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Customer Service Quality in the E-Banking Environment: A Case Study of State Bank of India Branches in Muzaffarpur District

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Abstract

Electronic banking (e-banking) has become the primary interface through which commercial banks in India engage with their customers, and the quality of e-banking services increasingly determines customer satisfaction, retention, and loyalty. This study examines customer perceptions of service quality in the e-banking environment offered by State Bank of India (SBI) branches in Muzaffarpur district, Bihar, using a modified SERVQUAL framework comprising five dimensions: reliability, responsiveness, assurance, empathy, and tangibility. Primary data were collected from 150 SBI e-banking customers through a structured, five-point Likert-scale questionnaire and analysed using SPSS software. Descriptive statistics, Cronbach's alpha reliability testing, Pearson correlation, multiple regression, and independent samples t-test/ANOVA were employed to examine the relationship between service quality dimensions and customer satisfaction and to test differences across demographic groups. The results indicate that all five SERVQUAL dimensions are positively and significantly correlated with customer satisfaction, with reliability and responsiveness emerging as the strongest predictors in the regression model, which explained approximately 55 percent of the variance in customer satisfaction. No statistically significant difference in satisfaction was found across gender, whereas age groups showed a statistically significant difference. The study concludes that SBI branches in Muzaffarpur have achieved a moderate-to-high level of customer satisfaction with e-banking services, although gaps remain in responsiveness, grievance redressal, and personalised attention. Practical recommendations for improving e-banking service delivery in the semi-urban and rural markets of Bihar are offered for bank management and policymakers.

Keywords: e-banking, service quality, SERVQUAL, customer satisfaction, State Bank of India, Muzaffarpur, SPSS

1. Introduction

1.1 Background of the Study

The Indian banking sector has undergone a profound structural transformation over the past two decades, moving away from a predominantly branch-based, paper-intensive model of service delivery toward a technology-enabled, self-service ecosystem. Automated teller machines,



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internet banking, mobile banking applications, Unified Payments Interface (UPI), and other digital channels have collectively redefined what customers expect from their bank. Within this changing landscape, service quality is no longer confined to the courtesy of a bank clerk or the speed of a passbook update; it now extends to the reliability of a server, the responsiveness of a mobile application, and the security of an online transaction. For public sector banks such as State Bank of India (SBI), which continue to serve a very large proportion of first-generation and semi-urban banking customers, the challenge of delivering consistent, high-quality e-banking services is particularly significant, especially as customers increasingly migrate from assisted, staff-mediated transactions toward self-service technologies (Galdolage & Rasanjalee, 2022). Muzaffarpur district in Bihar, characterised by a mix of urban, semi-urban, and rural banking clientele, offers a useful setting in which to examine how customers actually experience e-banking, as distinct from how banks intend it to be experienced.

Muzaffarpur, one of the older and more densely populated districts of north Bihar, presents an especially interesting case because it combines an established urban commercial core with a large surrounding semi-urban and agrarian hinterland. Customers drawn from this hinterland often open and continue to operate their accounts with SBI branches even after migrating temporarily for work, making the reliability and remote accessibility of e-banking channels particularly consequential for maintaining an uninterrupted banking relationship. It is against this backdrop that the present study situates its inquiry into how service quality, as experienced through digital channels, translates into customer satisfaction for a bank that remains, for many residents of the district, their first and often only formal banking relationship.

1.2 Growth of E-Banking in the Indian Banking Sector

The expansion of e-banking in India has been driven by a combination of regulatory push, technological diffusion, and changing consumer behaviour. Government-led initiatives such as the Pradhan Mantri Jan Dhan Yojana, the Digital India programme, and the promotion of UPI-based payments have substantially widened the base of banked and digitally active customers, including in smaller towns and rural pockets of states such as Bihar. The Reserve Bank of India has reported a sustained rise in the volume and value of digital transactions over the past several years, reflecting both increased smartphone penetration and greater comfort among customers with online financial transactions. This pattern mirrors international evidence that crisis-driven and pandemic-era conditions can sharply accelerate digital financial service adoption, as documented for financial institutions in Nigeria by Edo et al. (2023) and for digital banking users in Vietnam by Nguyen and Dang (2024). At the same time, this rapid expansion has exposed persistent gaps in digital literacy, network connectivity, cybersecurity awareness, and grievance redressal mechanisms, especially outside metropolitan centres, consistent with broader findings that mobile-only internet access is often associated with narrower digital skills and more limited



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service use than access through computers (Correa, Pavez, & Contreras, 2020). These gaps make the study of e-banking service quality in a district such as Muzaffarpur both timely and practically relevant, since national-level statistics on digital adoption often mask considerable variation in actual customer experience at the branch level.

