

## EFFECT OF DIGITAL BANKING TRANSFORMATION ON PUBLIC AND PRIVATE BANKS IN SATNA

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### Abstract

This paper looks at how digital banking transformation affects the performance and service delivery of chosen public and private sector banks in Satna, Madhya Pradesh. The study emphasises four banks—State Bank of India (SBI) and Punjab National Bank (PNB) from the public sector, and ICICI Bank and HDFC Bank from the private sector. Data were gathered from 120 consumers and 40 staff members using structured questionnaires using a quantitative method. The results showed that private banks had significantly improved digital banking adoption, which led to greater customer satisfaction, regular use, and more efficient service delivery in comparison to public sector banks. Staff members of private banks viewed digital transformation as less troublesome and more advantageous as well. On the other hand, public sector banks struggled with technical problems and insufficient training. Statistical tests verified a notable variation in satisfaction ratings between public and private banks. The survey finds that although digital banking has improved the banking experience in all areas, private banks are better placed in terms of digital performance. Public sector banks are advised strategic upgrades in infrastructure, training, and consumer involvement.

**Keywords:** Digital Banking, Public and Private Banks, Customer Satisfaction, Technological Transformation, Banking Sector, SBI, PNB, ICICI, HDFC, Digital Adoption.

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### 1. INTRODUCTION

A key component of success in today's business environment is digital transformation, which is described as using digital technology to redefine business models and open up new revenue

streams (Wang et al., 2022). The banking sector is not an exception to this trend, which is pervasive throughout life and coincides with the fourth industrial revolution. Digitalisation has become essential for banks worldwide due to increased competition and the disruptive emergence of FinTech startups. Consequently, digital transformation has become a core development strategy for the majority of banks.

The Research indicates that banks may benefit strategically from using information technology (IT) in a number of ways (Verhoef et al., 2021). Banks may improve customer satisfaction and build closer relationships by using IT to better understand customer behaviour. Cross-selling financial items is made easy with online banking, which can increase bank revenue and customer growth.

According to studies by Bátiz-Lazo & Woldesenbet (2006), Acharya & Yorulmazer (2008), and Zhao et al. (2019), digitalisation can improve bank efficiency and possibly boost their competitiveness. Although some previous research indicated that digitalisation and profitability were positively correlated, the new study delves deeper into this link than Do et al. (2022).

Public and private sector banks in India have adopted digital banking to different extents. While public sector banks have steadily increased their digital services to match the evolving demands of consumers and regulatory requirements, private banks have been leading the way in technology innovation and customer-centric digital solutions. But the success of this change varies between banks, with clear disparities in infrastructure, service quality, and user experience.

Satna, a city in Madhya Pradesh, offers a special setting to investigate these variations. With rising digital literacy and expanding access to mobile and internet services, it is an emerging metropolitan area. This study intends to evaluate the real-world effect of digital banking transformation on both consumers and employees by examining chosen banks in Satna—State Bank of India (SBI) and Punjab National Bank (PNB) from the public sector, and ICICI Bank and HDFC Bank from the private sector.

The desire to know how digitalisation has affected banking efficiency, customer satisfaction, and service quality drives this work. It also aims to evaluate the efficacy of digital adoption between public and private banks and highlight the issues they encounter. The findings of this

study can offer useful contributions for policy-making, operational enhancements, and improved customer involvement plans.

## 2. LITERATURE REVIEW

An empirical study by **Singh and Sayeed (2022)** evaluated Satna District consumers' opinions of public sector banks, concentrating on Punjab National Bank (PNB) and State Bank of India (SBI). 300 clients participated in surveys, interviews, and conversations as part of their mixed-method study. Customer views of service quality, accessibility, trust, and satisfaction were examined in the analysis. The results showed gaps in service delivery, particularly in digital banking services, and showed varying degrees of client satisfaction. Consumers also offered suggestions for improving the entire banking experience, stating that public sector banks should improve their offerings to keep up with evolving demands.

