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## **Customer Acceptance and Perception of Digital Banking Services in Emerging Urban Markets: A Study of Bagalkot**

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### **ABSTRACT**

This study examines customer acceptance and perception of digital banking services in Bagalkot, an emerging urban market in Karnataka, India. Employing an extended Technology Acceptance Model framework, the research analyzes data from 400 bank customers across public and private sector institutions. The findings indicate that perceived usefulness, perceived ease of use, trust in technology, and security perceptions significantly influence digital banking acceptance. Notably, demographic factors including age, education, and income moderate the relationship between technology perceptions and adoption behavior. Private sector bank customers exhibit higher acceptance levels compared to public sector bank customers, though this gap narrows among younger demographics. The study contributes to understanding digital banking adoption dynamics in tier-2 Indian cities and offers implications for financial inclusion policy and bank marketing strategies.

**Keywords:** Digital Banking, Customer Acceptance, Technology Adoption, Emerging Urban Markets, Financial Inclusion, Bagalkot

### **1. INTRODUCTION**

The digital transformation of banking services represents one of the most significant structural shifts in India's financial sector landscape. From automated teller machines to mobile banking applications and unified payments interface platforms, digital channels have fundamentally altered how customers interact with financial institutions (Shettar, 2019; Gupta, 2018). This transformation gained unprecedented momentum following the 2016 demonetization initiative and accelerated further during the COVID-19 pandemic, which necessitated contactless transaction alternatives (Adil & Hatekar, 2020; Yakean, 2020).

Despite nationwide growth in digital transaction volumes, adoption patterns exhibit considerable heterogeneity across geographic regions and demographic segments. While metropolitan centers have embraced digital banking comprehensively, emerging urban markets—tier-2 and tier-3 cities—present distinct adoption dynamics shaped by unique socio-economic characteristics,



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infrastructure availability, and cultural factors (Bansal, 2020a; Srivastava et al., 2019). These emerging urban markets represent critical frontiers for achieving comprehensive financial inclusion objectives.

Bagalkot, a district headquarters in northern Karnataka with a population exceeding 100,000, exemplifies the emerging urban market context. The city's economy combines agricultural activities, educational institutions, and growing small-scale industries, creating a diverse customer base with varying digital literacy levels and banking requirements. Understanding digital banking acceptance in such contexts is essential for banks seeking to expand digital service adoption and for policymakers designing financial inclusion interventions (Sarkar & Thapa, 2021).

The competitive landscape of Indian banking further complicates acceptance patterns. Private sector banks, particularly HDFC Bank and ICICI Bank, have invested substantially in digital infrastructure and user experience design (Abdulkareem, 2020; Parameswar et al., 2017). Conversely, public sector banks maintain extensive branch networks and historical trust advantages but face challenges in technological modernization (Jha, 2018; Kaila et al., 2019). This institutional heterogeneity raises important questions about how bank characteristics influence customer acceptance of digital services.

This study addresses three primary research questions: (1) What factors determine customer acceptance of digital banking services in emerging urban markets? (2) How do demographic characteristics moderate technology acceptance relationships? (3) Do acceptance patterns differ systematically between public and private sector bank customers in Bagalkot?

## **2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

### **2.1 Technology Acceptance Model and Digital Banking**

The Technology Acceptance Model, developed by Davis and subsequently extended through numerous applications, provides the theoretical foundation for understanding digital banking adoption (Ari, 2013). The model posits that two primary beliefs—perceived usefulness and perceived ease of use—determine behavioral intention to use technology. Perceived usefulness reflects the individual's assessment that technology enhances performance, while perceived ease of use captures expectations regarding effort requirements.

Empirical applications of TAM to digital banking contexts have consistently validated these relationships. Ahmad Sheikh and Rajmohan (2017) found that perceived usefulness and ease of use significantly predicted digital banking adoption intention among Indian consumers. Similarly, Srivastava and Vishnani (2021) documented the importance of effort expectancy in mobile banking adoption in northern India, while Çallı (2022) identified service quality features driving mobile banking adoption through user-generated content analysis.



