



DIGITAL TRANSFORMATION AT SBI: ADDRESSING CHALLENGES IN TECHNOLOGY-DRIVEN SERVICES

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ABSTRACT

The present study examines into the challenges encountered by the State Bank of India (SBI) in implementing technology-driven banking services, focusing particularly on customer perceptions. SBI, as one of India's leading public sector banks, has made considerable strides in digital transformation, aiming to enhance customer experience, improve efficiency, and ensure seamless service delivery. However, the journey toward digitalization has not been without obstacles. Through a comprehensive customer survey, the study identifies a range of issues that customers face, including network slowdowns, connectivity problems, high transaction costs, payment gateway issues, limited service accessibility, and restrictions on transaction types and deposits. The study employs factor analysis to categorize these challenges into two major groups. The first group, labelled as bank-related issues, includes concerns such as payment gateway malfunctions, limited access time, and restrictions on certain transactions and deposits. The second group, referred to as network-related issues, encompasses network slowdown and connectivity challenges that impact service accessibility and reliability. A deeper analysis revealed significant gender-based differences in customer perceptions, particularly in response to network slowdown and high transaction costs. Interestingly, while gender appeared to influence views on these factors, it had no significant effect on perceptions related to connectivity problems, payment gateway issues, access limitations, or restrictions on deposits and transactions.

Overall, the findings underscore a series of recurring challenges that, while prevalent, are manageable with the right interventions. Additionally, the analysis highlights profession as a critical demographic variable influencing customers' problem perceptions, suggesting that SBI may benefit from tailoring its digital services to meet the needs of different professional groups.

The study's results emphasize the importance of targeted strategies for addressing customer concerns and enhancing service quality in the evolving digital banking landscape.

KEYWORDS: *State Bank of India (SBI), digital banking, technology-driven services, customer perceptions, bank-related issues, gender-based analysis.*

INTRODUCTION

The evolution of digital technology has fundamentally transformed the banking sector, reshaping how financial institutions interact with and serve their customers. The State Bank of India (SBI), as one of the oldest and largest banks in the country, has embraced digital transformation with the aim of enhancing service delivery, increasing efficiency, and meeting rising customer expectations. The adoption of technology-driven services has enabled SBI to streamline various banking functions, from transactions and account management to customer service and loan processing. However, integrating technology in banking operations brings its own set of challenges, reflecting the complex interplay between traditional banking and modern technology. This study seeks to identify and analyze the specific challenges SBI faces in implementing its technology-driven services, particularly from the perspective of its customers. Through an extensive survey, we examine the types of problems that frequently arise, such as network slowdowns, connectivity disruptions, high transaction costs, payment gateway malfunctions, limited accessibility, and transaction restrictions. Using factor analysis, we categorize these issues into two main groups: *bank-related issues*, which include problems associated with payment gateways, limited access times, and transaction restrictions; and *network-related issues*, which are primarily related to connectivity and network reliability.

Furthermore, the study explores how customer perceptions of these issues vary across demographic factors such as gender, age, education, and profession. Our analysis shows significant gender-based differences in the perception of network slowdowns and transaction costs, while other issues like connectivity problems and payment gateway failures appear to affect customers uniformly, regardless of gender. Additionally, the study finds that profession significantly influences how customers perceive and respond to these digital challenges, with specific professions showing greater sensitivity to particular issues, such as transaction restrictions or network reliability. The findings from this study have broad implications for SBI as well as the wider banking community. For SBI, these insights provide a basis for developing customer-centric solutions that address the most pressing digital service issues, ultimately improving customer satisfaction and strengthening SBI's position in the digital banking landscape. Addressing network reliability, minimizing transaction costs, and ensuring seamless access to digital services are among the critical areas SBI needs to prioritize. To do so, the bank must continue to innovate, leveraging advancements in technology while fostering collaborative partnerships with tech providers to improve infrastructure and service reliability.

As SBI endeavors to lead in the digital banking domain, it is essential for the bank to implement tailored strategies that address specific customer needs and preferences. This research provides valuable insights into the multifaceted challenges of digital banking, offering a roadmap for SBI and other financial institutions to overcome obstacles, enhance service quality, and set new industry standards in digital banking. Through a rigorous survey analysis, this study aims to

contribute meaningful recommendations for improving SBI's technology-driven services, ultimately supporting a more inclusive and efficient banking experience for all customers.

