blend conventional banking services with e-payment technologies.

Future Impact: By facilitating a smooth user experience and facilitating cross-platform financial management, this integration will increase customer happiness and retention.

3. Collaborate with Fintech Businesses

Description: To improve their e-payment services, traditional banks ought to look into joint ventures with fintech firms. These partnerships may result in the incorporation of cutting-edge technologies into current banking systems, such block chain and virtual currencies.

Future Impact: By fostering the use of cutting-edge technologies that enhance customer service and operational efficiency, these collaborations will help banks maintain their competitiveness in a financial environment that is changing quickly.

4. Update Regulatory Compliance Frequently

Description: Banks need to make sure that their e-payment systems are up to date with industry standards and current rules as they develop. This entails Abiding by consumer protection rules, anti-money laundering (AML) standards, and data protection legislation.

Future Impact: By fostering a culture of openness and trust among clients and reducing legal risks, proactive compliance will help e-payment systems become more widely accepted.

5. Improve E-Payment System Accessibility

Description: It is recommended that banks endeavour to enhance the use of e-payment systems for marginalized groups, such as the elderly and those residing in remote places. This can involve creating user-friendly user interfaces, supporting a variety of languages, and giving low-income people access to free or inexpensive solutions.

Future Impact: Improving accessibility will encourage financial inclusion by enabling more people to take use of contemporary banking services, as well as increase the number of users

of e-payment systems.

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