1.3 Profile of State Bank of India and Its E-Banking Initiatives

State Bank of India, the country's largest public sector bank by branch network and customer base, has invested heavily in digital transformation through platforms such as YONO (You Only Need One), SBI Internet Banking (INB), the SBI Quick missed-call and SMS banking service, and an extensive ATM and cash-deposit-machine network, reflecting a wider trend of artificial-intelligence-driven technology adoption across the Indian banking and financial sector (Deepthi, Gupta, Rai, & Arora, 2022). In Muzaffarpur district, SBI operates a dense network of branches serving government employees, small traders, farmers, students, and daily-wage earners, many of whom have only recently transitioned from purely branch-based banking to hybrid or fully digital banking relationships. This transition creates a distinctive customer base in which expectations of service quality are shaped as much by traditional branch experiences—queueing, staff courtesy, and physical accessibility—as by digital-era expectations of speed, availability, and ease of use. Understanding how these two sets of expectations interact is central to evaluating e-banking service quality in this specific geographic and socio-economic context.

1.4 Research Problem

Despite the rapid rollout of digital banking infrastructure, customers in semi-urban districts such as Muzaffarpur frequently report difficulties ranging from server downtime and failed transactions to inadequate assistance in resolving digital banking complaints. Anecdotal evidence from local branches and popular discourse suggests that while awareness of e-banking facilities has increased, actual satisfaction with the quality of these services remains uneven. Existing academic literature on e-banking service quality in India has largely concentrated on metropolitan cities and national- or state-level samples—Kapoor (2015), for instance, examined e-banking customer satisfaction only within the Tricity region of Chandigarh, Panchkula, and Mohali—leaving a gap in branch-level, district-specific evidence from Bihar in general and Muzaffarpur in particular. Without empirical evidence on which specific service quality dimensions most strongly influence customer satisfaction in this local context, bank management may continue to allocate resources toward generic digital upgrades rather than the specific service attributes that matter most to their actual customer base. This study addresses that gap by empirically testing the relationship between SERVQUAL-based service quality dimensions and customer satisfaction among SBI e-banking customers in Muzaffarpur district.



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1.5 Objectives and Scope of the Study

The study is guided by the following objectives:

- To examine the demographic and usage profile of e-banking customers of SBI branches in Muzaffarpur district.
- To assess customer perceptions of e-banking service quality across the five SERVQUAL dimensions—reliability, responsiveness, assurance, empathy, and tangibility.
- To examine the relationship between e-banking service quality dimensions and overall customer satisfaction.

The scope of the study is confined to individual retail customers who actively use at least one e-banking channel of SBI (internet banking, mobile/YONO banking, or SMS/missed-call banking) and are attached to a branch located within Muzaffarpur district. Corporate banking customers and non-SBI account holders are excluded from the sample.

2. Literature Review

2.1 Conceptual Framework of Service Quality

Service quality has long been conceptualised as the gap between customers' expectations of a service and their perceptions of the service actually delivered. This expectation-perception framework, most closely associated with the SERVQUAL instrument, treats service quality as a multidimensional construct rather than a single, unidimensional attribute. In the banking context, service quality has traditionally been assessed through dimensions such as reliability, responsiveness, assurance, empathy, and tangibles, each capturing a distinct facet of the customer's interaction with the bank. As banking services have migrated from physical branches to digital channels, researchers have extended this conceptual apparatus to the online environment, arguing that constructs such as trust, security, and system availability now play a role analogous to the tangibles and assurance dimensions of traditional branch banking. Kaur and Kiran (2015) demonstrated that e-banking service quality perceptions and resulting customer loyalty differ meaningfully across public, private, and foreign bank customers in India, underscoring that service quality cannot be treated as a bank-type-invariant construct.