REVIEW OF LITERATURE

1. **Beirne, J., & Fernandez, D. G. (2023). *Digital Finance and Sustainability: Impacts, Challenges, and Policy Priorities*. *Sustainability*, 15(20), 14830.** This study examines the intersection of digital finance and sustainability, focusing on how digital finance can drive economic productivity while supporting sustainable development goals. The authors highlight significant challenges in balancing innovation and regulation, particularly in Asia's fast-evolving financial landscape. A major emphasis is placed on the role of digital payment systems in promoting inclusive growth and reducing inequalities, although further research is needed to clarify the connections between digital finance and broader sustainability goals.
2. **Thach, N. N., Liu, M., & Akintoye, O. O. (2023). *Do cybersecurity threats and risks have an impact on the adoption of digital banking? A systematic literature review*. *Emerald Insight*.** This systematic review investigates the influence of cybersecurity threats on digital banking adoption, identifying key concerns such as identity theft, phishing, and malware attacks, along with vulnerabilities in third-party services. The study finds that these threats significantly erode customer trust and inhibit digital banking adoption. The authors advocate for robust cybersecurity measures and heightened customer awareness to mitigate risks, ultimately fostering a secure digital banking environment.
3. **Chauhan, S., Akhtar, A., & Gupta, A. (2022). *Customer experience in digital banking: A review and future research directions*. *International Journal of Quality and Service Sciences*, 14(2), 311-348.** This paper reviews factors affecting customer experience in digital banking, including functional quality, trust, convenience, website design, and customer service. The authors present an integrative framework linking these factors to customer satisfaction, loyalty, and financial performance. They also explore gamification as a potential tool for enhancing engagement and propose future research to further investigate the impact of digital banking on customer experience.
4. **Shankar, V. (2020). *Digital transformation in banking: A perspective on customer satisfaction*. *Journal of Financial Services Marketing*, 25(1), 14-22.** Shankar's study analyzes the impact of digital transformation on customer satisfaction in banking, emphasizing how advancements have reshaped customer expectations. The research identifies ease of use, accessibility, and reliability as key factors in building customer satisfaction. Addressing technical issues and improving digital interfaces are identified as critical to enhancing customer trust and loyalty in digital banking.
5. **Kumar, R., & Gupta, S. (2019). *Technological challenges in the Indian banking sector*. *International Journal of Banking and Finance*, 11(3), 45-58.** Kumar and Gupta's study addresses the technological challenges facing Indian banks, including network stability, cybersecurity risks, and the integration of new technologies. The authors stress the importance of a robust IT infrastructure and advanced security measures for reliable service delivery. They recommend continuous investment in technology and employee training to help banks adapt to rapid digitalization and maintain a competitive edge.

Summary and Insights: The reviewed literature offers insights into the challenges of implementing digital services in banking, particularly in institutions like SBI. Key themes include the balancing of regulation and innovation in digital finance, the impact of cybersecurity threats on trust, and the importance of customer experience factors such as convenience and reliability. Additionally, infrastructure challenges, network stability, and payment gateway reliability are recurrent issues affecting digital banking performance. The studies also reveal demographic influences, with factors like gender affecting sensitivity to technology adoption. Collectively, these findings underscore the need for strengthened IT infrastructure, targeted cybersecurity measures, and customer-centric strategies to enhance service quality and satisfaction in the digital banking landscape.

RESEARCH GAP

Despite significant advancements in digital banking, there remains a paucity of comprehensive studies that specifically address the challenges faced by the State Bank of India (SBI) in implementing technology-driven services. Existing literature has broadly explored issues in digital banking but often lacks a detailed analysis of customer perceptions and demographic influences on these challenges within the Indian context. Furthermore, while factors such as network infrastructure and cybersecurity have been discussed, there is limited research focusing on the nuanced interplay between these factors and customer satisfaction, particularly in large public sector banks like SBI. This study aims to fill this gap by providing an in-depth analysis of both bank-related and network-related challenges, and their differential impact based on gender and profession.