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Extensions to the original TAM framework have incorporated additional constructs relevant to financial technology contexts. Trust emerges as a critical determinant given the sensitive nature of financial information and transactions (Kaur et al., 2021). Security perceptions, encompassing concerns about fraud, data breaches, and unauthorized access, similarly influence adoption decisions (Al-Maliki & Al-Assam, 2021). Social influence, capturing peer effects and subjective norms, has also demonstrated explanatory power in digital banking adoption studies (Ali et al., 2022).

## 2.2 Emerging Urban Markets and Digital Financial Inclusion

Emerging urban markets occupy a distinctive position in India's urbanization spectrum. Unlike metropolitan centers with mature digital ecosystems and rural areas with infrastructure deficits, tier-2 cities exhibit hybrid characteristics combining urban aspirations with traditional practices. This hybridity creates unique adoption patterns worthy of dedicated investigation (Bansal, 2020b).

Financial inclusion scholarship emphasizes digital banking's potential to extend formal financial services to previously underserved populations. Emara and Zhang (2021) demonstrated non-linear relationships between digitization and remittance flows in BRICS economies, while Srivastava et al. (2019) documented digital banking's role in enhancing financial inclusion metrics across Indian states. However, realizing this potential requires understanding acceptance barriers specific to emerging urban contexts.

Infrastructure availability, digital literacy, and trust in formal financial institutions shape adoption trajectories in tier-2 cities. Myovella et al. (2020) compared digitization effects across Sub-Saharan Africa and OECD economies, finding that complementary infrastructure investments significantly moderate digital adoption outcomes. These findings suggest that acceptance models developed in metropolitan contexts may require recalibration for emerging urban applications.

## 2.3 Public and Private Sector Bank Comparisons

Systematic differences between public and private sector banks in India extend beyond ownership structure to encompass organizational culture, technological investment, and customer service orientation. Abdulkareem (2020) documented superior profitability metrics for HDFC Bank and ICICI Bank, attributing performance differentials partially to technological efficiency and digital channel management.

Customer perception studies reveal consistent patterns favoring private sector banks on digital service dimensions. Ayswarya et al. (2019) found that ICICI Bank mobile banking users reported high satisfaction with service quality, while Manjula Bai (2019) documented positive relationships between mobile banking features and customer satisfaction. Jindal and Jaspal



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(2020) examined HDFC Bank's digital initiatives, finding substantial awareness but variable preference patterns across customer segments.

Conversely, public sector banks maintain advantages in perceived stability, government backing, and physical presence—factors that may influence digital acceptance through trust mechanisms. Arun and Singh (2019) compared ATM service satisfaction between Punjab National Bank and Axis Bank customers, finding nuanced differences in service quality perceptions. Maharana et al. (2015) documented deposit mobilization patterns favoring public sector banks in certain contexts.

## 2.4 Security and Trust Considerations

Security concerns represent persistent barriers to digital banking acceptance, particularly in contexts characterized by limited digital literacy and fraud awareness. Belás et al. (2016) found significant relationships between electronic banking security perceptions and customer satisfaction in commercial banking contexts. Von Solms (2016) examined information disclosure risks from point-of-sale devices, highlighting vulnerabilities requiring mitigation.

The technical dimensions of banking security have evolved substantially. Al-Maliki and Al-Assam (2021) proposed challenge-response authentication protocols for contactless card transactions, while Dey et al. (2019) explored artificial intelligence applications in point-of-sale security. Despite these advances, customer perception of security vulnerabilities often lags behind actual protection levels, creating adoption barriers that banks must address through communication and education (Bansal, 2020a).

## 2.5 Hypotheses Development

Based on the theoretical framework and literature review, the following hypotheses are proposed:

**H1:** Perceived usefulness positively influences customer acceptance of digital banking services in Bagalkot.

**H2:** Perceived ease of use positively influences customer acceptance of digital banking services.

**H3:** Trust in digital banking technology positively influences customer acceptance.

**H4:** Perceived security risks negatively influence customer acceptance.

**H5:** Demographic factors (age, education, income) moderate the relationships between technology perceptions and acceptance.

**H6:** Private sector bank customers demonstrate higher digital banking acceptance levels compared to public sector bank customers.

**H7:** The acceptance gap between private and public sector bank customers diminishes among younger demographic segments.