2.2 E-Banking Service Quality Models (SERVQUAL and E-SERVQUAL)

Building on the original SERVQUAL framework, several scholars have proposed modified instruments better suited to electronic service contexts. Raza et al. (2020) applied a modified e-SERVQUAL model to internet banking and found that dimensions such as efficiency, system availability, and privacy significantly predicted e-customer satisfaction and loyalty. Similarly, Balbin-Romero et al. (2022), studying a Peruvian bank, confirmed that e-SERVQUAL dimensions were strong predictors of customer satisfaction, reinforcing the cross-national applicability of the framework. In the Indian context, Kant, Jaiswal, and Mishra (2017) used structural equation modelling to show that service quality dimensions significantly influence



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both customer satisfaction and corporate image in public sector banks, suggesting that service quality perceptions have consequences that extend beyond immediate satisfaction to a bank's broader reputation. Nihayah, Marwan, Nawras, Ahmad, and Ahmad (2021) similarly validated a multi-dimensional e-banking service quality measurement approach among customers in Riyadh, Saudi Arabia, while Rajaobelina, Brun, Prom Tep, and Arcand (2018) extended the model to mobile banking specifically, showing that customer experience with the mobile channel shapes trust and commitment in ways that parallel traditional SERVQUAL dimensions. These studies collectively support the use of a SERVQUAL-derived instrument, adapted for the e-banking context, as an appropriate methodological foundation for the present study.

2.3 Customer Satisfaction in E-Banking: Empirical Evidence

A substantial body of empirical work links specific e-banking service quality dimensions to customer satisfaction outcomes. Roy, Balaji, Kesharwani, and Sekhon (2017) examined internet banking adoption in India through a perceived-risk lens and found that risk perceptions, closely tied to assurance and security dimensions, significantly shape customer attitudes toward continued use. Shankar and Rishi (2020) reported that convenience is a critical determinant of mobile banking adoption intention in the Indian market, echoing the responsiveness and tangibility dimensions emphasised in this study. Outside India, Tetteh (2022) found that reliability and responsiveness were the strongest predictors of e-banking satisfaction among customers in Ghana, while Sewaka, Anggraini, Mas'adi, Nurhadi, and Arianto (2021) reported that both service quality and customer satisfaction jointly determine customer loyalty to banking products in Indonesia. Machogu and Okiko (2015), studying Rwandan commercial banks, additionally found that gender moderated the relationship between e-banking complexity and customer satisfaction, a finding that motivates the demographic hypothesis tests conducted in this study. Closer to the Indian public-sector context, Shafeeq and Beg (2021) documented that the COVID-19 pandemic accelerated digital financial service adoption in India while simultaneously exposing gaps in digital financial inclusion, particularly among semi-urban and rural populations similar to those served by SBI branches in Muzaffarpur. Hemalatha and Devaraja (2023), studying an urban co-operative bank, similarly found that tangibles, assurance, and responsiveness were positively associated with digital banking satisfaction, while Kaur and Sharma (2015), working outside the banking sector in tourism services, found that electronic service quality was a significant driver of customer loyalty more broadly, lending cross-sector support to the constructs examined in this study.

2.4 Research Gap

While the reviewed literature confirms a robust and largely consistent relationship between SERVQUAL-based service quality dimensions and customer satisfaction across diverse banking markets, most Indian studies have concentrated on metropolitan cities such as Delhi-NCR,



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Chennai, Bengaluru, and Mumbai, or have used broad, multi-city, multi-bank samples that do not isolate the experience of a single bank's customers in a specific semi-urban district. Very few studies have examined SBI's e-banking service quality specifically within Bihar, and none, to the researcher's knowledge, has focused exclusively on Muzaffarpur district using a 150-respondent SPSS-based hypothesis-testing design. This study addresses that gap by providing branch-level, district-specific empirical evidence on e-banking service quality and customer satisfaction, thereby complementing the largely metro-centric existing literature.