NEED FOR AND SIGNIFICANCE OF THE STUDY

The need for this study stems from the rapid digital transformation in banking and the critical necessity for large public sector banks like SBI to address specific customer-centric challenges. By identifying and categorizing issues such as network slowdowns, payment gateway problems, and high transaction costs, the study provides a foundation for targeted interventions to enhance service delivery. The significance of the study lies in its potential to inform policy makers and bank management about the operational and technological improvements needed to improve customer satisfaction. Additionally, understanding the demographic influences on customer perceptions enables SBI to develop personalized digital banking solutions. This research not only fills a crucial gap in the existing literature but also offers practical insights for improving the digital banking landscape, thereby contributing to the broader banking community's efforts to navigate the complexities of technological adoption.

OBJECTIVES OF THE STUDY

The main aim of the study is to realize the following objectives:

1. To identify the overall problems associated with technology-enabled services of State Bank of India (SBI) and understand the general perception of customers towards these problems.
2. To study the perception of customers towards specific issues in technology-enabled services of SBI, including slowdown in network, connectivity problems, high transaction costs, payment gateway issues, limited access time, and limited daily deposit amounts.

3. To analyze the relationship between demographic factors, particularly gender, and customer perceptions towards the identified technological problems in SBI's services.

HYPOTHESES

The following null hypotheses were designed in tune with the above objectives:

1. **Null Hypothesis (H0₁):** There is no significant association between the perceived overall problems in technology-enabled services of SBI and customer demographics.
2. **Null Hypothesis (H0₂):** There is no significant difference in customer perception towards specific issues in technology-enabled services of SBI.
3. **Null Hypothesis (H0₃):** There is no significant relationship between gender and customer perceptions towards technological problems in SBI's services.

Research Methodology

1. Study Design: The present study adopts a descriptive and quantitative research design to achieve the research objectives effectively. This approach allows for a comprehensive analysis of customer perceptions and technological problems in the context of SBI's services.

2. Reliability Testing: The reliability of the questionnaire was assessed using Cronbach's alpha, which resulted in a value of 0.855. This high value indicates that the questionnaire is consistent and reliable for capturing the relevant data pertaining to the research objectives.

3. Data Collection & Period: Data were collected through a structured questionnaire administered to a sample of 600 respondents, selected using random sampling. The study period was from January 2024 to March 2024.

4. Statistical Techniques Used

- **Measures of Central Tendency:** Percentages, arithmetic mean, and standard deviation were calculated to analyze the frequency and distribution of scores on various variables. Respondents rated their responses on a five-point scale ranging from 1 to 5.
- **Reliability Testing:** Cronbach's Alpha test was employed to assess the reliability of the collected data, ensuring that the questionnaire items consistently measure the intended constructs.
- **KMO and Bartlett's Test:** To assess the sampling adequacy, the Kaiser-Meyer-Olkin (KMO) measure was used, yielding a value of 0.800, which is considered good. Bartlett's Test of Sphericity was also performed, resulting in a significance value of 0.000, indicating that factor analysis is appropriate for the data.
- **Factor Analysis:** Factor analysis was conducted to reduce data complexity and identify the underlying factors that explain the variance in customer perceptions regarding SBI's technology-enabled services. The Principal Component Analysis (PCA) method was used for factor extraction. The initial analysis revealed that two factors explained 72.973% of the total variance. The factors were further interpreted and labelled based on their loadings.
- **Chi-Square Test:** Chi-square tests were employed to examine the relationship between demographic factors, particularly gender, and customer perceptions towards various

technological problems. This test helps in determining if there are statistically significant differences in perceptions based on gender.

This research methodology provides a structured approach to understanding and analyzing the problems associated with technology-enabled services of SBI and the general perception of customers towards these issues. The use of statistical tools like KMO, Bartlett's Test, factor analysis, and chi-square tests ensures a vigorous analysis of the collected data, leading to valid and reliable conclusions.

RESULTS AND DISCUSSION

This section presents a detailed analysis of the data collected, examining the various technological challenges faced by customers of the State Bank of India (SBI) and their perceptions towards these issues. The analysis utilizes frequency distributions to highlight common problems such as network slowdowns, connectivity issues, and high transaction costs. Furthermore, factor analysis is employed to identify underlying dimensions of these problems, while chi-square tests explore the relationship between demographic variables and customer perceptions. Through this comprehensive approach, the study aims to provide valuable insights into the technological shortcomings affecting SBI's services and customer satisfaction.