The Russian financial system was studied by **Tsindeliani et al. (2022)** in light of the growth of the digital economy. The authors determined the legal and strategic prerequisites for facilitating digitalisation in the banking industry through political and legal study. Their research showed that in order to facilitate the long-term digital transformation of financial services, regulatory harmonisation and international cooperation were crucial. The researchers came to the conclusion that a strong framework for digital banking could enhance the application of prudential regulations and safeguard the general welfare.

**Dogan (2024)** looked into how the digital transformation affected Turkish banks' financial results. Using an exploratory mixed-methods approach, the study used content analysis to create a Digital Transformation (DT) ratio. The analysis included metrics like ROA, ROE, and CAR and included data from 2005 to 2023. According to the results, DT and financial performance metrics in public banks were negatively correlated, but they were positively correlated in private banks. The study found that while digital transformation had a mixed impact on public institutions, it had a considerable impact on private banks' financial performance.

By creating an index system based on three dimensions—strategic, business, and management transformations—**Xie and Wang (2023)** examined the digital transformation of China's commercial banks. According to their empirical study, digital transformation accelerated the decline of physical banking channels, improved bank performance, and lessened the pressure

from new technology entrants. The study found that increasing bank efficiency and competitiveness in the market was mostly dependent on digital transformation.

### **3. RESEARCH METHODOLOGY**

#### **3.1.Research Design**

This study adopted a descriptive and comparative research design to examine the impact of digital banking transformation on selected public and private sector banks in Satna. The objective was to evaluate and compare digital service adoption, customer satisfaction, and employee perceptions across public and private banking institutions.

#### **3.2.Area of Study**

The research was conducted in Satna district, Madhya Pradesh, with a specific focus on four banks operating in the region:

- Public Sector Banks: State Bank of India (SBI) and Punjab National Bank (PNB)
- Private Sector Banks: ICICI Bank and HDFC Bank

#### **3.3.Research Approach**

A quantitative approach was employed to collect and analyze primary data. Structured questionnaires were administered to both customers and employees to gather measurable insights on digital banking usage, satisfaction levels, challenges, and perceived benefits.

#### **3.4.Sample Design**

A stratified random sampling method was used to ensure proportionate representation from each bank type and group (customers and employees).

#### **3.5.Sample Size:**

**Customers:** 120 respondents (30 each from SBI, PNB, ICICI, and HDFC)

**Bank Employees:** 40 respondents (10 each from the four selected banks)

The sample included individuals with active engagement in digital banking services such as mobile apps, internet banking, ATMs, and UPI.

### 3.6.Data Collection Methods

- **Primary Data:** It is collected using structured, pre-tested questionnaires. The customer survey focused on usage frequency, satisfaction, challenges, and preferred digital platforms. The employee survey explored benefits, operational efficiency, and issues in digital service implementation.
- **Secondary Data:** It is gathered from RBI reports, bank websites, annual reports, academic journals, and published financial studies relevant to digital banking transformation in India.

### 3.7.Tools and Techniques for Data Analysis

The Quantitative data collected from the survey were analyzed using the following statistical tools:

- Descriptive statistics (mean, frequency, percentage) to summarize data
- Independent sample t-test to compare mean satisfaction levels between public and private sector banks

