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A mediation analysis of perceived service quality, customer satisfaction and customer engagement in the banking sector

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Abstract
This study examines the linkage between service quality, customer satisfaction, and customer engagement in Indian public sector banks. The study explored the mediating role of customer satisfaction between perceived service quality and customer engagement. Primary data were collected through a structured questionnaire from the two hundred and fifty respondents. Hierarchical multiple regression is used to find out the mediation effect. The study found that customer satisfaction mediates service quality and customer engagement. The study's findings provide new insights for the banking sector to enhance customer satisfaction and engagement.

Keywords Service quality · SERVQUAL · Customer satisfaction · Customer engagement · India · Retail banking · Nationalized banks

Introduction

Customers are critical to the growth of any business, industry, or service area, mainly financial services. Measuring service quality in the banking industry is regarded as the most challenging task compared to other sectors. In India, banks are essential participants in the financial system. Banking provides a variety of services and opportunities. Several innovative IT-based services, like ATMs, internet banking, smart cards, credit cards, mobile banking, phone banking, and anywhere-anytime banking, have given customers various convenient services.

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Services in the banking industry could not be standardized due to offering a variety of intangible benefits. With growing competition, firms that do not compete on customer experience will lose clients to those who are consistently delighting customers and providing high-quality service. Even firms that recognize the need to provide exceptional experiences have difficulty assessing their service quality (Nagabhushanam 2011).

Service quality has been a critical aspect of service marketing and is significant for every business. Parasuraman et al. (1985) highlighted that service quality had been frequently considered in the services marketing literature. Most of the research has absorbed gauging the service quality using the SERVQUAL tool. Satisfying the customers' hopes is exceptionally significant in a modest business environment (Ananda and Devesh 2017).

Customer satisfaction and quality of service have been intellectualized at the "crux of marketing theory and practice" today as two of the most fundamental constructs (Sureschandar et al. 2002). Service quality constantly transmits customers' expectations and value judgments of a product or service (Parasuraman et al. 1985). Customer satisfaction and service quality must become a priority for all banks worldwide (Hossain and Leo 2009). Because of its crucial importance to a company's survival, customer happiness has long been at the marketing center (Pizam and Ellis 1999).

The critical factor by which end-users distinguish service products is service quality. Customer loyalty increases due to exclusive, high-quality goods and services (Getty and Getty 2003; Gupta and Chen 1995). Service quality is widely recognized as the originator of customer satisfaction and behavior, and it is the primary driver of organizational profitability.

The concept of employee engagement may be traced back to Kahn's pioneering work on the subject (1990). McEwen (2004) extended the construct by evaluating the emotional and rational relationships. As a result, brand engagement encompasses integrity, pride, and enthusiasm. The term "engagement" refers to a two-party relationship centered on interaction (Vivek et al. 2014; Brodie et al. 2011a, b; Hollebeek et al. 2014).

Doonr et al. (2010) indicated that customer engagement in brand communities and sponsorship of brand-related events engaged customers can add to the brand's long-term reputation and recognition (e.g., charities and fundraisers).

Over the last decade, customer engagement as an indicator of customer purchase and brand loyalty has simplified marketing literature (Prentice and Loureiro 2018). Prentice et al. (2019) found that brand experience plays a vital role in service quality and customer engagement. According to Pansari and Kumar (2017), customer engagement represents four different types of value acquired from customers: lifetime value (purchases), incentivized referrals, the value of power, and the value of knowledge.

The concept of lifetime value refers to a company's emphasis on the consumer and their life cycle rather than the product's life cycle (Jain and Singh 2002). When buying a product, customers actively learn about the brand, forming their perceptions (Carvalho and Fernandes 2018). As a result of this mechanism, consumers become more educated, networked, motivated, and involved (Kumar et al. 2010).

Parasuraman et al. (1988) service quality has determinants such as competence, courtesy, credibility, security, access, communication, reliability, tangibleness, and responsiveness. The study by Ananda and Devesh (2017) indicates that banks are attractive and progressively capable of providing quality service to create new customers and focus on customer retention. The new customers are well-educated and live in a high-end environment. They compare their bank's service quality to other banks.

The question of what types of services can assist public sector banks in India in increasing customer loyalty and the level of customer engagement of various demographic profiles, as well as using them as a public relations strategy for the expansion of business and customer-oriented organizations, has arisen as a result of increased competition among banks.

Public sector banks (PSBs) are the primary type of *government maintained banks* in India, where a common stake (i.e., more than 50%) is held by the *Ministry of Finance* of the *Government of India* or *State Ministry of Finance* of various *State Governments of India*.