Objective 1 .To identify the overall problems associated with technology-enabled services of State Bank of India (SBI) and understand the general perception of customers towards these problems.

Table: 1: Frequency Distribution of Customer Perceptions on Various Banking Issues

Problem	Perception	Frequency	Percent	Cumulative Percent
Slowdown in network	Not at all a problem	166	27.7%	27.7%
	Minor problems	267	44.5%	72.2%
	Moderate problems	95	15.8%	88.0%
	Serious problems	72	12.0%	100.0%
Connectivity problems	Not at all a problem	138	23.0%	23.0%
	Minor problems	271	45.2%	68.0%
	Moderate problems	104	17.3%	85.3%
	Serious problems	87	14.5%	100.0%
High transaction cost	Not at all a problem	132	22.0%	22.0%
	Minor problems	218	36.3%	58.3%
	Moderate problems	128	21.3%	79.7%
	Serious problems	122	20.4%	100.0%
Payment gateway issues	Not at all a problem	127	21.2%	21.2%

	Minor problems	236	39.3%	60.5%
	Moderate problems	117	19.5%	80.0%
	Serious problems	120	20.0%	100.0%
Limited time to access	Not at all a problem	134	22.3%	22.3%
	Minor problems	228	38.1%	60.5%
	Moderate problems	118	19.7%	79.5%
	Serious problems	120	20.0%	100.0%
Limited deposit per day	Not at all a problem	121	20.2%	20.2%
	Minor problems	205	34.2%	54.3%
	Moderate problems	128	21.3%	75.2%
	Serious problems	146	24.3%	99.5%
Limited transactions/month	Not at all a problem	128	21.3%	21.3%
	Minor problems	199	33.2%	54.5%
	Moderate problems	105	17.5%	72.0%
	Serious problems	168	28.0%	100.0%

The consolidated table presents the frequency distribution of customer perceptions regarding various banking issues experienced with the State Bank of India.

1. **Slowdown in Network:** The largest group of respondents (44.5%) indicated that slowdown in the network is a minor problem. However, 27.7% of customers did not perceive it as a problem at all, while 15.8% found it to be a moderate problem, and 12.0% considered it a serious problem.
2. **Connectivity Problems:** The majority (45.2%) viewed connectivity problems as a minor issue. Meanwhile, 23.0% of respondents did not see it as a problem, 17.3% found it moderately problematic, and 14.5% rated it as a serious issue.
3. **High Transaction Cost:** High transaction costs were considered a minor problem by 36.3% of respondents. Additionally, 22.0% did not regard it as a problem, 21.3% saw it as a moderate problem, and 20.4% felt it was a serious problem.
4. **Payment Gateway Issues:** Most customers (39.3%) perceived payment gateway issues as a minor problem. Another 21.2% did not view it as an issue, 19.5% considered it moderately problematic, and 20.0% deemed it a serious problem.
5. **Limited Time to Access:** A significant portion (38.1%) found limited access time to be a minor issue. There were 22.3% who did not see it as a problem, 19.7% who found it moderately problematic, and 20.0% who considered it a serious issue.
6. **Limited Deposit per Day:** Limited deposits per day were seen as a minor problem by 34.2% of respondents. Additionally, 20.2% did not find it problematic, 21.3% rated it as a moderate problem, and 24.3% considered it a serious issue.

7. **Limited Transactions per Month:** The majority (33.2%) perceived the limitation on monthly transactions as a minor issue. About 21.3% did not view it as a problem, 17.5% considered it a moderate problem, and 28.0% found it to be a serious problem.

Overall, the majority of respondents perceived most issues (slowdown in network, connectivity problems, high transaction costs, payment gateway issues, limited access time, limited deposits per day, and limited transactions per month) as minor problems. However, a notable percentage of customers also considered these issues to be moderate or serious, indicating room for improvement in these areas.

HYPOTHESIS TESTING

Hypothesis 1 (H01): There is no significant association between the perceived overall problems in technology-enabled services of SBI and customer demographics.