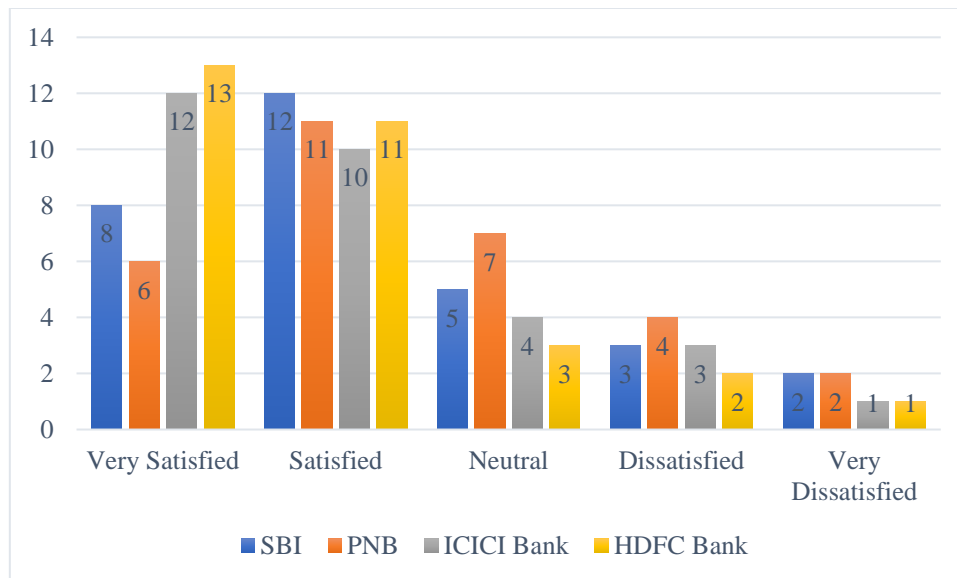
## 4. DATA ANALYSIS AND INTREPRETATION

The findings indicate that users of private sector banks (ICICI and HDFC) expressed more satisfaction with digital banking services than those of public sector banks (SBI and PNB) in Table 1.

**Table 1: Customer Satisfaction with Digital Banking Services**

Bank Name	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied	Total
SBI	8	12	5	3	2	30
PNB	6	11	7	4	2	30
ICICI Bank	12	10	4	3	1	30

<b>HDFC Bank</b>	13	11	3	2	1	30
<b>Total</b>	<b>39</b>	<b>44</b>	<b>19</b>	<b>12</b>	<b>6</b>	<b>120</b>



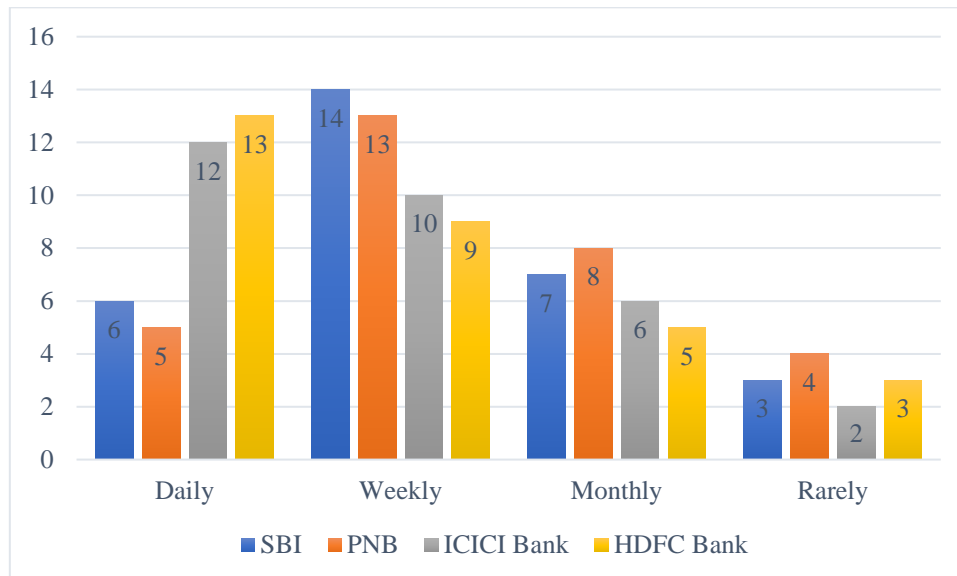
**Figure 1: Graphical Presentation of Customer Satisfaction with Digital Banking Services**

The data indicating the better service experience in private banks, HDFC Bank got the most "very satisfied" replies (13), followed by ICICI Bank with twelve. By comparison, public banks had a more even distribution with less "very satisfied" comments and a somewhat greater number of neutral and unhappy replies. This implies that although public banks have embraced digital services, the customer experience and satisfaction stay relatively lower than that of private banks.