3. Research Methodology

3.1 Research Design

The study adopts a descriptive and analytical research design based on a cross-sectional survey. A quantitative approach was chosen because the primary objective is to measure the strength and statistical significance of relationships between e-banking service quality dimensions and customer satisfaction, which requires numerical, testable data rather than purely qualitative description.

3.2 Population and Sample

The population for this study comprises individual retail customers of SBI branches located within Muzaffarpur district who actively use at least one e-banking channel. A total sample of 150 respondents was drawn using a combination of stratified and convenience sampling: strata were formed on the basis of branch location (urban, semi-urban, and rural branches within the district) to ensure representation across the district's varied customer base, and respondents within each stratum were approached conveniently at bank premises and through digitally circulated questionnaires. A sample size of 150 was considered adequate for the multivariate statistical procedures employed, including multiple regression with five predictor variables, consistent with commonly applied rules of thumb for minimum sample size in regression-based survey research.

3.3 Data Collection Instrument

Primary data were collected using a structured questionnaire divided into two sections. Section A captured demographic and usage-related information, including gender, age, occupation, education, and frequency of e-banking use. Section B contained 25 statements measuring five service quality dimensions—reliability, responsiveness, assurance, empathy, and tangibility—each represented by four items, along with a five-item customer satisfaction scale, all adapted from established SERVQUAL and e-SERVQUAL instruments used in prior banking research. Responses were recorded on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Secondary data were drawn from RBI publications, SBI annual reports, and peer-reviewed journal articles to support the literature review and contextual discussion.



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3.4 Variables and Hypotheses

The independent variables are the five SERVQUAL-based service quality dimensions (reliability, responsiveness, assurance, empathy, and tangibility), and the dependent variable is overall customer satisfaction with SBI's e-banking services. Based on the objectives and literature reviewed, the following hypotheses were formulated and tested:

H01: There is no statistically significant relationship between e-banking service quality dimensions and customer satisfaction among SBI customers in Muzaffarpur district.

Ha1: There is a statistically significant relationship between e-banking service quality dimensions and customer satisfaction among SBI customers in Muzaffarpur district.

H02: There is no statistically significant difference in customer satisfaction with e-banking services between male and female customers.

Ha2: There is a statistically significant difference in customer satisfaction with e-banking services between male and female customers.

H03: There is no statistically significant difference in customer satisfaction with e-banking services across different age groups.

Ha3: There is a statistically significant difference in customer satisfaction with e-banking services across different age groups.

3.5 Statistical Tools

Collected data were coded and analysed using IBM SPSS Statistics (version 26). The following statistical techniques were applied: (i) descriptive statistics (frequencies, percentages, means, and standard deviations) to profile respondents and summarise service quality perceptions; (ii) Cronbach's alpha to assess the internal consistency and reliability of the multi-item scales; (iii) Pearson product-moment correlation to examine the strength and direction of association between service quality dimensions and customer satisfaction; (iv) multiple linear regression to identify the relative predictive contribution of each service quality dimension to customer satisfaction and to test hypothesis H01/Ha1; and (v) an independent samples t-test and one-way ANOVA to test hypotheses H02/Ha2 and H03/Ha3 respectively. A significance level of 0.05 was adopted throughout for hypothesis testing.

4. Results and Discussion

4.1 Demographic Profile of Respondents

Table 1 presents the demographic and usage profile of the 150 respondents surveyed. The sample was reasonably balanced across age groups and skewed slightly toward male respondents (58.7%), which broadly mirrors the gender distribution reported in prior SBI-focused customer satisfaction studies in northern India. A majority of respondents (69.4%) held a graduate or postgraduate qualification, and more than 65 percent used e-banking services at least on a



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weekly basis, indicating a reasonably digitally engaged sample suitable for evaluating service quality perceptions.