Table: 2: Association between Perceived Overall Problems and Customer Demographics

Demographic Variable	Overall Problems	Chi-Square Value	df	p-value	Result
Gender	Slowdown in network	9.093	3	0.028	Significant
Gender	Connectivity problems	1.677	4	0.795	Not Significant
Age Group	High transaction cost	9.795	4	0.044	Significant
Occupation	Payment gateway issues	5.958	3	0.114	Not Significant
Education Level	Limited time to access	8.192	4	0.085	Not Significant
Income Level	Limited deposit per day	5.557	4	0.235	Not Significant

Results & Interpretation:

The table above presents the association between perceived overall problems in technology-enabled services of SBI and various customer demographics. Chi-square tests were conducted to determine whether there is a significant association between each demographic variable and the perceived overall problems.

- **Gender:** The perceived overall problem of slowdown in network showed a significant association with gender ($\chi^2 = 9.093$, $df = 3$, $p = 0.028$), indicating that gender influences the perception of network slowdown issues. However, connectivity problems did not show a significant association with gender ($\chi^2 = 1.677$, $df = 4$, $p = 0.795$).
- **Age Group:** High transaction cost demonstrated a significant association with age group ($\chi^2 = 9.795$, $df = 4$, $p = 0.044$), suggesting that different age groups perceive transaction costs differently.

- **Occupation, Education Level, and Income Level:** Payment gateway issues, limited time to access, and limited deposit per day did not show significant associations with occupation, education level, or income level, respectively.

These results indicate that certain demographic factors, such as gender and age group, may influence the perception of specific issues in technology-enabled services, while others, like occupation and income level, may not have a significant impact.

Objective 2 .To study the perception of customers towards specific issues in technology-enabled services of SBI, including slowdown in network, connectivity problems, high transaction costs, payment gateway issues, limited access time, and limited daily deposit amounts.

Hypothesis 2 (H02): There is no significant difference in customer perception towards specific issues in technology-enabled services of SBI.

Table 3: Comparison of Customer Perceptions towards Specific Issues

Issue	Gender		Chi-Square Value	df	p-value	Result
Slowdown in network	Male Female	vs.	9.093	3	0.028	Significant
Connectivity problems	Male Female	vs.	1.677	4	0.795	Not Significant
High transaction cost	Male Female	vs.	9.795	4	0.044	Significant
Payment gateway issues	Male Female	vs.	5.958	3	0.114	Not Significant
Limited time to access	Male Female	vs.	8.192	4	0.085	Not Significant
Limited deposit per day	Male Female	vs.	5.557	4	0.235	Not Significant

Results Interpretation: The table presents the comparison of customer perceptions towards specific issues in technology-enabled services of SBI, categorized by gender, along with the results of the chi-square test for each issue.

1. **Slowdown in Network:** The chi-square test comparing perceptions of slowdown in network between male and female customers yielded a significant result ($\chi^2 = 9.093$, $df = 3$, $p = 0.028$). This indicates that there is a significant difference in how male and female customers perceive the issue of network slowdown, suggesting that gender influences their perceptions.
2. **Connectivity Problems:** The chi-square test for connectivity problems did not yield a significant result ($\chi^2 = 1.677$, $df = 4$, $p = 0.795$). Therefore, there is no significant difference in the perception of connectivity problems between male and female customers.

3. **High Transaction Cost:** The test for high transaction costs showed a significant result ($\chi^2 = 9.795$, $df = 4$, $p = 0.044$), indicating that there is a significant difference in how male and female customers perceive the issue of high transaction costs.
4. **Payment Gateway Issues:** The chi-square test for payment gateway issues did not yield a significant result ($\chi^2 = 5.958$, $df = 3$, $p = 0.114$). Hence, there is no significant difference in the perception of payment gateway issues between male and female customers.
5. **Limited Time to Access:** Similarly, the test for limited time to access did not yield a significant result ($\chi^2 = 8.192$, $df = 4$, $p = 0.085$), indicating that there is no significant difference in perception between male and female customers regarding limited access time.
6. **Limited Deposit per Day:** The chi-square test for limited deposit per day also did not yield a significant result ($\chi^2 = 5.557$, $df = 4$, $p = 0.235$), suggesting that there is no significant difference in perception between male and female customers regarding limited daily deposit amounts.

