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# A Study on Determinants of Customer Satisfaction towards Digital Banking Services

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***Abstract*— The paper discusses the major variables that may influence customer satisfaction in the fast-paced digital banking sector in 2026. With the growing adoption of more sophisticated technologies by financial institutions to stay competitive, there has been an academic and operational need to comprehend the transition of traditional service quality into digital-first deliveries. The study employs a conceptual framework structured based on the e-SERVQUAL and Technology Acceptance Model (TAM) with four main independent variables: System Reliability, Security and Privacy, AI Personalization, and Interface Design (UX). A descriptive research design was used, and 385 active users of digital banking were interviewed using an online questionnaire. Descriptive Statistics, Pearson Correlation, and Multiple Regression Analysis were used to review the data in SPSS software. The results indicate a strong model in which the identified determinants predict 75.8% variance in customer satisfaction ($R^2$ = .758). System Reliability (β=.328) and Interface Design (β=.318) were the most relevant predictors with the highest-rated factors in terms of mean user trust (M = 4.20). Even though the correlation between AI Personalization and other variables was high and positive (r=.743), it is the most important area that can be enhanced in the future. The findings cause the null hypothesis to be rejected and attest to the existence of a strong, positive correlation between high-quality digital attributes and user loyalty.**

***Keywords*—Digital Banking, Customer Satisfaction, System Reliability, AI Personalization, User Experience (UX), e-SERVQUAL.**

## I. Introduction

The world of finance has experienced a seismic shift, moving the realm of traditional brick-and-mortar business to a vibrant digital-first environment. This change is predetermined by the fact that banks need to stay abreast of a market that is increasingly becoming tech-savvy in which customer satisfaction is the ultimate measure of a successful business. Digital banking is not a luxury anymore but an essential feature that contributes to financial inclusivity and effectiveness. However, the determinants of customer satisfaction with the advent of complex technologies in institutions have been complex and comprise the technical dimension, the psychological dimension and the service dimension.

A study by Cristina, Duhnea, and Moraru (2024) revealed that the ability of banks to carry over traditional service quality into a virtual setting has also been a potent factor contributing to digital transformation in new European markets such as Romania.

Both Zainuddin et al. (2025) and Hadid et al. (2020) discovered that consumer satisfaction with digital banking in Malaysia is mostly identified by the quality of digital banking. Moreover, with the emergence of modern interfaces such as chatbots, new variables have been introduced into the equation of satisfaction. According to Eren (2021), the effectiveness and perceived smartness of automated support systems have become crucial in determining the user experience.

The combination of theoretical models such as the Technology Acceptance Model (TAM) and UTAUT has enabled scholars to further investigate the reasons behind adopting and sticking with a given platform. According to Aria and Sacco (2023), the notion of satisfaction is not only connected to utility but a by-product of a complex interplay between performance expectancy and ease of use. This applies particularly during times of uncertainty when Harb et al. (2022) found that consumers closely relied on digital channels, and reliability was a non-negotiable aspect.

The digital shift is not unimpeded, however. According to Kaur et al. (2021), perceived risks including financial loss and data privacy breaches have a significant negative impact on the levels of satisfaction in Northern India. This points to a serious Trust-Convenience Paradox. Finally, according to the proposal by Bankuoru Egala et al. (2021), balancing high-tech functions and high-touch security is a thin line that can help banks make sure that the quality of digital banking services is converted into long-term customer retention and loyalty.

## II. Review Of Literature

**TABLE I**
**Literature Review Summary**

| Author and Year | Objective | Methodology | Key Findings | Summary |
|---|---|---|---|---|
| Cristina et al. (2024) | To examine consumer satisfaction determinants in Romania. | Empirical study using quantitative analysis. | Quality of service and interface ease drive satisfaction. | Links local bank performance to digital user fulfillment. |
| Zainuddin et al. (2025) | To identify satisfaction drivers in Malaysian digital banking. | Quantitative survey-based research. | Reliability and responsiveness are primary satisfaction factors. | Confirms service quality as a core loyalty pillar. |
| Pavithra & Geetha (2021) | To assess factors affecting customer | Descriptive study using primary survey data. | Perceived ease of use significantly impacts adoption rates. | Highlights importance of user-friendly interface design. |

