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IMPACT OF CUSTOMER SATISFACTION WITH E-BANKING INSTRUMENTS ON THE ADOPTION OF DIGITAL BANKING SERVICES

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Abstract
The rapid growth of digital banking has significantly transformed the financial services sector, particularly in emerging economies such as India, where technology-enabled financial platforms increasingly influence customer behavior and transaction patterns. This study examines the impact of customer satisfaction with various e-banking instruments on the actual usage of digital banking services. Primary data were collected through a structured questionnaire using a five-point Likert scale to measure satisfaction across Banking Cards, Mobile Banking, Internet Banking, Unified Payments Interface (UPI), Aadhaar Enabled Payment System (AEPS), Mobile Wallets, Point-of-Sale (PoS) Machines, ATM services, and E-Banking Platform Design. The data were analyzed using descriptive statistics, thematic analysis, word cloud analysis, and multiple regression techniques.The findings reveal that customers are generally satisfied with e-banking services, with UPI, Mobile Banking, and Internet Banking emerging as the most preferred digital banking channels. Thematic analysis identified usefulness, accessibility, network quality, trust, and social influence as the major factors affecting customer satisfaction. Regression analysis further confirmed that customer satisfaction significantly influences the actual usage of digital banking services, with the model demonstrating moderate explanatory power (R^2 = 0.40). The study concludes that customer satisfaction is a major determinant of digital banking adoption and emphasizes the need for financial institutions to improve service quality, technological infrastructure, security measures, and digital awareness initiatives to enhance customer engagement and encourage wider adoption of digital banking services.

Keywords: Digital Banking, E-Banking Services, Customer Satisfaction, Digital Banking Adoption, UPI, Mobile Banking, Customer Usage Behavior, Financial Inclusion, Financial Technology.

Introduction

The global financial services landscape has undergone a radical transformation, evolving from traditional brick-and-mortar operations to a dynamic, technology-driven ecosystem. E-banking services, which were once considered merely auxiliary or supplementary to the traditional banking system, have now been elevated to a central unit for both core banking operations and customer interactions. This shift is particularly pronounced in emerging economies like India, where technology-driven platforms are actively reshaping user behavior, transaction patterns, and the very nature of financial inclusion.

As digital banking becomes the primary interface between financial institutions and their clients, understanding the drivers of adoption and sustained usage is critical. My research is grounded

in the observation that the transition to electronic channels is not uniform; significant variance exists in how different demographics engage with these technologies. Foundational studies, such as those by Yiu et al. (2007), and Auta (2010), emphasise that socio-economic, technological, and behavioral variables are instrumental in determining the extent of e-banking adoption. Consequently, this study moves beyond a surface-level view of technology to examine the nuanced factors—specifically channel-specific satisfaction and socio-economic characteristics—that influence actual usage.

The Digital Banking Ecosystem and Customer Satisfaction

The modern e-banking environment is composed of a diverse array of instruments, each offering unique value propositions to the consumer. In this study, services are categorised into several key touchpoints:

- Mobile and Internet Banking: The core platforms for comprehensive account management and fund transfers.
- Unified Payments Interface (UPI): A high-growth, real-time payment system that has gained massive traction for its perceived ease of use.
- Traditional Electronic Services: Banking cards and ATMs, which continue to facilitate liquid transactions and serve as a bridge for many users.
- Specialised Financial Tools: Services such as the Aadhaar Enabled Payment System (AEPS), Mobile Wallets, and Point of Sale (PoS) machines.

Customer satisfaction serves as a vital metric for the success of these platforms. Utilising a five-point Likert scale, I measured how users perceive the reliability, security, and accessibility of each instrument. My descriptive analysis reveals that UPI leads the way in consumer preference with a mean satisfaction score of 3.97, followed by Mobile Banking at 3.82. Conversely, E-Banking Platform Design received the lowest mean score (3.45), suggesting that the user interface remains a significant pain point that may hinder broader adoption.