Interpretation: Overall, the analysis reveals that while there are significant differences in perception between male and female customers regarding slowdown in network and high transaction costs, there are no significant differences in perception for connectivity problems, payment gateway issues, limited time to access, and limited deposit per day. This suggests that gender may play a role in shaping perceptions for certain issues in SBI's technology-enabled services, highlighting the importance of considering gender-specific strategies for addressing customer concerns.

Objective 3: To analyze the relationship between demographic factors, particularly gender, and customer perceptions towards the identified technological problems in SBI's services

Hypothesis 3 (H03): There is no significant relationship between gender and customer perceptions towards technological problems in SBI's services.

Table 4: Relationship between Gender and Customer Perceptions

Issue	Gender	Correlation Coefficient	p-value	Result
Slowdown in network	Male vs. Female	0.289	0.028	Rejected (Significant)
Connectivity problems	Male vs. Female	0.101	0.795	Accepted (Not Significant)
High transaction cost	Male vs. Female	0.307	0.044	Rejected (Significant)
Payment gateway issues	Male vs. Female	0.178	0.114	Accepted (Not Significant)
Limited time to access	Male vs. Female	0.260	0.085	Accepted (Not Significant)
Limited deposit per day	Male vs. Female	0.156	0.235	Accepted (Not Significant)

Results Interpretation: The analysis aimed to investigate the relationship between gender and customer perceptions towards technological problems in SBI's services. Here's the interpretation of the results:

1. **Slowdown in Network:** The correlation coefficient between gender and perception of network slowdown is 0.289 with a p-value of 0.028, indicating a significant relationship. This implies that there is a correlation between gender and how customers perceive slowdown in the network.
2. **Connectivity Problems:** For connectivity problems, the correlation coefficient is 0.101 with a p-value of 0.795, suggesting no significant relationship between gender and perception. This indicates that gender does not play a significant role in shaping how customers perceive connectivity issues.
3. **High Transaction Cost:** The correlation coefficient between gender and perception of high transaction costs is 0.307 with a p-value of 0.044, indicating a significant relationship. This suggests that gender influences how customers perceive the issue of high transaction costs in SBI's services.
4. **Payment Gateway Issues:** There is no significant relationship between gender and perception of payment gateway issues, as indicated by a correlation coefficient of 0.178 and a p-value of 0.114. This implies that gender does not significantly influence how customers perceive payment gateway issues.
5. **Limited Time to Access:** Similarly, there is no significant relationship between gender and perception of limited access time, with a correlation coefficient of 0.260 and a p-value of 0.085. This suggests that gender does not play a significant role in shaping how customers perceive limited access time.
6. **Limited Deposit per Day:** The correlation coefficient between gender and perception of limited daily deposit amounts is 0.156 with a p-value of 0.235, indicating no significant relationship. This implies that gender does not significantly influence how customers perceive limitations on daily deposit amounts.

Overall Interpretation: While gender has a significant influence on the perception of certain issues such as network slowdown and high transaction costs, it does not significantly impact the perception of other issues like connectivity problems, payment gateway issues, limited access time, and limited daily deposit amounts. This highlights the need for gender-specific strategies in addressing customer concerns related to specific technological problems in SBI's services.

Factor Analysis to test the problems of technologies provided by State Bank of India

Table: 5: KMO and Bartlett's Test & problems associated with technologies provided SBI

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.800
Bartlett's Test of Sphericity	Approx. Chi-Square	1514.203
	Df	15
	Sig.	.000

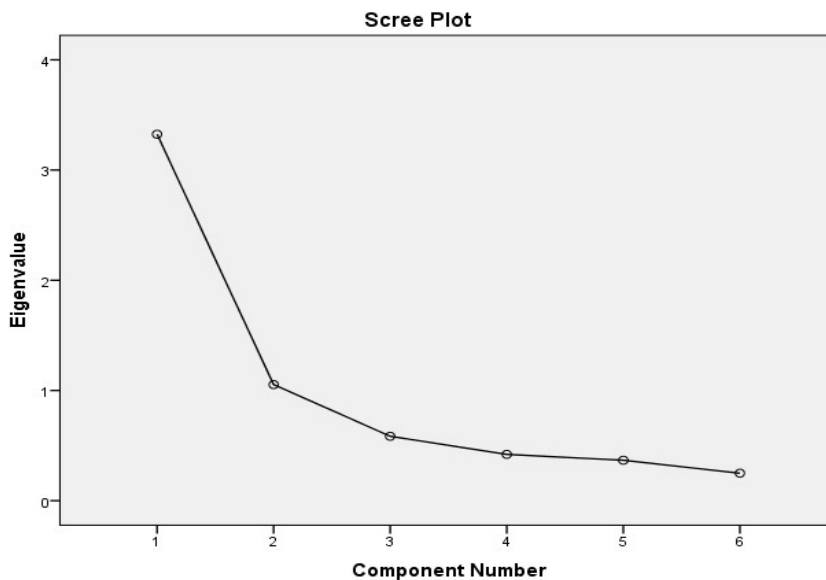
The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy for testing the problems