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| Author and Year | Objective | Methodology | Key Findings | Summary |
|---|---|---|---|---|
| | perception of services. | | | |
| Kaur et al. (2021) | To analyze risks impacting satisfaction in Northern India. | Quantitative analysis of risk variables. | High security risks negatively correlate with satisfaction. | Identifies trust and safety as critical barriers to success. |
| Almansour & Elkrghli (2023) | To evaluate e-banking satisfaction in Libyan banks. | Cross-sectional study with bank customers. | Efficiency and privacy are the strongest satisfaction predictors. | Validates e-banking benefits in emerging economies. |
| Harb et al. (2022) | To study digital channel satisfaction during uncertainty. | Longitudinal analysis during market instability. | Digital stability provides emotional security to users. | Confirms digital banking as a lifeline during crises. |
| Duc (2022) | To explore satisfaction levels in Vietnam's banking sector. | Meta-case approach and qualitative review. | Customer support and tech-speed define the user experience. | Provides a comprehensive view of Southeast Asian trends. |
| Egala et al. (2021) | To study the link between service quality and retention. | Structural Equation Modeling (SEM). | Superior service quality directly reduces customer churn. | Interplays digital excellence with long-term retention. |
| Aria & Sacco (2023) | To analyze satisfaction via TAM and UTAUT models. | PLS-SEM statistical modeling. | Performance expectancy is the main driver of usage. | Uses theoretical models to predict user behavior. |
| Hadid et al. (2020) | To measure service quality impact on Malaysian banks. | Case study approach with quantitative data. | Efficiency and technical support increase bank reputation. | Emphasizes quality-led satisfaction in the digital age. |
| Eren (2021) | To find determinants of satisfaction in chatbot usage. | Empirical study on AI-driven banking apps. | Accuracy and speed of AI responses build user trust. | Identifies AI as a modern factor for satisfaction. |
| Chauhan et al. (2022) | To review digital banking customer experience trends. | Systematic literature review and future directions. | Personalized experience is the next frontier of satisfaction. | Directs future research toward human-centric tech. |
| Li et al. (2021) | To study the role of cloud security and e-learning. | Quantitative assessment of tech features. | Cloud reliability and security enhance user confidence. | Links advanced tech infrastructure to satisfaction. |
| Raza et al. (2020) | To modify e-SERVQUAL for internet banking loyalty. | Modified e-SERVQUAL model testing. | Privacy and efficiency are essential for building loyalty. | Modernizes service quality metrics for digital platforms. |
| Rahi et al. (2020) | To study factors propelling internet banking adoption. | Survey-based quantitative analysis. | Website design and brand image significantly drive usage. | Highlights visual and brand trust as key influencers. |

## III. Research Gap

Even though research on service quality and TAM models has been conducted widely, there is a significant research gap in the implications of the real-time effect of Agentic AI and predictive personalization on customer satisfaction. The majority of research is dedicated to general e-banking characteristics, but there is a gap in the literature about the effects of proactive, autonomous AI interventions on user trust and retention in the 2026 digital world, as opposed to reactive chatbots.

## IV. Research Design

### *A. Statement of the Problem*

The switch to digital-first banking accompanied by a rapid shift away from traditional branch-based banking has fundamentally changed the consumer-bank relationship. Although digital banking offers the most convenient banking experience, most institutions are grappling with high churn rates because of technical friction, a sense of insecurity, and absence of personalized support. This study is required to bridge the gap between technology implementation and actual use by the user. The key question of interest is what particular predictors of service quality—including reliability, responsiveness, and AI personalization—have the greatest impact on user satisfaction. By identifying these variables, banks will be in a position to invest strategically towards enhancing interface design and security measures that will ultimately translate to customer loyalty.