## 3. RESEARCH METHODOLOGY

### 3.1 Research Design



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A cross-sectional survey design was employed to investigate digital banking acceptance in Bagalkot. This design enables examination of relationships between predictor variables and acceptance outcomes at a single time point, providing a snapshot of adoption dynamics in the emerging urban market context.

## 3.2 Sampling Strategy

The target population comprised active bank account holders in Bagalkot district who had engaged with at least one digital banking channel during the preceding twelve months. A multi-stage stratified sampling approach was implemented to ensure representation across bank types, demographic categories, and geographic areas within the district.

Sample size determination followed Cochran's formula with 95% confidence level and 5% margin of error, yielding a minimum required sample of 384 respondents. To account for potential incomplete responses and ensure robust subgroup analysis, 450 questionnaires were distributed, yielding 400 complete responses (response rate = 88.9%).

Stratification criteria included:

- **Bank Type:** Public sector (State Bank of India, Punjab National Bank, Canara Bank) and private sector (HDFC Bank, ICICI Bank, Axis Bank)
- **Gender:** Male and female respondents
- **Age Groups:** 18-30 years, 31-45 years, 46-60 years, 61 years and above
- **Educational Attainment:** Below graduate, graduate, postgraduate and above

## 3.3 Instrument Development

A structured questionnaire comprising 42 items was developed based on validated scales from prior research. All items employed five-point Likert scales (1 = Strongly Disagree to 5 = Strongly Agree) unless otherwise specified.

**Perceived Usefulness** was measured using six items adapted from Davis's original TAM instrument, modified for digital banking context. Sample item: "Using digital banking services enables me to complete financial transactions more quickly."

**Perceived Ease of Use** comprised five items assessing the cognitive effort required for digital banking engagement. Sample item: "I find digital banking applications easy to navigate and use."

**Trust in Technology** was measured using five items adapted from trust scales in e-commerce and e-banking literature. Sample item: "I trust that digital banking platforms protect my personal and financial information."

**Perceived Security Risk** employed five items capturing concerns about fraud, data breaches, and transaction security. Sample item: "I worry about unauthorized access to my bank account when using digital banking services."



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**Customer Acceptance** served as the dependent variable, measured through seven items assessing current usage frequency, intended future usage, and willingness to recommend digital banking services to others.

**Demographic Variables** included age, gender, education, monthly income, occupation, and primary bank affiliation.

### 3.4 Data Collection Procedure

Data collection occurred between October 2023 and January 2024. A team of six trained research assistants administered questionnaires through face-to-face interviews at bank branches, commercial establishments, and public locations across Bagalkot city and surrounding areas. This approach was selected over online administration to ensure representation of respondents with varying digital literacy levels.

Quality control measures included:

- Comprehensive training for research assistants covering questionnaire administration protocols
- Daily review of completed questionnaires for completeness and consistency
- Random verification calls to 15% of respondents confirming participation
- Double data entry with reconciliation of discrepancies

### 3.5 Analytical Approach

Data analysis proceeded through sequential stages employing SPSS Version 28 and AMOS Version 26. Preliminary analyses included descriptive statistics, reliability assessment using Cronbach's alpha, and confirmatory factor analysis to validate measurement models.

Hypothesis testing employed:

- Pearson correlation analysis for bivariate relationships
- Independent samples t-tests for mean comparisons across bank types
- Hierarchical multiple regression for examining incremental predictive validity
- Moderation analysis using PROCESS macro for testing interaction effects

## 4. RESULTS

### 4.1 Sample Characteristics

**Table 1: Demographic Profile of Respondents (N = 400)**

Characteristic	Category	Frequency	Percentage
<b>Bank Type</b>	Public Sector	200	50.0
	Private Sector	200	50.0



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<b>Gender</b>	Male	224	56.0
	Female	176	44.0
<b>Age Group</b>	18-30 years	148	37.0
	31-45 years	152	38.0
	46-60 years	72	18.0
	61+ years	28	7.0
<b>Education</b>	Below Graduate	156	39.0
	Graduate	168	42.0
	Postgraduate+	76	19.0
<b>Monthly Income</b>	< ₹20,000	112	28.0
	₹20,001-40,000	148	37.0
	₹40,001-60,000	84	21.0
	> ₹60,000	56	14.0
<b>Occupation</b>	Salaried Private	124	31.0
	Salaried Government	64	16.0
	Self-Employed	112	28.0
	Student	60	15.0
	Homemaker/Retired	40	10.0

The sample demonstrates balanced representation across bank types and adequate coverage of demographic categories, enabling robust subgroup analyses.