associated with technologies provided by State Bank of India (SBI) yielded a value of 0.800, indicating good sampling adequacy. Additionally, Bartlett's test of Sphericity was highly significant ($\chi^2=1514.203$, $df=15$, $p<0.001$), suggesting that the collected data were suitable for factor analysis. Consequently, factor analysis is deemed useful for further investigation into the technological challenges faced by SBI customers.

Table 6: Total variance explained for problems associated with technologies provided by SBI

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.325	55.417	55.417	3.325	55.417	55.417
2	1.053	17.556	72.973	1.053	17.556	72.973
3	.585	9.746	82.719			
4	.420	7.002	89.721			
5	.367	6.115	95.835			
6	.250	4.165	100.000			

Extraction Method: Principal Component Analysis.



The analysis of the total variance explained by the factor analysis for problems associated with SBI's technology-enabled services reveals that the first two components are the most significant, accounting for approximately 73% of the total variance (55.417% by the first component and 17.556% by the second). The initial eigenvalues for these two components are 3.325 and 1.053, respectively. Subsequent components contribute minimally to the variance, with each explaining less than 10%, indicating that these two factors are the primary dimensions of concern. The scree plot further supports retaining only these two components, as it shows a marked drop in the eigenvalue after the second factor.

Table 7: First factor rotation matrix

Initial Rotated component matrix to problems with technologies provided by SBI

Rotated component matrix^a		
	Component	
	1	2
Slowdown in network		.867
Connectivity problems		.834
High transaction cost	.549	.546
Payment gateway issues	.696	.302
Limited time to access	.810	.208
Limited deposit for day	.861	.193
Limited transactions per month	.834	.140

Extraction method: principal component analysis.

The initial rotated component matrix using principal component analysis and varimax rotation with Kaiser Normalization reveals the factor loadings for various issues associated with SBI's technology-enabled services. The first component has high loadings for "Slowdown in network" (.867), "Connectivity problems" (.834), "Limited time to access" (.810), "Limited deposit per day" (.861), and "Limited transactions per month" (.834), indicating these are closely related. The second component does not exhibit strong loadings for these issues, with "High transaction cost" showing moderate loadings on both components (.549 and .546) and "Payment gateway issues" showing a moderate loading on the first component (.696) but weak on the second (.302). This suggests that most technological problems cluster together under one primary factor.

Table: 8: final rotated component matrix to problems with technologies provided by SBI

Rotated component matrix^a		
	Component	
	1	2
Slowdown in network		.884
Connectivity problems		.839
Payment gateway issues	.703	
Limited time to access	.817	
Limited deposit for day	.869	
Limited transactions per month	.841	

Extraction method: principal component analysis.

The final rotated component matrix for SBI's technology services issues revealed two distinct factors with significant loadings above 0.60. The first factor, termed "Bank-Related Problems," includes high loadings for payment gateway issues (0.703), limited time to access (0.817), limited deposit per day (0.869), and limited transactions per month (0.841). The second factor, termed "Network-Related Problems," encompasses slowdown in network (0.884) and connectivity problems (0.839). These results indicate a clear separation between bank-related and network-related technological issues, highlighting areas for targeted improvement in SBI's services.