Determinants of Actual Usage

While the availability of technology is a prerequisite, it does not inherently guarantee high transaction volumes. To understand this discrepancy, I utilized a multiple regression model to analyze how satisfaction with individual instruments predicts actual usage, represented by the total transaction value (Y):

$$Y= \beta_0 + \beta x_1 + \beta x_2 + \beta x_3 + \beta x_4 + \beta x_5 + \beta x_6 + \beta x_7 + \beta x_8 + \beta x_9$$

To evaluate the factors influencing the adoption and intensity of digital finance, this study employs a multiple linear regression model designed to quantify the relationship between customer satisfaction and actual service usage. The model uses the Actual Usage of E-Banking services (Transaction Value) as the dependent variable (Y), serving as a proxy for the depth of digital banking integration in a user's financial behaviour. The independent variables (βx_1 through βx_9) represent the satisfaction levels across nine distinct digital banking channels and design elements: Banking Cards, Mobile Banking, Internet Banking, Unified Payment Interface (UPI), Aadhaar Enabled Payment System (AEPS), Mobile Wallets, Point-of-Sale (PoS) Machines, Platform Design, and ATM services. By assigning a regression coefficient (β) to each specific instrument, the model aims to identify which platforms act as primary drivers of digital transactions and which may exhibit substitution effects or overlapping functionalities. This statistical framework allows for a granular analysis of how individual channel experiences contribute to the overall variance in e-banking usage

Scope and Objectives

The primary objective of this study is to provide financial institutions with a comprehensive understanding of these dynamics. By identifying the gap between technology availability and meaningful user engagement, this research highlights the urgent need to strengthen platform usability, improve security protocols, and promote digital awareness to bridge the digital divide.

Literature Review

A. Hedau (2025) examined the socio-economic challenges influencing digital banking adoption in India. The study found that perceived usefulness, perceived ease of use, and self-efficacy significantly affect customer willingness to use digital banking platforms. It further highlighted that disadvantaged socio-economic groups face barriers due to limited digital skills and low technological confidence. The research recommended simplified interfaces, awareness programs, and trust-building measures to improve adoption among diverse customer groups.

Bala (2025) investigated the role of digital literacy and social influence in rural banking adoption in India. The study concluded that family influence, peer networks, and community trust strongly shape behavioral intention toward digital banking. Limited infrastructure and poor technical skills were identified as major barriers in rural areas,

particularly among elderly and less-educated consumers.

Chan et.al (2022) explored customer adoption of Open Banking systems and found that performance expectancy, effort expectancy, social influence, and perceived risk significantly shape customer intentions. The study further noted that financial literacy directly influences trust in digital banking systems and willingness to adopt emerging financial technologies.

Ghosh and Golder (2026) reviewed the effects of fintech adoption on traditional banking institutions. The study reported that fintech integration improves customer experience, banking efficiency, and competitiveness. However, it also highlighted operational risks, regulatory uncertainty, and digital dependency as emerging challenges in the banking ecosystem.

Bassey et.al (2026) examined the economic implications of digital banking on financial inclusion across different economic regions. The study concluded that internet access, smartphone availability, and supportive digital infrastructure significantly increase adoption rates. Nevertheless, rural populations and low-income groups continue to face obstacles due to inadequate digital literacy and limited infrastructure

Joshi (2024) investigated the role of financial inclusion and the adoption of Unified Payments Interface (UPI) services among low-income and marginalized populations, commonly referred to as the "bottom of the pyramid." The study focused on identifying the major determinants influencing digital payment adoption within economically weaker sections of society. The findings revealed that social influence emerged as the most significant factor affecting UPI adoption behavior. Recommendations and encouragement from friends, family members, peers, and social networks were found to play a stronger role in motivating users than technological or economic factors. The study concluded that interpersonal communication and community-level acceptance significantly enhance the willingness of low-income consumers to adopt digital payment systems such as UPI.