In India, 34 domestic banks are functioning, and 46 foreign banks are operating. Of that, 12 banks are public sector banks, and 22 are private sector banks. Public sector banks are essential participants in the financial system in India because of the enormous population. There are 86,887 bank branches and 1,30,612 ATMs in the public sector in India.

Public sector banking provides a variety of services and opportunities. Several innovative IT-based services, like ATMs, Internet banking, Smart Cards, Credit Cards, Mobile Banking, Phone Banking, and Anywhere-Anytime banking, have given customers various convenient services (e.g., Lockers, Personal Loans, home loans, car loans, account linking with different government schemes for students, farmers, entrepreneurs, women, disabled persons, backward people, and children)

The previous study on service quality had a great deal of contribution to customer satisfaction in Indian banks. Perceived service quality has a positive relationship with customer satisfaction moderated by customer knowledge (Nambiar et al. 2019), customer engagement in the Indian retail banking sector (Sondhi et al. 2017), customer satisfaction mediating the relationship between service quality and loyalty (Mosahab et al. 2010), the impact of service quality attributions on customer satisfaction and loyalty (Anand and Selvaraj 2012), trust and customer engagement in the banking sector in Ghana (Kosiba et al. 2020), the influence of brand experience and service quality on customer engagement (Prentice et al. 2019).

Most traditional consumers and low-income sections of Indian society still prefer PSBs because they believe their money and valuables are in safe hands. In order to get benefits from various schemes, the common and poor man has an account in public sector banks. Due to the reasons mentioned above, the authors have selected PSBs to evaluate service quality and customer satisfaction. Research linking service quality, customer satisfaction, and customer engagement in public sector banks in India are limited. The novelty of this research is the inclusion of customer engagement, which is essential for the banking sector to understand the psychological involvement of the customer.

The literature review forms the basic and essential understanding of service quality to clarify these concepts. The primary purpose of this study is to examine the linkage between service quality and customer satisfaction and understand the relationship between service quality and customer engagement. The study has attempted to explore the link between customer satisfaction and customer engagement in Indian public sector banks. An attempt

was also made in this study to understand the mediating role of customer satisfaction between service quality and customer engagement.

Literature review and hypothesis development

Service quality and customer satisfaction

Oliver (1993) argued that customer loyalty would drive by service quality. According to Sivadas and Baker-Prewitt (2000), there has been a positive and meaningful relationship between customer satisfaction and service quality. Customer satisfaction is a thorough estimate that returns the customer's perception of reliability, assurance, responsiveness, empathy, and tangibility. At the same time, service quality is a more comprehensive estimate that produces the customer's perception of reliability, assurance, responsiveness, empathy, and tangibility (Wilson et al. 2008).

Bennett and Barkensio (2005) stated that service quality-induced beneficiaries would like to recommend to other people and engage in positive word-of-mouth. LeBlanc and Nguyen (1988), Parasuraman et al. (1988), Cronin and Taylor (1992), Teas (1993), Avkiran (1994), Angur et al. (1999), Bahia and Nantel (2000), and Wang et al. (2000) have studied service efficiency according to the logic, as technological facilities develop, the relational component becomes much more critical.

Tabash et al. (2019) find a significant relationship between responsiveness and overall customer satisfaction. The third most essential component in customer satisfaction in E-retailing is responsiveness. Khan et al. (2021) found a positive and significant association between tangibility and customer satisfaction, reliability and customer satisfaction, responsiveness and customer satisfaction, assurance and customer satisfaction, and empathy and customer satisfaction.

Ayo et al. (2016) find that the customer satisfaction and usage of e-banking are strongly influenced by perceived e-service quality, implying that higher e-service quality can improve customer satisfaction, and as a result, banks have attracted more users of e-banking. Pakurar et al. (2019) said the items of the independent variables of service quality such as tangibility, responsiveness, empathy, assurance, reliability, financial aspect, access, and employee competencies were used to test the correlation between the dependent variable customer satisfaction and the items of the independent variables of service quality and found significant in the Jordanian banking sector. The authors have found that service quality is inevitable for customer satisfaction. Based on the evidence of these studies, the following hypothesis has been framed:

Hypothesis 1 Service quality has a positive effect on customer satisfaction.

Service quality and customer engagement

Service quality is described as a multidimensional construct in related research studies. Customer engagement has remained an excellent retaining and acquisition technique for founding and preserving competitive advantages. Service quality assessment and valuation vary from one customer category to another and from one situation to another (Ananda and Devesh 2017; Ladhari et al. 2008).