Table 1. Demographic and Usage Profile of Respondents (n = 150)

Variable	Category	Frequency	Percentage (%)
Gender	Male	88	58.7
	Female	62	41.3
Age (years)	18–25	34	22.7
	26–35	46	30.7
	36–45	38	25.3
	46–55	22	14.7
	Above 55	10	6.7
Occupation	Salaried / Govt. employee	42	28.0
	Business / Self-employed	36	24.0
	Student	28	18.7
	Farmer	24	16.0
	Other	20	13.3
Education	Up to higher secondary	26	17.3
	Graduate	64	42.7
	Postgraduate	46	30.7
	Professional	14	9.3
Frequency of e-banking use	Daily	40	26.7
	Weekly	58	38.7
	Monthly	38	25.3
	Rarely	14	9.3

Source: Primary survey data, computed using SPSS 26 (n = 150).

4.2 Reliability of the Measurement Scale

Before proceeding to hypothesis testing, the internal consistency of each multi-item construct was assessed using Cronbach's alpha. As shown in Table 2, all constructs recorded alpha values above the widely accepted threshold of 0.70, and the overall 25-item scale returned an alpha of 0.887, indicating good internal consistency and confirming that the instrument is suitable for further statistical analysis.



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Table 2. Reliability Statistics (Cronbach's Alpha)

Construct	No. of Items	Cronbach's Alpha
Reliability (REL)	4	0.812
Responsiveness (RES)	4	0.784
Assurance (ASS)	4	0.799
Empathy (EMP)	4	0.771
Tangibility (TAN)	4	0.756
Customer Satisfaction (CS)	5	0.823
Overall Scale	25	0.887

Source: SPSS Reliability Analysis output, primary survey data (n = 150).

4.3 Descriptive Statistics of Service Quality Dimensions

Table 3 reports the mean scores and standard deviations for each service quality dimension and for overall customer satisfaction. Assurance recorded the highest mean score ($M = 3.94$, $SD = 0.59$), suggesting that respondents generally trust the security and competence of SBI's e-banking staff and systems, while empathy recorded the lowest mean score ($M = 3.62$, $SD = 0.71$), indicating comparatively weaker perceptions of personalised attention and individualised problem-solving. Overall customer satisfaction ($M = 3.80$, $SD = 0.60$) falls in the 'agree' range on the five-point scale, suggesting a moderate-to-high level of satisfaction among SBI e-banking customers in the district, with clear room for improvement.

Table 3. Descriptive Statistics of E-Banking Service Quality Dimensions and Customer Satisfaction (n = 150)

Dimension	Mean	Std. Deviation	Rank
Reliability	3.86	0.62	2
Responsiveness	3.71	0.68	4
Assurance	3.94	0.59	1
Empathy	3.62	0.71	5
Tangibility	3.78	0.65	3
Overall Customer Satisfaction	3.80	0.60	—

Source: SPSS Descriptive Statistics output, primary survey data (n = 150). Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

4.4 Correlation Analysis

Pearson correlation coefficients were computed to examine the strength and direction of the relationship between each service quality dimension and customer satisfaction, as well as the inter-correlations among the dimensions themselves. As shown in Table 4, all correlations are positive and statistically significant at the 0.01 level. Responsiveness ($r = 0.67$) and reliability (r



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= 0.63) show the strongest association with customer satisfaction, followed by assurance ($r = 0.59$), empathy ($r = 0.52$), and tangibility ($r = 0.48$). The moderate inter-correlations among the independent dimensions (ranging from 0.38 to 0.58) indicate that multicollinearity is unlikely to be a serious concern in the subsequent regression analysis.

Table 4. Pearson Correlation Matrix: Service Quality Dimensions and Customer Satisfaction

Variable	REL	RES	ASS	EMP	TAN	CS
Reliability (REL)	1					
Responsiveness (RES)	0.58**	1				
Assurance (ASS)	0.49**	0.52**	1			
Empathy (EMP)	0.41**	0.47**	0.55**	1		
Tangibility (TAN)	0.38**	0.44**	0.46**	0.50**	1	
Customer Satisfaction (CS)	0.63**	0.67**	0.59**	0.52**	0.48**	1

***Correlation is significant at the 0.01 level (2-tailed). Source: SPSS bivariate correlation output, primary survey data ($n = 150$).*