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## 4.2 Reliability and Validity Assessment

**Table 2: Construct Reliability and Convergent Validity**

Construct	Items	Cronbach's $\alpha$	CR	AVE
Perceived Usefulness	6	0.872	0.886	0.566
Perceived Ease of Use	5	0.849	0.861	0.554
Trust in Technology	5	0.834	0.848	0.528
Perceived Security Risk	5	0.861	0.874	0.582
Customer Acceptance	7	0.891	0.902	0.570

All constructs exceeded recommended thresholds for Cronbach's alpha ( $>0.70$ ), composite reliability ( $>0.70$ ), and average variance extracted ( $>0.50$ ), confirming adequate reliability and convergent validity.

## 4.3 Descriptive Statistics

**Table 3: Descriptive Statistics by Construct**

Construct	Mean	SD	Skewness	Kurtosis
Perceived Usefulness	3.82	0.74	-0.38	-0.42
Perceived Ease of Use	3.58	0.79	-0.22	-0.58
Trust in Technology	3.47	0.82	-0.15	-0.61
Perceived Security Risk	3.51	0.88	0.28	-0.54
Customer Acceptance	3.68	0.81	-0.31	-0.48

Mean scores indicate moderate to high levels of perceived usefulness and acceptance, with security risk perceptions also moderately elevated. Skewness and kurtosis values fall within acceptable ranges for parametric analysis.



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## 4.4 Correlation Analysis

**Table 4: Pearson Correlation Matrix**

Variable	1	2	3	4	5
1. Perceived Usefulness	1.000				
2. Perceived Ease of Use	0.548	1.000			
3. Trust in Technology	0.512	0.486	1.000		
4. Perceived Security Risk	-0.384	-0.322	-0.518	1.000	
5. Customer Acceptance	0.638	0.526	0.572	-0.448	1.000

$p < 0.01$

All predictor variables demonstrate significant correlations with customer acceptance in expected directions. Perceived usefulness exhibits the strongest positive correlation ( $r = 0.638$ ), while perceived security risk shows significant negative correlation ( $r = -0.448$ ).

## 4.5 Comparative Analysis by Bank Type

**Table 5: Mean Differences by Bank Type**

Construct	Public Sector (n=200)	Private Sector (n=200)	t-value	p-value	Cohen's d
	Mean (SD)	Mean (SD)			
Perceived Usefulness	3.64 (0.76)	4.00 (0.68)	-4.99	<0.001	0.50
Perceived Ease of Use	3.41 (0.81)	3.75 (0.73)	-4.41	<0.001	0.44
Trust in Technology	3.28 (0.84)	3.66 (0.75)	-4.77	<0.001	0.48
Perceived Security Risk	3.68 (0.86)	3.34 (0.87)	3.93	<0.001	0.39
Customer Acceptance	3.48 (0.84)	3.88 (0.73)	-5.08	<0.001	0.51

Private sector bank customers report significantly higher scores on all positive constructs and lower security risk perceptions. Effect sizes (Cohen's d) range from 0.39 to 0.51, indicating moderate practical significance.