### *B. Objectives*

1) To find out the impact of system reliability and technical performance on the level of customer satisfaction.
2) To determine the importance of security features and data privacy attitudes in creating trust among users in online interfaces.
3) To assess how AI-driven banking service personalization impacts perceived value and customer loyalty.
4) To establish the correlation between ease-of-use interface design and the rate of adoption of digital banking.

### *C. Research Methodology*

Research methodology is the plan that will be followed to conduct the research in a way that the information attained will be valid, reliable and will answer the research questions.

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Descriptive Research design is most suitable in this case. This method is used to define the features of a population and determine the prevalence of certain determinants. It permits the researcher to take a profile of user preferences and satisfaction levels without controlling variables, giving a clear picture of the current market.

### D. Sources of Data

*Primary Data:* Collected on a personal basis via a structured digital questionnaire. The data collection occurs at the sample units that have been identified (active digital banking users) with the aim of responding to the unique research questions and hypotheses of the current study.

*Secondary Data:* This involves published information found in scholarly journals and financial documents and industry reports. Official banking websites and past articles are also used to obtain information as they provide historical background and theoretical underpinning.

### E. Sampling Plan

*Sampling Unit:* Single active users of digital banking services (mobile apps or web portals).

*Sample Size:* The entire sample size will be a total of 385 responses in order to be statistically significant.

*Sampling Technique:* Convenience Sampling will be used to reach available online users using various online platforms and social media networks effectively.

### F. Tools for Data Collection

*Survey:* The questionnaire will be in the form of an online survey, where answers will be measured using a 5-point Likert scale (Strongly Disagree to Strongly Agree).

*Observation:* Non-participant observation of user interface navigation styles and feedback will be conducted by reviewing app stores to detect common pain points in the digital experience.

*Focus Groups:* Small group discussions with 6-8 frequent users of digital banking will be conducted to obtain qualitative richness of their emotional trust and preferences about digital banking features.

### G. Plan of Analysis

Data obtained will be efficiently put together, categorized and tabulated to guarantee accuracy. The analysis will entail descriptive statistics that will summarize demographic data, followed by Correlation and Multiple Regression Analysis. These instruments, applied using MS Excel and SPSS, will show the intensity of the relationships between determinants of service and overall satisfaction, enabling the researcher to make logical inferences and conclusions.

## V. Conceptual Framework

### A. Variable Identification

*Dependent Variable (DV)*

*Customer Satisfaction:* This is the main result under consideration—the overall satisfaction and positive score of the user of digital banking services provided.

*Independent Variables (IV)*

The following four independent variables are selected to suit the research objectives:

*System Reliability:* The banking platform is stable and operates without errors.

*Security & Privacy:* How safe transactions are perceived to be and how well the bank is able to secure sensitive user data.

*AI Personalization:* The worth of intelligent notifications, financial suggestions, and custom functionality based on Artificial Intelligence.

*Interface Design (UX):* The ease of use, attractiveness and navigability of the mobile application or web portal.

## VI. Results

*H0 (Null Hypothesis):* The identified determinants (System Reliability, Security & Privacy, AI Personalization and Interface Design) have no significant association with the level of customer satisfaction with digital banking services.

*H1 (Alternative Hypothesis):* The level of customer satisfaction with digital banking services is greatly associated with the identified determinants (System Reliability, Security & Privacy, AI Personalization and Interface Design).

### 6.1 Descriptive Statistics

**TABLE II**
**Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Age Group | 385 | 1 | 4 | 2.07 | .906 |
| Occupation | 385 | 1 | 4 | 2.15 | .915 |
| Primary Platform | 385 | 1 | 4 | 1.69 | .934 |
| Use Frequency | 385 | 1 | 4 | 1.97 | .958 |
| Frequent Activity | 385 | 1 | 4 | 2.03 | .907 |
| Start Motivation | 385 | 1 | 4 | 1.96 | 1.210 |
| Preferred Resolution | 385 | 1 | 4 | 2.45 | 1.009 |
| Tech Stable | 385 | 1 | 5 | 3.95 | .989 |
| Realtime Txn | 385 | 1 | 5 | 3.99 | 1.001 |
| MFA Secure | 385 | 1 | 5 | 4.20 | .909 |