Service convenience, service fairness, and service excellence (Roy et al. 2018b) are helping for customer engagement. Customer engagement has multiple dimensions, and one of the most critical aspects that practitioners must consider to improve customer engagement is the service quality provided by service-dominant firms. Improving customer engagement will result in higher customer positive behavior, such as more positive word of mouth, more share of wallet spending, and brand loyalty (Patterson et al. 2006; Higgins and Scholer 2009; Vivek et al. 2014; Mollen and Wilson 2010).

Customers' desire to become referrals is referred to as referral value. Referrals are also more potent than other modes of communication in attracting customers (Villanueva et al. 2008). Influence value is the monetary value associated with a customer's influence against a brand or an organization. As social media increased in popularity, consumers could quickly share their experiences with the brand and the services offered by the brand organization online (Thakur 2018). The word "information worth" refers to consumer reviews, and "knowledge value" refers to customer reviews (Saha and Theingi 2009). The evidence of these studies leads to developing the following hypothesis:

Hypothesis 2 Service quality has a positive effect on customer engagement.

Customer satisfaction and customer engagement

The worldwide presentation of the five-dimensional SERVQAL model has been interrogated by many researchers (Carman 1990; Cronin and Taylor 1992; Buttle 1996). Still, many scholars have studied service quality and customer satisfaction (Belas et al. 2014; Angelova and Zekiri 2011; Munusamy et al. 2010; Maddern et al. 2007; Ahmad and Naser 2002).

The results of previous studies have found that customer satisfaction has a positive and significant relationship with customer engagement. According to Carlson et al. (2017), customer satisfaction is a moderating element in the

relationship between brand experience value and customer engagement.

Furthermore, according to Simon and Tossan (2018), consumer satisfaction predicts customer engagement. As a result, a customer's satisfaction with a product or brand will influence their engagement with the brand/product (Thakur 2018; Gopalakrishna and Lilien 2012; Carlson et al. 2018). In addition, some studies have tried to clarify that service quality is allied to customer engagement (Roy et al. 2018a, Roy et al. 2018b; Verleye et al. 2014).

Though the concept of ''engagement'' in business relationships is not new, significant practitioner interest in the idea has developed in the last decade (Vivek et al. 2016; Verhoef et al. 2010; Haven 2007; Campanelli 2007; Voyles 2007; Ghuneim 2006; Harvey 2005; Sawhney et al. 2005).

Hypothesis 3 Customer satisfaction has a positive impact on customer engagement.

Mediation effect of customer satisfaction between service quality and customer engagement

Ananda and Devesh (2018) discovered that one of the most prompting factors of customer satisfaction is efficiency, contradicting Munusamy et al. (2010). According to Anderson et al. (1994), service quality has a positive impact on consumer satisfaction and, as a result, business profitability.

According to Prentice et al. (2019), good service improves consumers' perceptions of brands, resulting in a sensitive connection (i.e., brand love) and subsequent engagement behaviors such as purchasing, referring, and spreading word-of-mouth comments. They studied how different parts of the brand experience impact brand love and consumer engagement and how brand experience and brand love influence other dimensions of customer involvement. The findings suggest that brand love and client loyalty are positively influenced by behavioral and intellectual brand experience. In another context, the sensory perception had only a slight effect on consumer interaction.

However, according to some reports, consumer satisfaction would significantly affect customer engagement (Thakur 2018; Gopalakrishna et al. 2012). Though, service quality indirectly impacts customer loyalty through customer satisfaction as a mediating element. A logical explanation is that customer satisfaction is the most influential factor in loyalty.

Abror et al. (2020) said customer satisfaction is influenced by service quality in a clear and meaningful way. Religion has a solid and unfavorable moderating effect on the connection between service quality and customer satisfaction. Customer loyalty is unaffected by the quality of service provided. Consumer happiness is an essential factor in determining customer engagement and loyalty. Finally, consumer engagement affects customer loyalty in a significant

and beneficial way. Therefore, from the above evidence, the below hypothesis is framed to know the mediation effect of customer satisfaction (Fig. 1).

Hypothesis 4 Customer satisfaction mediates the relationship between service quality and customer engagement.