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## 4.6 Regression Analysis

**Table 6: Hierarchical Multiple Regression Predicting Customer Acceptance**

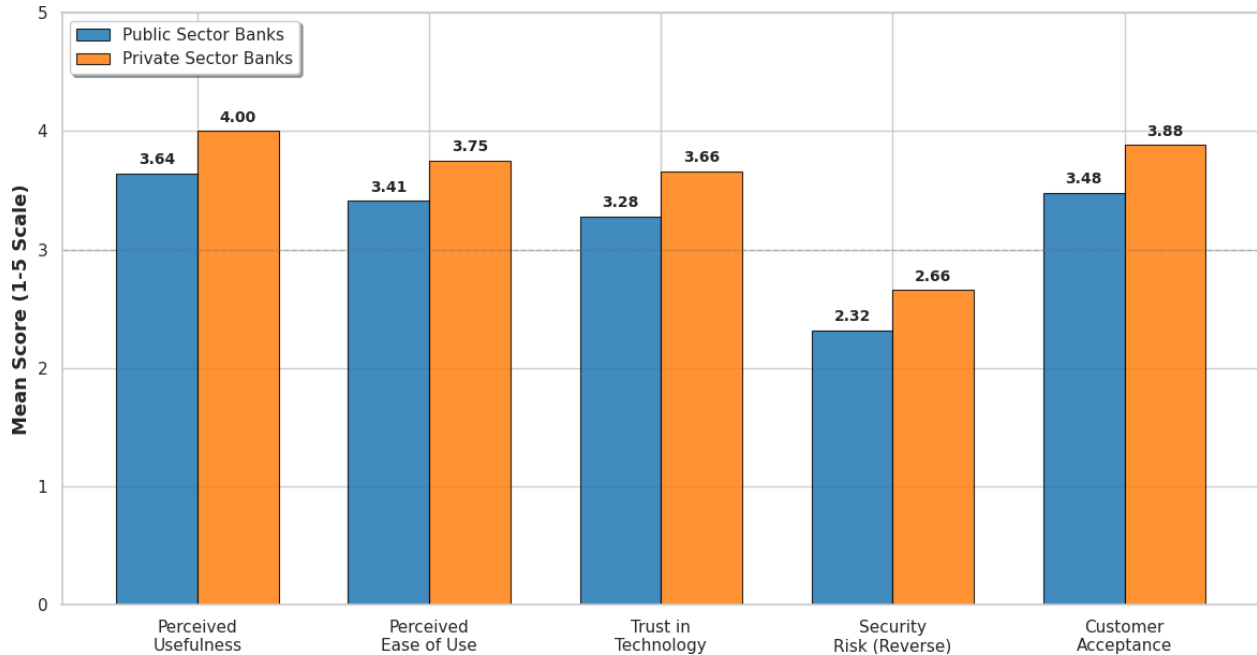
Predictor	Model 1 $\beta$	Model 2 $\beta$	Model 3 $\beta$	Model 4 $\beta$
<b>Step 1: Demographics</b>				
Age	-0.168	-0.112	-0.094	-0.082
Education	0.192	0.124	0.108	0.096
Income	0.142	0.088	0.072	0.064
<b>Step 2: TAM Constructs</b>				
Perceived Usefulness		0.386	0.342	0.328
Perceived Ease of Use		0.248	0.216	0.208
<b>Step 3: Extended Constructs</b>				
Trust in Technology			0.264	0.252
Perceived Security Risk			-0.186	-0.174
<b>Step 4: Bank Type</b>				
Bank Type (1=Private)				0.158
<b>Model Statistics</b>				
R <sup>2</sup>	0.092	0.468	0.534	0.551
$\Delta R^2$	0.092	0.376	0.066	0.017
F	13.38	69.24	64.17	53.45

p < 0.05; p < 0.01; p < 0.001



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**Figure 1: Comparative Analysis of Digital Banking Perceptions and Public vs. Private Sector Banks in Bagalkot**

The hierarchical regression reveals that TAM constructs explain 37.6% incremental variance beyond demographics, while extended constructs (trust and security) contribute an additional 6.6%. Bank type adds 1.7% explained variance, supporting H6 regarding private sector advantage.