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| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Data Trust | 385 | 1 | 5 | 3.87 | 1.053 |
| AI Useful | 385 | 1 | 5 | 3.60 | 1.137 |
| Personalized Value | 385 | 1 | 5 | 3.55 | 1.127 |
| Easy Navigate | 385 | 1 | 5 | 4.01 | .976 |
| UI Design Stay | 385 | 1 | 5 | 3.84 | 1.108 |
| Valid N (listwise) | 385 | | | | |

The descriptive statistics of the 385 respondents provide a clear description of customer perception of digital banking. The mean scores of the core determinants vary between 3.55 and 4.20 on the 5-point Likert scale, denoting a generally high satisfaction level across all variables. Security (MFASecure = 4.20) has the highest mean score, indicating that customers are most confident with multi-factor authentication procedures. Interface Design (Easy Navigate = 4.01) and Technical Performance (RealtimeTxn = 3.99) follow, indicating that users appreciate a smooth and consistent transactional process. Although still favorable, AI-motivated features (AI Useful = 3.60) and Personalized Value (3.55) had the lowest mean scores, showing that although AI is accepted, there is still much to be desired in terms of relevancy of automated insights. The standard deviations (.906-1.210) denote a moderate distribution of answers, meaning a wide variety of user opinions.

### *6.2 Correlation*

**TABLE III**
**Pearson Correlation Matrix**

| | Tech Stable | Data Trust | AI Useful | Easy Navigate | UI Design Stay |
|---|---|---|---|---|---|
| Tech Stable | 1 | .433** | .714** | .823** | .817** |
| Data Trust | .433** | 1 | .185** | .392** | .404** |
| AI Useful | .714** | .185** | 1 | .722** | .743** |
| Easy Navigate | .823** | .392** | .722** | 1 | .813** |
| UI Design Stay | .817** | .404** | .743** | .813** | 1 |

*** Correlation is significant at the 0.01 level (2-tailed).*

The Pearson correlation analysis indicates a very strong positive correlation between all the identified determinants and customer satisfaction (UI Design Stay). It correlates best with System Reliability (r=.817, p=.001) and Interface Design (r=.813, p=.001), indicating that technical stability and ease of navigation contribute most to user retention.

Another high correlation is AI Personalization (r=.743, p<.001), whereas Data Trust has a moderate positive correlation (r=.404, p<.001). All p-values are less than 0.01, confirming statistical significance and proving that overall customer satisfaction increases directly with improvements in these digital attributes.

### *6.3 Regression Analysis*

**TABLE IV**
**Model Summary**

| Model | R | R Square | Adj. R Square | Std. Error |
|---|---|---|---|---|
| 1 | .871a | .758 | .756 | .548 |

*a. Predictors: (Constant), Easy Navigate, Data Trust, AI Useful, Tech Stable*

**TABLE V**
**ANOVA**

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 357.329 | 4 | 89.332 | 297.758 | .000b |
| Residual | 114.006 | 380 | .300 | | |
| Total | 471.335 | 384 | | | |

*a. Dependent Variable: UI Design Stay b. Predictors: (Constant), Easy Navigate, Data Trust, AI Useful, Tech Stable*

**TABLE VI**
**Coefficients**

| Model | B | Std. Error | Beta (β) | t | Sig. |
|---|---|---|---|---|---|
| (Constant) | -.341 | .136 | | -2.520 | .012 |
| Tech Stable | .368 | .054 | .328 | 6.766 | .000 |
| Data Trust | .093 | .030 | .089 | 3.076 | .002 |
| AI Useful | .256 | .038 | .263 | 6.666 | .000 |
| Easy Navigate | .361 | .054 | .318 | 6.679 | .000 |

*a. Dependent Variable: UI Design Stay*

The results of the multiple regression analysis show that the model is powerful and statistically significant ($F = 297.758$, $p < .001$). The value of $R^2$ of .758 indicates that the four determinants account for 75.8 percent of the variance in customer satisfaction. The predictors individually have significant positive impacts ($p < .05$), namely System Reliability (β=.328), Interface Design (β=.318), AI Personalization (β=.263), and Security (β=.089). Given that the p-values of all variables and the entire model are below .05, the Null Hypothesis (H0) is rejected and the Alternative Hypothesis (H1) is accepted. The identified determinants have a significant positive correlation with customer satisfaction in digital banking.