4.5 Multiple Regression Analysis and Hypothesis Testing

A multiple linear regression was conducted with customer satisfaction as the dependent variable and the five service quality dimensions as predictors, to test H_{01}/H_{a1} . The overall regression model was statistically significant, $F(5, 144) = 35.24$, $p < 0.001$, with an R^2 of 0.551 and an adjusted R^2 of 0.535, indicating that the five SERVQUAL dimensions jointly explain approximately 53.5 percent of the variance in customer satisfaction after adjusting for the number of predictors—a substantial effect size for survey-based behavioural research. As shown in Table 5, reliability ($\beta = 0.249$, $p < 0.001$) and responsiveness ($\beta = 0.291$, $p < 0.001$) were the strongest and most statistically significant predictors of customer satisfaction, followed by assurance ($\beta = 0.174$, $p = 0.001$). Empathy ($\beta = 0.098$, $p = 0.066$) and tangibility ($\beta = 0.089$, $p = 0.084$) did not reach statistical significance at the 0.05 level, suggesting that while these dimensions are positively associated with satisfaction, their independent predictive contribution is comparatively weaker once the other dimensions are controlled for.

Table 5. Multiple Regression Analysis: Predictors of Customer Satisfaction

Predictor	B	Std. Error	Beta (β)	t	Sig. (p)
(Constant)	0.512	0.239	—	2.14	0.034
Reliability	0.241	0.058	0.249	4.16	0.000
Responsiveness	0.283	0.061	0.291	4.64	0.000
Assurance	0.178	0.055	0.174	3.24	0.001
Empathy	0.096	0.052	0.098	1.85	0.066



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Tangibility	0.087	0.050	0.089	1.74	0.084
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Dependent Variable: Customer Satisfaction. $R = 0.742$, $R^2 = 0.551$, Adjusted $R^2 = 0.535$, $F(5,144) = 35.24$, $p < 0.001$. Source: SPSS Linear Regression output.

Since the overall regression model is statistically significant ($p < 0.001$) and three of the five dimensions individually attain significance at the 0.05 level, the null hypothesis H01 is rejected and the alternative hypothesis Ha1 is accepted: e-banking service quality dimensions are significantly related to customer satisfaction among SBI customers in Muzaffarpur district.

To test H02/Ha2, an independent samples t-test compared mean customer satisfaction scores between male ($M = 3.83$, $SD = 0.58$) and female ($M = 3.75$, $SD = 0.63$) respondents. The test produced $t(148) = 1.12$, $p = 0.264$, which is not significant at the 0.05 level. The null hypothesis H02 is therefore retained: there is no statistically significant difference in customer satisfaction with e-banking services between male and female SBI customers in the district, suggesting that gender is not a major determinant of satisfaction in this context, consistent with the broadly gender-neutral design of digital banking interfaces.

To test H03/Ha3, a one-way ANOVA compared mean customer satisfaction scores across the five age groups. The results showed a statistically significant difference, $F(4, 145) = 2.51$, $p = 0.044$, which is below the 0.05 threshold. The null hypothesis H03 is therefore rejected in favour of Ha3: customer satisfaction with e-banking services differs significantly across age groups. Post-hoc comparison of group means indicated that respondents in the 26–35 age bracket reported the highest satisfaction ($M = 3.94$), while respondents above 55 years reported comparatively lower satisfaction ($M = 3.48$), plausibly reflecting generational differences in digital literacy and comfort with self-service banking channels.

4.6 Discussion of Findings

The results of this study are broadly consistent with prior e-banking service quality research reviewed in Section 2. As in the findings of Raza et al. (2020) and Tetteh (2022), reliability and responsiveness emerged as the dimensions most strongly associated with customer satisfaction, reinforcing the view that customers place a premium on system uptime, transaction accuracy, and prompt problem resolution over more peripheral service attributes. The comparatively weaker, though still positive, contribution of empathy and tangibility echoes the findings of Shankar and Rishi (2020), who emphasised convenience over interpersonal or aesthetic dimensions in mobile banking adoption. The absence of a significant gender difference aligns with the increasingly gender-neutral design of self-service digital channels, while the significant age-based difference corroborates Machogu and Okiko's (2015) observation that demographic factors can moderate the customer experience of e-banking complexity. Taken together, these findings suggest that SBI branches in Muzaffarpur would benefit most from investments that strengthen system reliability and responsiveness—such as reducing server downtime, speeding



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up complaint resolution, and simplifying the YONO and internet banking interfaces for older customers—rather than from generic digital marketing or purely cosmetic interface changes.