**Table 2: Frequency of Digital Banking Usage (Customers)**

Bank Name	Daily	Weekly	Monthly	Rarely	Total
<b>SBI</b>	6	14	7	3	30
<b>PNB</b>	5	13	8	4	30

<b>ICICI Bank</b>	12	10	6	2	30
<b>HDFC Bank</b>	13	9	5	3	30
<b>Total</b>	36	46	26	12	120



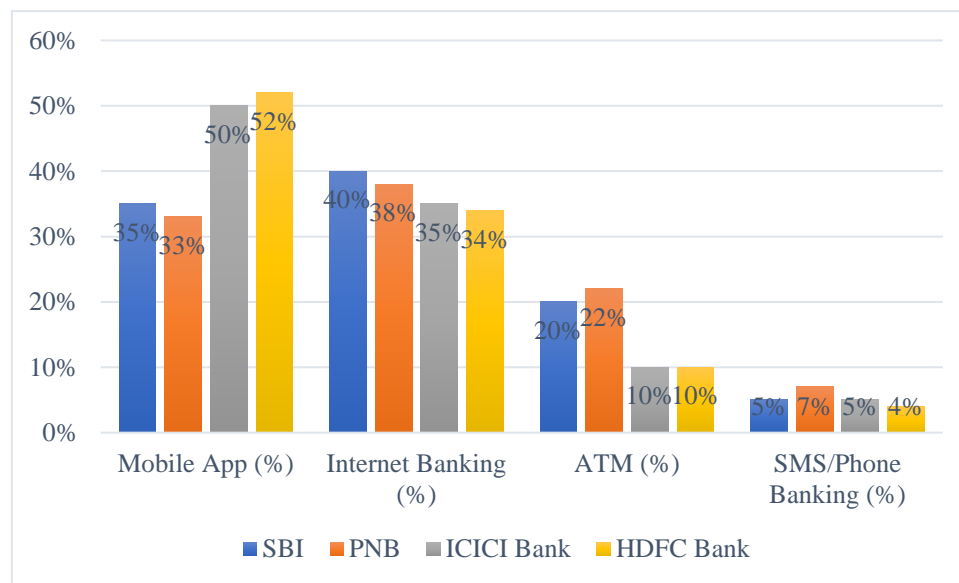
**Figure 2: Graphical Presentation of Frequency of Digital Banking Usage (Customers)**

Table 2 shows the Different bank types showed great variation in the use frequency of digital banking services. With greater daily and weekly usage rates, private bank customers—especially those of ICICI and HDFC—used digital services more often. Showing good adoption, ICICI Bank had 12 daily users and HDFC had 13. Conversely, public banks had less daily users and a higher percentage of consumers said monthly or infrequent use. Private banks' increased comfort, simplicity of use, and maybe superior digital infrastructure drive this trend, which promotes more regular use.

**Table 3: Preferred Digital Banking Channels**

<b>Bank Name</b>	<b>Mobile App (%)</b>	<b>Internet Banking (%)</b>	<b>ATM (%)</b>	<b>SMS/Phone Banking (%)</b>
<b>SBI</b>	35%	40%	20%	5%

<b>PNB</b>	33%	38%	22%	7%
<b>ICICI Bank</b>	50%	35%	10%	5%
<b>HDFC Bank</b>	52%	34%	10%	4%