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*6.4 Cronbach's Alpha*

**TABLE VII**
**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .934 | .935 | 8 |

The reliability test indicates that the Cronbach's Alpha of the 8 items is .934. This implies high internal consistency, showing that the survey instrument is very reliable in the measurement of customer satisfaction.

## VII. Discussions

Through the thorough analysis of data from 385 respondents, the following findings summarize the most important determinants of customer satisfaction in the digital banking sector:

- The 75.8% of variance in customer satisfaction directly explained by the four main determinants confirms the proposed research framework.
- System Reliability was the best predictor of user retention, with a Pearson correlation of 0.817 and a Beta coefficient of 0.328.
- Security (MFASecure = 4.20) had the highest mean score, indicating high trust in two-factor authentication measures.
- The Adjusted R-Square of 75.6% indicates that the model is very reliable in forecasting future consumer behavior in the digital banking sector.
- Interface Design is of critical importance to users, with an average score of 4.01 and a high correlation of 0.813 with overall satisfaction.
- The 26-40 age group (approximately 167 respondents) constitutes the largest portion of respondents, implying millennials are the main force behind digital adoption.
- Mobile Banking Apps is the most popular platform, with 224 users reporting them as their primary platform for financial engagements.
- The regression result F-value of 297.758 statistically justifies the rejection of the null hypothesis at $p < 0.001$.
- AI Personalization is a powerful tool but with a comparatively lower mean of 3.60, indicating room for improvement in automated insight relevancy.
- Data Trust recorded a mean of 3.87 with a less pronounced correlation compared to technical stability, indicating financial security remains a foundational concern.
- User satisfaction requires real-time processing; the RealtimeTxn measure of 3.99 shows that users desire real-time fund transfers.
- High engagement is revealed by the data, as 148 respondents use digital banking services daily for personal or business finance transactions.
- The standard deviation of AI Useful was the greatest in the study (1.137), indicating varying views on the usefulness of AI alerts.
- Salaried Professionals (181 respondents) form the biggest occupation category, underlining that the working population is the most common user of digital services.

## VIII. Conclusions

The paper concludes that customer satisfaction in the digital banking industry is a multidimensional construct mostly fuelled by technical excellence and perceived trust. The fact that the most crucial determinants are System Reliability and Interface Design, jointly producing a significant 75.8% variance explained by the research model, is confirmed by the empirical results based on 385 respondents. Since security is a fundamental hygiene factor that customers expect, AI-inspired personalization has turned into a differentiator that adds value to the banking experience.

The null hypothesis has been rejected, supporting the idea that banks can no longer afford to rely only on their historic brand reputation but should develop frictionless, zero-crash environments that make complex financial operations easier. The moderate scores on AI utility indicate an opportunity gap that institutions can capitalize on to streamline their predictive algorithms for more contextual financial guidance. Finally, the study offers an action plan for financial institutions to leave behind primitive digital service delivery models and become customer-focused. By adding a robust security system with an intuitive interface and intelligent automation, banks will be able to foster long-term loyalty and emerge successful in the competitive digital economy of 2026.

## IX. Further Scope Of The Study

This paper presents a plethora of possibilities to further academic and practical knowledge of digital finance. Future research may compare and contrast the perceptions of traditional banking customers with those who adopt Neobanks to find the differences in sources of satisfaction. Increasing geographic reach to rural populations would give important data on barriers to digital literacy and financial inclusion.

Furthermore, longitudinal studies could track shifts in satisfaction as Agentic AI gains more autonomy beyond current predictive warnings. The changing Trust-Convenience Paradox could also be resolved through investigating the effects of Blockchain-based security on user trust. Finally, qualitative techniques such as deep-dive interviews would be useful in portraying the emotional dimension of customer loyalty not observable in quantitative surveys.

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