Beyond the specific coefficients reported above, the pattern of findings carries a broader implication for how public sector banks in tier-two and tier-three markets should sequence their digital investment priorities. In markets where customers are transitioning from branch-based to digital banking relationships, as is the case in much of Muzaffarpur district, the marginal value of improving core functional reliability appears to exceed the marginal value of enhancing softer, relationship-oriented attributes such as empathy or the visual design of digital interfaces. This does not imply that empathy and tangibility are unimportant—both remain positively and significantly correlated with satisfaction at the bivariate level in Table 4—but rather that, once core functional performance is controlled for, they explain comparatively less additional variance. This distinction matters for resource allocation: a branch manager with a limited budget for staff training versus system upgrades would, on the basis of this evidence, be better advised to prioritise system-level reliability and responsiveness improvements before investing further in interpersonal service training, at least in the short run.

5. Conclusion

This study set out to examine customer perceptions of e-banking service quality and their relationship with customer satisfaction among State Bank of India customers in Muzaffarpur district, using a SERVQUAL-based instrument administered to 150 respondents and analysed through SPSS. The findings demonstrate that reliability, responsiveness, assurance, empathy, and tangibility are all positively associated with customer satisfaction, with reliability and responsiveness exerting the strongest and most statistically significant influence. The overall regression model confirms that these five dimensions jointly account for a substantial share of the variation in customer satisfaction, providing strong empirical support for the hypothesis that e-banking service quality meaningfully shapes customer satisfaction in this district-level, public-sector-bank context. Hypothesis testing further revealed that satisfaction does not differ significantly by gender but does differ significantly across age groups, with younger and middle-aged customers reporting higher satisfaction than older customers.

From a managerial perspective, the findings suggest several practical priorities for SBI branch management in Muzaffarpur district. First, continued investment in server capacity, transaction reliability, and faster resolution of failed or delayed transactions is likely to yield the greatest improvement in customer satisfaction, given the strong loading of reliability and responsiveness in the regression model. Second, targeted digital literacy and assisted-banking initiatives for older customers could help narrow the satisfaction gap identified across age groups. Third, while assurance-related perceptions of security and staff competence are already comparatively strong, continued communication about data security measures could further reinforce customer trust.



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Finally, modest but consistent improvements in empathy—such as personalised query resolution and proactive communication—could help lift the currently weakest-performing dimension of the service quality construct.

The study is subject to certain limitations. The sample of 150 respondents, while adequate for the multivariate techniques employed, is confined to a single district and a single bank, which limits the generalisability of the findings to other banks or regions. The use of convenience sampling within strata, rather than pure random sampling, may also introduce a degree of selection bias. Future research could extend this design to a comparative study of public and private sector banks across multiple districts of Bihar, incorporate qualitative interviews to explore the reasons underlying lower satisfaction among older customers, and examine the moderating role of digital literacy and income on the service-quality–satisfaction relationship. Despite these limitations, the study contributes district-specific, branch-level empirical evidence that complements the predominantly metro-centric literature on e-banking service quality in India, and offers actionable, statistically grounded guidance for improving customer satisfaction at SBI branches in Muzaffarpur district.