**Figure 3: Graphical Presentation of Preferred Digital Banking Channels**

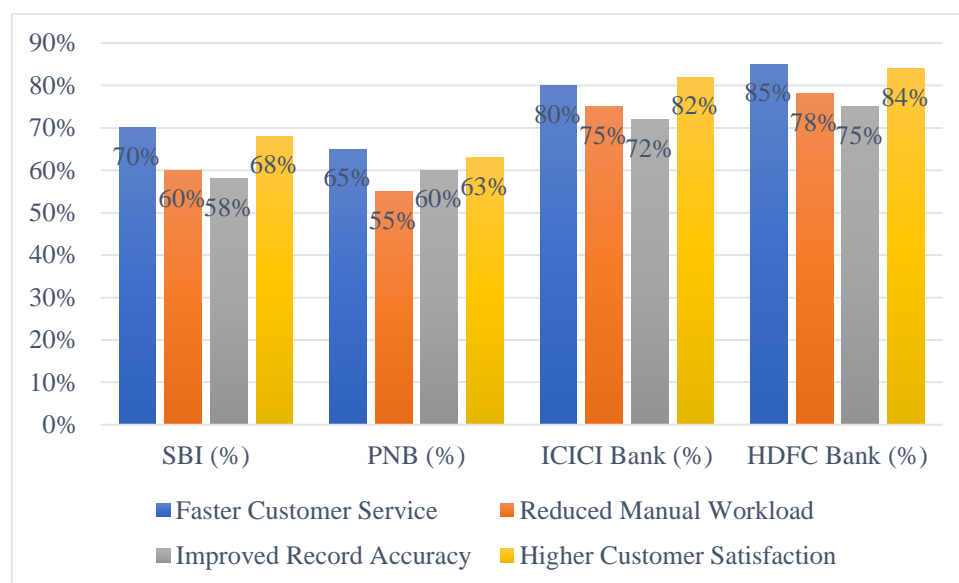
Table 3 shows though private banks, particularly HDFC and ICICI, indicated greater mobile app use (52% and 50% respectively), customers at all banks favoured mobile apps and internet banking. Public banks such as SBI and PNB leaned more towards internet banking and ATMs, which implies a slower move to mobile-first platforms. Across all banks, SMS and phone banking were the least desired methods, suggesting a move towards more participatory, app-based platforms. This shows that private banks are more in line with current customer demands in digital service channels.

**Table 4: Employee Perception of Digital Banking Benefits**

<b>Benefit</b>	<b>SBI (%)</b>	<b>PNB (%)</b>	<b>ICICI Bank (%)</b>	<b>HDFC Bank (%)</b>



<b>Faster Customer Service</b>	70%	65%	80%	85%
<b>Reduced Manual Workload</b>	60%	55%	75%	78%
<b>Improved Record Accuracy</b>	58%	60%	72%	75%
<b>Higher Customer Satisfaction</b>	68%	63%	82%	84%



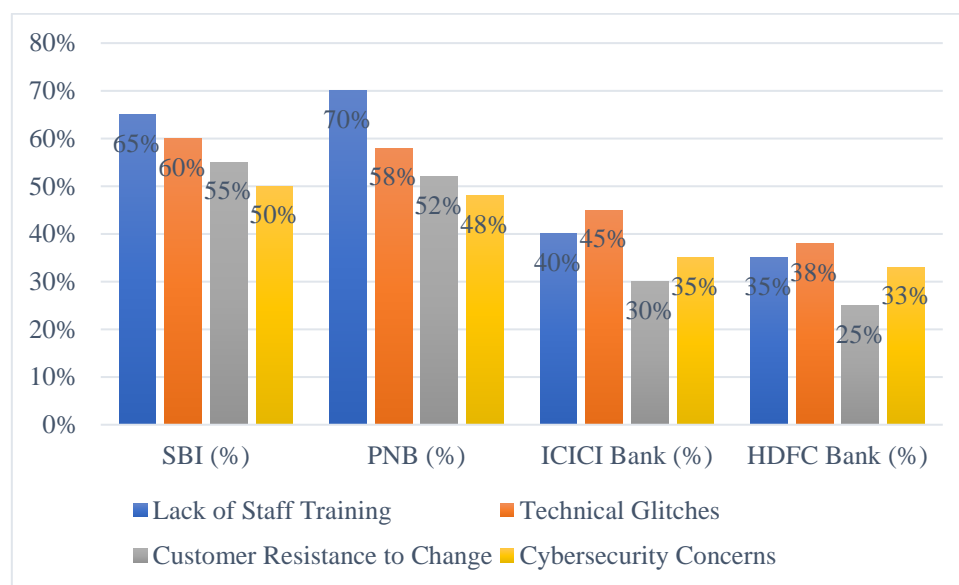
**Figure 4: Graphical Presentation of Employee Perception of Digital Banking Benefits**