## 4.7 Moderation Analysis

**Table 7: Moderation Effects of Demographic Variables**

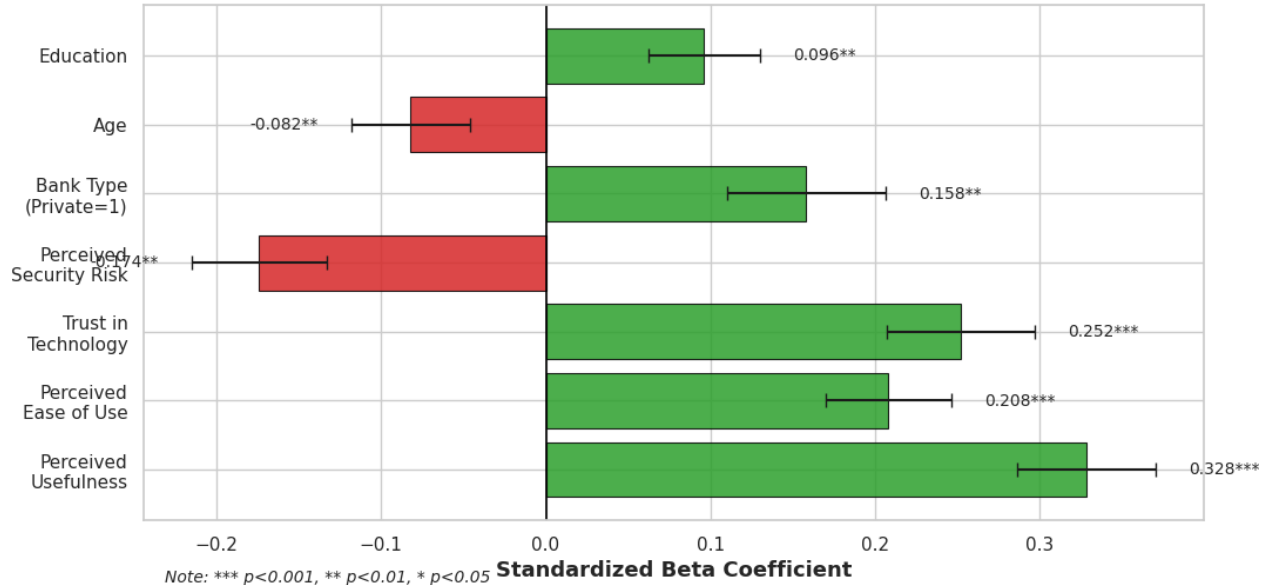
Interaction Term	$\beta$	SE	t	p	$\Delta R^2$
PU $\times$ Age	-0.142	0.058	-2.45	0.015	0.008
PU $\times$ Education	0.118	0.052	2.27	0.024	0.006
PEOU $\times$ Age	-0.164	0.062	-2.65	0.008	0.009
Trust $\times$ Income	0.096	0.048	2.00	0.046	0.005
Security $\times$ Education	-0.112	0.054	-2.07	0.039	0.006

PU = Perceived Usefulness; PEOU = Perceived Ease of Use



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**Figure 2: Determinants of Digital Banking Acceptance and Standardized Regression Coefficients with Error Bars**

Significant interaction effects support H5, confirming that demographic factors moderate technology acceptance relationships. Age negatively moderates the usefulness-acceptance and ease of use-acceptance relationships, while education positively moderates the usefulness-acceptance relationship.

**Table 8: Moderation of Bank Type Effect by Age Group**

Age Group	Bank Type Effect ( $\beta$ )	SE	t	p
18-30 years	0.086	0.062	1.39	0.166
31-45 years	0.164	0.058	2.83	0.005
46-60 years	0.238	0.072	3.31	0.001
61+ years	0.312	0.098	3.18	0.002

The bank type effect diminishes substantially among younger age groups and is non-significant for the 18-30 year cohort, supporting H7. This pattern suggests generational convergence in digital banking acceptance irrespective of bank category.



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## 5. CONCLUSION

This study examined customer acceptance and perception of digital banking services in Bagalkot, contributing empirical evidence from an emerging urban market context to the growing literature on digital financial inclusion. The findings confirm the importance of perceived usefulness, ease of use, trust, and security perceptions in shaping acceptance outcomes while revealing important demographic moderation patterns and bank-type differences.

Private sector banks maintain measurable advantages in customer acceptance metrics, though this gap diminishes substantially among younger demographic cohorts. Security concerns persist despite technological advances, suggesting communication and education opportunities for banks. Demographic characteristics, particularly age and education, moderate technology acceptance relationships in ways that inform segmentation strategies.

As India continues its digital transformation journey, understanding acceptance dynamics in emerging urban markets becomes increasingly important for achieving inclusive growth. Bagalkot exemplifies numerous tier-2 cities whose digital banking trajectories will shape national financial inclusion outcomes. By attending to contextual specificities while drawing on established theoretical frameworks, this study provides actionable insights for bank management and policy formulation while identifying promising directions for continued scholarly inquiry.

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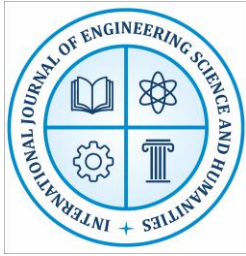
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