Seiler et al. (2013) examined the influence of socio-demographic variables on customer satisfaction and customer loyalty in the private banking industry. The study analyzed how demographic characteristics affect service value, satisfaction, and loyalty within a high-involvement banking context. Using Structural Equation Modeling (SEM) through Partial Least Squares (PLS) and Analysis of Variance (ANOVA), the researchers found that customer satisfaction has a strong positive impact on customer loyalty. Although service value did not directly influence customer loyalty, its effect was fully mediated through customer satisfaction. The study also identified significant differences in customer perceptions based on employment status, type of private banking provider, and size of liquid assets. The findings emphasized the importance of demographic segmentation and personalized financial services in improving customer retention and long-term loyalty in the banking sector.

Data Analysis

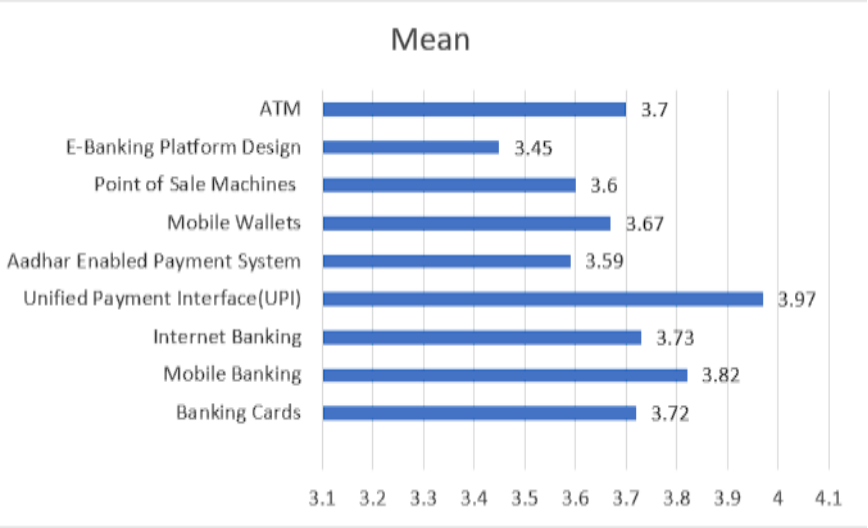
Reliability Analysis	
Cronbach's Alpha	N of Items
0.841	9

The reliability analysis of the scale was conducted using Cronbach's Alpha to measure the internal consistency of the questionnaire items. The obtained Cronbach's Alpha value was 0.841 for 9 items, indicating a high level of reliability and consistency among the variables included in the scale. Generally, a Cronbach's Alpha value above 0.70 is considered acceptable, while values above 0.80 indicate good reliability. Therefore, the result suggests that the items used in the study are highly consistent in measuring the underlying construct and are suitable for further statistical analysis.

Descriptive Analysis of Customer Satisfaction						
Mean	**Median**	**Mode**	**Std. Dev**	**Skewness**	**Kurtosis**	**Mean**
Banking Cards	3.72	4	4	0.851	-0.855	1.625
Mobile Banking	3.82	4	4	0.808	-0.483	0.644
Internet Banking	3.73	4	4	0.783	-0.649	1.16
Unified Payment Interface (UPI)	3.97	4	4	0.773	-0.639	0.368
Aadhar Enabled Payment System	3.59	4	3[a]	0.757	0.11	-0.414
Mobile Wallets	3.67	4	4	0.874	-0.703	0.911
Point of Sale Machines	3.6	4	4	0.747	-0.237	0.375

E-Banking Platform Design	3.45	3	3	0.842	0.022	-0.222
ATM	3.7	4	4	0.924	-0.928	0.735

Source: Complied by Author



Source: Complied by Author

The findings indicate that respondents were generally satisfied with most e-banking services, as all mean values are above the midpoint value of 3. Among the various instruments, Unified Payment Interface (UPI) recorded the highest mean score (3.97), indicating that customers are highly satisfied with UPI services. This may be attributed to the convenience, speed, and ease of digital transactions provided by UPI platforms. Mobile Banking also showed a high satisfaction level with a mean score of 3.82, reflecting the growing preference for smartphone-based banking services. Similarly, Internet Banking (3.73), Banking Cards (3.72), and ATM services (3.70) demonstrated relatively high customer satisfaction, suggesting that traditional digital banking channels continue to remain reliable and widely accepted among users. Mobile Wallets (3.67) and Point of Sale (POS) Machines (3.60) also received favorable responses, indicating moderate to high satisfaction among customers.