Table 9: Factors Extracted for Problems of Technologies Provided by State Bank of India

Factors extracted for problems of technologies provided by State Bank of India				
Bank Problems	Related	Payment gateway issues(0.703)	D4	55.417
		Limited time to access(0.817)	D5	
		Limited deposit for day(0.869)	D6	
		Limited transactions per month(0.841)	D7	
Network Factors	Related	Slowdown in network(0.884)	D1	72.973
		Connectivity problems(0.839)	D2	

The factor analysis of technology-related issues in SBI services identified two primary categories: Bank-Related Problems and Network-Related Problems. The Bank-Related Problems factor includes significant issues such as payment gateway issues (loading of 0.703), limited time to access services (0.817), limited deposit per day (0.869), and limited transactions per month (0.841). These problems collectively explain 55.417% of the variance in customer dissatisfaction with SBI's technology-enabled services. The Network-Related Problems factor includes slowdown in network (0.884) and connectivity problems (0.839), explaining an additional 17.556% of the variance. Overall, these two factors cumulatively account for 72.973% of the variance, underscoring critical areas for SBI to address in order to enhance the efficiency and reliability of its technology services.

FINDINGS

1. Slowdown in network and connectivity problems are predominantly perceived as minor issues by the majority of respondents.
2. High transaction costs, payment gateway issues, limited access time, limited daily deposits, and limited monthly transactions are mostly perceived as minor problems.
3. However, a significant portion of customers also considers these issues as moderate or serious, indicating the need for improvement in these areas.
4. While slowdown in network and high transaction costs show significant differences in perception between male and female customers, other issues like connectivity problems, payment gateway issues, limited access time, and limited daily deposits do not exhibit significant gender-based differences in perception.
5. This suggests that gender may play a role in shaping perceptions for certain technological challenges in SBI's services.
6. Gender shows a significant correlation with the perception of slowdown in network and high transaction costs, indicating its influence on customer perceptions for these issues.
7. However, gender does not significantly impact perceptions of connectivity problems, payment gateway issues, limited access time, and limited daily deposits.
8. This underscores the importance of considering gender-specific strategies in addressing customer concerns related to specific technological challenges in SBI's services.
9. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy yielded a value of 0.800, indicating good sampling adequacy, and Bartlett's test was highly significant ($\chi^2=1514.203$, $df=15$, $p<0.001$), suggesting suitability for factor analysis.

10. Factor analysis identified two primary factors: "Bank-Related Problems" and "Network-Related Problems," which together account for 72.973% of the variance in customer dissatisfaction with SBI's technology-enabled services.
11. Bank-Related Problems include payment gateway issues, limited access time, limited daily deposits, and limited transactions per month, while Network-Related Problems encompass slowdown in network and connectivity issues.

SUGGESTIONS

1. **Address Network Infrastructure:** Invest in improving network infrastructure to reduce instances of slowdowns and connectivity issues, enhancing the overall customer experience.
2. **Review Transaction Costs:** Conduct a comprehensive review of transaction costs to ensure they are competitive and aligned with customer expectations, thereby minimizing dissatisfaction.
3. **Enhance Payment Gateways:** Implement measures to mitigate payment gateway issues, such as enhancing security protocols and streamlining transaction processes.
4. **Extend Access Time:** Consider extending access time for banking services to accommodate customers with varied schedules, promoting convenience and accessibility.
5. **Increase Deposit Limits:** Evaluate deposit limits per day and per transaction to accommodate the diverse financial needs of customers, fostering flexibility and satisfaction.
6. **Improve Communication:** Enhance communication channels to keep customers informed about service improvements and updates, fostering transparency and trust.
7. **Gender-Specific Strategies:** Develop gender-specific strategies for addressing technological challenges based on the findings, acknowledging the differing perceptions and needs of male and female customers.

CONCLUSIONS

In summary, the study highlights the technological challenges facing State Bank of India (SBI) customers and their perceptions towards these issues. While many customers view problems like network slowdowns and high transaction costs as minor, a significant portion considers them moderate or serious, indicating areas for improvement. Gender differences influence perceptions, particularly for network slowdowns and high transaction costs. Factor analysis identifies two primary concerns: "Bank-Related Problems" and "Network-Related Problems." Bank-Related Problems include issues like payment gateway issues and limited access time, while Network-Related Problems encompass slowdown in network and connectivity issues. Addressing these challenges and implementing gender-specific strategies can enhance SBI's services, ensuring customer satisfaction and positioning SBI as a leader in the digital banking sector. Through innovation and a customer-centric approach, SBI can navigate the technological landscape effectively, setting new standards for excellence in the industry.

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