Table 4 shows the Staff members of all four institutions noted several advantages of digital banking. Employees of private banks, especially HDFC and ICICI, stated more favourable views across all mentioned advantages—especially in relation to customer service and satisfaction. For example, 85% of HDFC employees thought digital banking greatly improved customer service, as opposed to 65% of PNB employees. These variations suggest that private banks might have superior internal processes, training, and performance metrics in line with their digital operations, hence promoting more confident staff involvement.

**Table 5: Challenges Faced in Implementing Digital Banking (Employees)**

<b>Challenge</b>	<b>SBI (%)</b>	<b>PNB (%)</b>	<b>ICICI Bank (%)</b>	<b>HDFC Bank (%)</b>

<b>Lack of Staff Training</b>	65%	70%	40%	35%
<b>Technical Glitches</b>	60%	58%	45%	38%
<b>Customer Resistance to Change</b>	55%	52%	30%	25%
<b>Cybersecurity Concerns</b>	50%	48%	35%	33%



**Figure 5: Graphical Presentation of Challenges Faced in Implementing Digital Banking (Employees)**

Table 5 shows the findings showed that staff of public sector banks (SBI and PNB) struggled more than their private sector peers in putting digital services into practice. Major problems were more regular technical failures and insufficient personnel training (65–70%). On the other hand, private banks such as ICICI and HDFC claimed less difficulties with lower percentages in all areas, implying more strong procedures, training tools, and improved technical infrastructure. These findings draw attention to the necessity of more money and training in digital capacity development in public sector banks.

**Table 6: Mean Customer Satisfaction Score (on a 5-point scale)**

Bank Name	Mean Score	Interpretation

<b>SBI</b>	3.4	Moderate Satisfaction
<b>PNB</b>	3.2	Moderate Satisfaction
<b>ICICI Bank</b>	4.1	High Satisfaction
<b>HDFC Bank</b>	4.2	High Satisfaction

Table 6 shows the Private banks have much better mean customer satisfaction ratings. While SBI and PNB fell behind with 3.4 and 3.2 respectively, HDFC Bank topped the list with 4.2 and ICICI Bank came next with 4.1. This significant disparity suggests a stronger fit of digital services with customer expectations in private banks, probably because of enhanced interface design, quicker transactions, and better customer support systems.

**Table 7: Independent Sample t-Test – Public vs Private Banks**

<b>Variable</b>	<b>Public Banks (SBI &amp; PNB)</b>	<b>Private Banks (ICICI &amp; HDFC)</b>	<b>t-value</b>	<b>p-value</b>	<b>Result</b>
<b>Customer Satisfaction</b>	3.3	4.15	-4.87	0.000	Significant

Table 7 shows the t-test looked at public and private bank clients' degree of satisfaction. The test verifies a statistically significant difference in customer satisfaction between the two industries with a notable p-value ( $0.000 < 0.05$ ). Private banks' average satisfaction rating of 4.15 was significantly higher than state banks' 3.3. This supports earlier results showing that private banks provide better digital banking services and improve customer experience than public banks.

The Key elements influencing customer satisfaction—including Service Quality, Staff Responsiveness, Ease of Access to Banking Services, and Technology and Digital Banking Experience—were analysed descriptively. Customer impressions were summarised by means of each statement's mean scores and standard deviations (SD).