In contrast, E-Banking Platform Design recorded the lowest mean value (3.45), suggesting comparatively lower satisfaction levels regarding the interface, usability, or visual design of digital banking platforms. Likewise, the Aadhar Enabled Payment System (AEPS) showed a moderate satisfaction level with a mean score of 3.59, which may reflect concerns regarding accessibility, technical issues, or awareness among users.

The median values for most variables are 4, indicating that a large proportion of respondents expressed satisfaction with the e-banking services. The mode values are also predominantly 4, further confirming that "satisfied" was the most frequent response category across the majority of banking instruments. However, AEPS and E-Banking Platform Design showed a mode of 3, indicating comparatively neutral opinions among respondents.

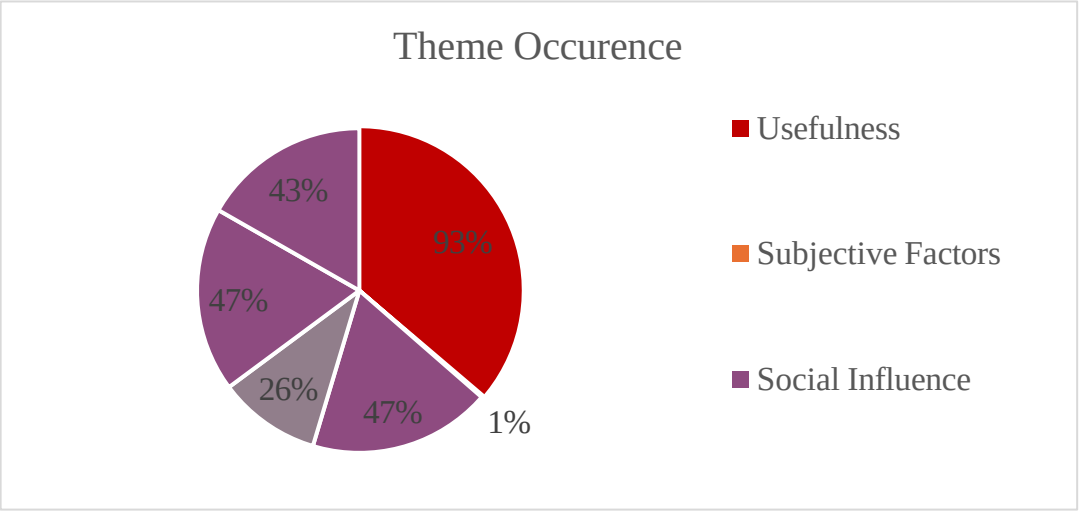
The standard deviation values range between 0.747 and 0.924, suggesting moderate variability in customer responses. ATM services exhibited the highest standard deviation (0.924), implying greater differences in user experiences and satisfaction levels, whereas POS Machines showed the lowest variability (0.747), indicating relatively consistent opinions among respondents.

The skewness values for most variables are negative, indicating that responses are concentrated toward the higher satisfaction side of the scale. For example, ATM services (-0.928) and Banking Cards (-0.855) show strong negative skewness, suggesting that a majority of respondents reported higher satisfaction levels. In contrast, AEPS (0.11) and E-Banking Platform Design (0.022) displayed near-symmetrical distributions, reflecting more balanced opinions among users.

The kurtosis values reveal that Banking Cards (1.625) and Internet Banking (1.16) are relatively leptokurtic, indicating more peaked distributions with responses concentrated around the mean. Variables such as AEPS (-0.414) and E-Banking Platform Design (-0.222) exhibit platykurtic distributions, suggesting flatter response patterns and greater dispersion in opinions.

Overall, the descriptive analysis reveals that customers are generally satisfied with e-banking instruments, particularly UPI and Mobile Banking services, while areas such as platform design and AEPS require further improvement to enhance user satisfaction and overall digital banking experience.