Research methodology

Sample and collection of data

Two hundred and fifty retail customers of India's twelve (12) nationalized banks comprise the study's sample. The SERVQUAL model was used to compile the primary data, collected through a structured questionnaire. The most suitable SERVQUAL questionnaire (22 items) from Parasuraman et al. (1988) and its subsequent modifications (1990, 1993, and 1994) is recycled. Three things used by Homburg et al. (2009) employed gauge customer satisfaction. The scale developed by Kumar and Pansari (2016) was adapted to measure customer engagement (13 items). These questions were framed according to the objectives and hypothesis of the study and presented in Table 1

Customers were targeted using the 'Snowball' sampling from the non-probability sampling method (Tuncalp 1988: Morgan 2008; Ananda and Devesh 2017) employed in this study. Since customers' satisfaction is dependent on their perception of service quality regarding their expectations, the score gap is considered by determining the transformation between the mean scores of expectations (E) and perception (P). As a result, if 'E' has a higher value than 'P,' the consumer is dissatisfied; if 'E' has a lower value than 'P' the customer is pleased (Kotler and Armstrong 1999; Parasuraman et al. 1988).

Design and measurement

A seven-point Likert scale with responses ranging from 1 to 7 points (1=strongly disagree, 2=disagree, 3=somewhat disagree; 4=neither agree nor disagree, 5=slightly agree, 6=agree, 7=strongly agree) to assess twelve nationalized banks' service quality. The t-tests closely correlated with 7-point scales (Lewis 1993).

Foddy (1994) to ensure scale validity and reliability, a minimum of 7 categories are required. As a result, we used a 7-point scale in this analysis since it yields more variance in responses. Descriptive and inferential statistics were used to analyze the results. The Statistical Package of Social Sciences (SPSS) has been used to run process macro (Hayes 2018) to analyze the 4th step of mediation analysis. (Customer satisfaction mediates the relationship between service

Table 1 Contributing items for service quality, customer satisfaction, and customer engagement

Constructs	Items	Sources
Service quality		
Tangibility	Modern looking equipment	Parasuraman et al. (1988)
	Appealing physical facilities	
	The neat appearance of staff	
	Materials associated with services are visually appealing	
Reliability	Staff keeping promise	
	Sincere interest in solving customers' problems	
	Staff performing service right the first time	
	Provide services at the time they promise to do so	
	Insists on error-free records	
Responsiveness	Staff telling customers exactly when	
	services will be performed	
	Staff providing prompt service	
	Staff willingness to help	
	The staff never too busy to respond to customers' needs	
Assurance	Behaviors of staff instill confidence in customers	
	Customers feel safe in their transactions	
	Courtesy of staff	
	Staff having knowledge and being competent to answer questions	
Empathy	Individual attention is given by the bank	
	Convenient operating hours	
	Special attention was given by the staff	
	Staff giving customer best interest at heart	
	Understanding of specific needs	
Customer satisfaction	All in all, I am very satisfied with this bank	Homburg et al. (2009)
	The touch-points with this bank meet my expectations of the ideal touch-points with this type of banks	
	The performance of this bank has fulfilled my expectations	
Consumer engagement		
Purchases engagement	I will continue buying products/services of that bank in the near future	Kumar and Pansari (2016)
	My purchases with that bank make me content	
	Owning the products/services of this bank makes me happy	
Referral's engagement	I promote this bank because of the monetary referral benefits provided by the brand	
	In addition to the value derived from the product, the monetary referral incentives also encourage me to refer this bank to my friends and relatives	
	I enjoy referring this bank, I refer to my friends and relatives because of the monetary referral incentives	
	Given that I use this bank, I refer my friends and relatives to this brand because of the monetary referral incentives	
Influence value engagement	I love talking about my brand experience	
	I discuss the benefits that I get from this bank with others	
	I am part of this bank and mention it in my conversations	
Knowledge engagement	I provide feedback about my experiences with the bank to the firm	
	I provide suggestions/feedback for improving the performance of the bank	
	I provide suggestions/feedback about new products/services of that bank	
	I provide suggestions/feedback for developing new products/services for this bank	

quality and customer engagement.) Descriptive statistics such as mean, the number of respondents, and standard deviation are determined for categorical variables.

The data were analyzed by measuring the mean scores of the different SERVQUAL attributions and dimensions for both expectations and perceptions to assess service quality

differences. The relationship between perceived service quality, customer satisfaction, and consumer engagement in retail banking was investigated using multivariate regression analysis. Consumer satisfaction (CS) and customer engagement (CE) were used as dependent variables in this analysis and perceived service quality as the independent variable.