References

1. Balbin-Romero, G., Carrera-Mija, E., Serrato-Cherres, A., & Cordova-Buiza, F. (2022). Relationship between e-banking service quality based on the e-SERVQUAL model and customer satisfaction: A study in a Peruvian bank. *Banks and Bank Systems*, 17(4), 180–
2. Correa, T., Pavez, I., & Contreras, J. (2020). Digital inclusion through mobile phones? A comparison between mobile-only and computer users in internet access, skills and use. *Information, Communication & Society*, 23(7), 1074–1091.
3. Deepthi, B., Gupta, P., Rai, P., & Arora, H. (2022). Assessing the dynamics of AI driven technologies in Indian banking and financial sector. *Vision*.
4. Edo, O. C., Etu, E. E., Tenebe, I., Oladele, O. S., Edo, S., Diekola, O. A., & Emakhu, J. (2023). Fintech adoption dynamics in a pandemic: An experience from some financial institutions in Nigeria during COVID-19 using machine learning approach. *Cogent Business & Management*, 10(2), Article 2242985.
5. Galdolage, B. S., & Rasanjalee, R. M. K. S. (2022). Why do people move towards self-service technologies? Insights from banking sector in Sri Lanka. *Journal of Business and Technology*, 6(1), 19–41.
6. Hemalatha, S., & Devaraja, T. S. (2023). Study on customer satisfaction on digital banking services by public and private sector banks. *International Research Journal of Education and Management Studies*, 2(3), 245–250.
7. Kant, R., Jaiswal, D., & Mishra, S. (2017). The investigation of service quality dimensions, customer satisfaction and corporate image in Indian public sector banks: An application of structural equation model (SEM). *Vision*, 21(1), 76–85.



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8. Kapoor, H. (2015). Customer satisfaction and e-banking services: A case study of Tricity. *International Journal of Innovative Research in Science, Engineering and Technology*, 4(10), 10270–10277.
9. Kaur, M., & Sharma, N. (2015). Electronic service quality and customer satisfaction: A study of customer loyalty with special reference to tourism industry. *Amity Business Review*, 16(2), 100–114.
10. Kaur, N., & Kiran, R. (2015). E-banking service quality and customer loyalty: Changing dynamics of public, private and foreign bank consumers in India. *Global Business and Management Research*, 7(1), 74–92.
11. Machogu, A. M., & Okiko, L. (2015). E-banking complexities and the perpetual effect on customer satisfaction in Rwandan commercial banking industry: Gender as a moderating factor. *Journal of Internet Banking and Commerce*, 20(3), 1–3.
12. Nguyen, P. M., & Dang, T. H. (2024). Factors affecting digital banking services acceptance: An empirical study in Vietnam during the COVID-19 pandemic. *Entrepreneurial Business and Economics Review*, 12(1), 101–117.
13. Nihayah, M., Marwan, M. S., Nawras, M. N., Ahmad, M. A. Z., & Ahmad, Y. A. (2021). Customer satisfaction measurement of e-banking service quality in Riyadh, Saudi Arabia. *Academy of Strategic Management Journal*, 20(2), 1–19.
14. Rajaobelina, L., Brun, I., Prom Tep, S., & Arcand, M. (2018). Towards a better understanding of mobile banking: The impact of customer experience on trust and commitment. *Journal of Financial Services Marketing*, 23(3–4), 141–152.
15. Raza, S. A., Umer, A., Qureshi, M. A., & Dahri, A. S. (2020). Internet banking service quality, e-customer satisfaction and loyalty: The modified e-SERVQUAL model. *The TQM Journal*, 32(6), 1443–1466. <https://doi.org/10.1108/TQM-02-2020-0019>
16. Roy, S. K., Balaji, M. S., Kesharwani, A., & Sekhon, H. (2017). Predicting internet banking adoption in India: A perceived risk perspective. *Journal of Strategic Marketing*, 25(5–6), 418–438. <https://doi.org/10.1080/0965254X.2016.1148771>
17. Sewaka, S., Anggraini, K., Mas'adi, M., Nurhadi, A., & Arianto, N. (2021). The effect of customer satisfaction and service quality of banking products on loyalty of bank customer in Tangerang. *International Journal of Artificial Intelligence Research*, 6(1), 295.
18. Shafeeq, M., & Beg, S. (2021). A study to assess the impact of COVID-19 pandemic on digital financial services and digital financial inclusion in India. *African Journal of Accounting, Auditing and Finance*, 7(4), 326–345.
19. Shankar, A., & Rishi, B. (2020). Convenience matter in mobile banking adoption intention? *Australasian Marketing Journal*, 28(4), 273–285.
20. Tetteh, J. E. (2022). Electronic banking service quality: Perception of customers in the Greater Accra Region of Ghana. *Journal of Internet Commerce*, 21(1), 104–131.