Thematic Analysis of Factors Affecting Customer Satisfaction	
Code (Theme)	**No. of Occurrence**
Usefulness	372
Subjective Factors	2
Social Influence	187
Value Perceived	105
Infrastructure and Facilitating Condition Related	189
Trust Related	172



Thematic Analysis

The thematic analysis identified the major factors influencing customer satisfaction toward e-banking services based on the frequency of responses under each theme. Among all factors, Usefulness recorded the highest number of occurrences (372), indicating that convenience, efficiency, and time-saving features are the most important contributors to customer satisfaction.

This suggests that customers primarily value e-banking services for their functional benefits and ease of transaction.

Infrastructure and Facilitating Conditions Related factors (189 occurrences) and Social Influence (187 occurrences) also emerged as significant determinants of satisfaction. These findings indicate that access to proper technological infrastructure, internet connectivity, and support systems, along with recommendations and influence from family, friends, and peers, strongly affect customer experiences with e-banking services.

Further, trust-related factors (172 occurrences) highlight the importance of security, privacy, and reliability in shaping customer satisfaction. Customers are more satisfied when they perceive digital banking platforms as secure and trustworthy. Value Perceived (105 occurrences) also contributes to satisfaction, suggesting that customers evaluate e-banking services based on the benefits received compared to the cost and effort involved.

In contrast, Subjective Factors recorded only 2 occurrences, indicating that personal attitudes and emotions have relatively less influence on customer satisfaction compared to practical and technological aspects. Overall, the findings reveal that usefulness, infrastructure, social influence, and trust are the key drivers of customer satisfaction in e-banking services.

Word Cloud Analysis

The word cloud presents the most frequently occurring terms related to customer satisfaction toward e-banking services, where larger words indicate factors mentioned more frequently by respondents. The prominent appearance of terms such as "satisfaction," "easy," "network," "accessibility," and "availability" suggests that customers highly value convenience, ease of use, and uninterrupted access while using digital banking platforms.

The frequent occurrence of the term "network" indicates that internet connectivity and technological infrastructure play a significant role in shaping customer experiences with e-banking services. Similarly, "security" and "reliability" highlight the importance of trust, safe transactions, and dependable banking systems in influencing customer satisfaction. Customers appear more satisfied when digital banking platforms are secure and function efficiently without technical issues.

The presence of words such as "awareness," "family," "media," and "employees" reflects the role of social influence and communication in promoting the adoption and usage of e-banking services. Additionally, terms like "cost" and "effectiveness" indicate that customers also consider the economic benefits and efficiency of digital banking services while evaluating their satisfaction. Overall, the word cloud demonstrates that customer satisfaction is mainly driven by accessibility, simplicity, network quality, security, reliability, and social awareness factors.

Regression Analysis

$Y = \beta_0 + \beta x_1 + \beta x_2 + \beta x_3 + \beta x_4 + \beta x_5 + \beta x_6 + \beta x_7 + \beta x_8 + \beta x_9$

Wherein,

Y = Actual Usage of E-Banking services

β_0 = Intercept (Regression Coefficient)

βx_1= Regression Coefficient of Banking Cards Satisfaction

βx_2= Regression Coefficient of Mobile Banking Satisfaction

βx_3= Regression Coefficient of Internet Banking Satisfaction

βx_4= Regression Coefficient of Unified Payment Interface Satisfaction

βx_5= Regression Coefficient of Aadhar Enabled Payment System Satisfaction

βx_6= Regression Coefficient of Mobile Wallets Satisfaction

βx_7= Regression Coefficient of Point-of-Sale Machines Satisfaction

βx_8= Regression Coefficient of Platform Design Satisfaction

βx_9= Regression Coefficient of ATM Satisfaction

Model Summary of Regression Analysis

Model	R	R Square	Adjusted R-Square	Std. Error of the Estimate
1	.632a	.400	.355	1.044

Source: Compiled by Author (SPSS 21.00 Output)

The Model Summary table shows that the regression model produced an R value of 0.632, indicating a moderate positive relationship between customer satisfaction variables and the actual usage of e-banking services. The R Square value of 0.400 implies that approximately 40% of the variation in actual e-banking usage is explained by the satisfaction levels associated with the selected e-banking instruments. This indicates a moderate explanatory power of the model. The Adjusted R-Square value of 0.355 further suggests that even after adjusting for the number of predictors included in the model, the independent variables continue to explain a substantial proportion of variation in e-banking usage. The Standard Error of the Estimate (1.044) indicates a moderate level of prediction accuracy and suggests that the regression model reasonably fits the observed data.