**Table 8: Descriptive Statistics for Major Factors (n = 400)**

Factor	Mean (Public)	Mean (Private)	Overall Mean	Standard Deviation (SD)
Service Quality	3.95	4.20	4.08	0.85
Responsiveness of Staff	3.88	4.10	3.99	0.86
Ease of Access to Banking Services	3.90	4.05	3.98	0.85
Technology and Digital Banking Experience	3.85	4.25	4.05	0.82

Table 8 outlines the mean scores and standard deviations for four key factors affecting customer satisfaction across public and private sector banks. The data suggests that private sector banks outperform public sector banks across all dimensions. Private banks have higher average ratings in service quality (4.20 vs. 3.95), staff responsiveness (4.10 vs. 3.88), ease of access to services (4.05 vs. 3.90), and digital banking experience (4.25 vs. 3.85). The overall means for each factor also reflect generally favorable customer perceptions, with all values hovering around 4 on a 5-point scale. The standard deviation across all factors is relatively consistent, around 0.82 to 0.86, indicating a moderate level of variation in customer responses.

**Table 9: T-Test Results Comparing Public and Private Sector Banks**

Factor	t-Statistic (t)	t-Critical (One-Tailed, 5%)	Significance
Service Quality	2.05	1.734	Significant
Responsiveness of Staff	1.92	1.734	Significant
Ease of Access to Banking Services	1.70	1.734	Not Significant
Technology and Digital Banking Experience	2.80	1.734	Significant

The t-test results compare perceptions of customers between public and private banks in Table 9. The factors of service quality, staff responsiveness, and digital banking experience have t-statistics (2.05, 1.92, and 2.80 respectively) that exceed the one-tailed critical value of 1.734 at a 5% significance level, indicating significant differences between public and private sector banks for these attributes. This implies that customers perceive private banks to perform

significantly better in these areas. However, ease of access to banking services does not show a significant difference ( $t = 1.70 < 1.734$ ), suggesting that both sectors provide comparable levels of accessibility to their banking services.

**Table 10: ANOVA Results for Effect of Age Group on Customer Satisfaction**

Factor	F-Statistic (F)	F-Critical (5%)	Significance
Service Quality	2.65	2.21	Significant
Responsiveness of Staff	2.10	2.21	Not Significant
Ease of Access to Banking Services	2.35	2.21	Significant
Technology and Digital Banking Experience	3.10	2.21	Significant

The ANOVA results assess whether different age groups perceive service factors differently in table 10. The analysis reveals that age significantly influences perceptions of service quality ( $F = 2.65 > 2.21$ ), ease of access ( $F = 2.35 > 2.21$ ), and technology/digital experience ( $F = 3.10 > 2.21$ ). This suggests that customer satisfaction in these areas varies depending on age demographics, highlighting the need for age-specific service strategies. However, staff responsiveness does not show a statistically significant variation across age groups ( $F = 2.10 < 2.21$ ), implying that perceptions of staff behavior are relatively consistent across different age segments.

## 5. CONCLUSION

The current study sought to assess how digital banking transformation affected certain public and private sector banks in Satna—specifically SBI and PNB (public), and ICICI and HDFC (private). The results show unequivocally that private sector banks have advanced more significantly in digital transformation than public sector banks. ICICI and HDFC customers showed more regular use, more happiness, and more preference for newer digital channels including mobile apps and online banking. The staff members of private banks also voiced more favourable opinions on the advantages of digital banking, such as enhanced operational efficiency and client service. On the other hand, staff members of public sector banks noted

greater difficulties such technological problems, lack of staff training, and opposition to digital transformation. The independent sample t-test verified statistically significant differences in satisfaction between public and private bank customers, favouring private banks. The survey finds that although public sector banks have embraced digital banking services, private banks still outperform them in terms of speed of implementation, user experience, and internal support systems. Public sector digital banking projects clearly need structural and strategic development.

### **Suggestions**

- **Improve Digital Literacy and Staff Training:** To increase digital literacy and service delivery, public sector banks should give staff members frequent training programs top priority. Ongoing staff development will improve customer interaction and lower opposition to digital transformation.
- **Improve Technological Infrastructure:** To lower problems and service outages, banks like SBI and PNB must spend money on strong, user-friendly digital platforms including safe mobile apps, quicker transaction processes, and improved server support.
- **Enhance consumer knowledge and involvement:** Many consumers, particularly at public banks, still rarely use digital services. User guidance on the advantages and security of digital banking should come from awareness programs and customer support services.

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