ANOVA Table

Model	Sum of Squares	d.f	Mean Square	F	Sig.
Regression	88	9	9.778	8.95	0.000
Residual	132	121	1.091		
Total	220	130			

Source: Compiled by Author (SPSS 21.00 Output)

The ANOVA results indicate that the regression model is statistically significant. The calculated F-value of 8.95 with a significance value of 0.000 ($p < 0.05$) demonstrates that the independent variables collectively have a significant effect on the actual usage of e-banking services. Since the significance value is lower than the accepted threshold of 0.05, the null hypothesis is rejected, confirming that customer satisfaction with various e-banking instruments significantly influences the usage behavior of customers. Furthermore, the regression sum of squares (88) compared to the residual sum of squares (132) indicates that the model explains a meaningful proportion of the total variability in e-banking usage, though some variation remains influenced by factors outside the scope of the study.

The regression analysis implies that customer satisfaction is a significant determinant of the actual usage of e-banking services. The moderate explanatory power of the model indicates that improvements in satisfaction with digital banking instruments such as UPI, Mobile Banking, Internet Banking, ATM services, and Banking Cards can positively enhance customer adoption and continued usage of e-banking services. The findings suggest that banks should focus on improving service quality, security, accessibility, and user experience to strengthen customer engagement and increase the effectiveness of digital banking platforms.

Practical Implication

The findings of the study provide important practical implications for banks, financial institutions, fintech companies, and policymakers. The analysis revealed that customer satisfaction significantly influences the actual usage of e-banking services, indicating that banks should prioritize customer-centric digital strategies to improve adoption and continued usage. Since customers showed higher satisfaction toward services such as UPI, Mobile Banking, Internet Banking, and Banking Cards, financial institutions should continue enhancing these platforms by improving transaction speed, security, reliability, and ease of use.

The thematic analysis and word cloud further highlighted that usefulness, accessibility, network quality, trust, and social influence are major factors affecting customer satisfaction. Therefore, banks should strengthen technological infrastructure, ensure uninterrupted connectivity, and simplify platform design to improve user experience. Special attention should also be given to cybersecurity measures and trust-building initiatives, as security and reliability strongly influence customer confidence in digital banking systems.

The study also suggests the need for digital literacy and awareness programs, particularly for rural, elderly, and economically weaker populations who may face challenges in adopting e-banking services. Promotional campaigns, customer support services, and educational initiatives can help reduce technological barriers and encourage wider usage of digital banking platforms. Overall, improving customer satisfaction through better infrastructure, user-friendly services, and awareness initiatives can enhance customer retention, increase digital financial inclusion, and strengthen the long-term growth of e-banking services.

Conclusion

The study examined customer satisfaction and the actual usage of various e-banking services by analyzing satisfaction levels toward different digital banking instruments and identifying the factors influencing customer behavior. The findings revealed that customers are generally satisfied with e-banking services, particularly UPI, Mobile Banking, Internet Banking, and Banking Cards, due to their convenience, accessibility, and efficiency. The thematic analysis further showed that usefulness, infrastructure, social influence, trust, and perceived value are the major determinants of customer satisfaction.

The regression analysis confirmed that customer satisfaction significantly influences the actual usage of e-banking services, with the model demonstrating moderate explanatory power. This indicates that improving customer satisfaction can positively increase the adoption and continued use of digital banking platforms. The study concludes that customer-oriented digital banking strategies, strong technological infrastructure, secure transaction systems, and digital awareness initiatives are essential for enhancing customer satisfaction and promoting financial inclusion. Overall, the research highlights the growing importance of digital banking services in transforming customer banking behavior and strengthening the digital financial ecosystem.

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