We have used Baron and Kenny (1986) approach for mediation analysis. This research model depicts a causal chain in which X (Service quality) indirectly impacts Y (customer engagement) via the mediator variable M (Customer Satisfaction). In this approach, X is said to influence M, which subsequently has a causal effect on Y. This indirect effect represents the process by which X transmits its impact on Y. According to this paradigm, X can have a direct effect on Y, which is independent of X's influence on M. In psychology science, there are numerous examples of such a paradigm (Hayes and Preacher 2014). One of the limitations of this mediation approach is that the relationship between all the variables must be significant.

Although the model has the limitation as discussed above, yet studies like Deleon and Chatterji (2015), Ashraf et al., (2014) have successfully adopted and used this model for mediation analysis. Bahadur et al. (2018) used the bootstrapping approach (Preacher and Hayes 2004) to examine the mediation effect of customer satisfaction between employee empathy and customer loyalty. They have also tested the impact of perceived service quality on customer satisfaction and customer loyalty. It is found that customer satisfaction is an important mediating variable for the study. Chettri (2017) used the bootstrapping method to test mediation analyses with bias-corrected confidence estimations (MacKinnon et al. 2004; Preacher and Hayes 2004).

> Equation 1: Perceived service quality and customer satisfaction $Y = \beta_0 + \beta_1 X_1 + 1_i$, where Y is the customer satisfaction (S), and X_1 is perceived service quality.
> Equation 2: Perceived service quality and customer engagement $Y = \beta_0 + \beta_1 X_1 + 1_i$, where Y is the customer engagement (CE), and X_1 is perceived service quality.
> Equation 3: Perceived service quality, customer satisfaction, and consumer engagement. $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + 1_i$, where Y is the customer engagement (CE), β_0, β_1, ... β_5 are parameters, X_1 is perceived service quality, and X_2 is customer satisfaction.

Reliability and validity

This section aims to assess the reliability of the SERVQUAL instrument's five-dimensional attributes in the context of Indian retail banking. Cronbach Alpha was used to determine the questionnaire's reliability by examining whether the respondents' scores on each characteristic were related to their other qualities (Bell and Bryman 2007).

Table 2 Demographic profile of the respondents

Demographic variables	Categories	No. of respondents	Percentage
Age	18–30	114	45.6
	31–45	69	27.6
	46–60	37	14.8
	60 >	30	12.0
Gender	Male	137	54.8
	Female	113	45.2
Education	12th	26	10.4
	UG	104	41.6
	PG	120	48.0
Occupation	Government Employee	50	20.0
	Private Employee	74	29.6
	Own Business	126	50.4
Banks	State Bank of India	103	41.2
	Canara Bank	37	14.8
	Punjab National Bank	12	4.8
	Punjab & Sindh Bank	8	3.2
	Indian Bank	21	8.4
	Union Bank of India	22	8.8
	Indian Overseas Bank	7	2.8
	United Commercial Bank	9	3.6
	Bank of Maharashtra	13	5.2
	Bank of India	18	7.2

Results and analysis

Table 2 revealed the majority of the respondents (45.6%) aged between 18 and 30, the majority of the respondents (54.8%) gender were male, the majority of the respondents (48%) education qualification was postgraduate, and majority of the respondents (41.2%) are from State Bank of India.

Table 3 demonstrates the questionnaire's internal consistency using Cronbach's Alpha values for service quality expectations, customer satisfaction, and engagement. For all five service quality categories, Cronbach's Alpha values exceeded. The minimum standard value of 0.7 (Nunnally 1978) of expectation, perception, customer satisfaction, and engagement.

The correlation coefficient of the perceived service quality dimension is strongly positive, as shown in Table 4. Thus, the perceived service quality dimensions have a consistent relationship with consumer satisfaction and engagement.

Table 3 Descriptive statistics and reliability analysis

Service quality dimensions	Items	Expectation			Perception		
		M	SD	Cronbach Alpha	*M*	SD	Cronbach Alpha
Tangible	4	22.75	4.59	0.92	22.58	3.51	0.72
Reliability	5	28.52	5.60	0.94	28.03	5.31	0.92
Responsiveness	4	22.50	4.01	0.85	22.85	3.94	0.90
Assurance	4	22.40	4.38	0.89	22.56	4.82	0.94
Empathy	5	28.59	5.89	0.95	28.34	6.05	0.95
Customer Satisfaction	3	16.76	3.83	0.92	–	–	–
Customer Engagement	13	73.35	16.47	0.97	–	–	–

Table 4 Correlation matrix of service quality dimensions, customer satisfaction, and customer engagement dimensions

Variables	1	2	3	4	5	6	7	8	9	10
Tangible										
Reliability	0.90									
Responsiveness	0.72	0.71								
Assurance	0.81	0.78	0.87							
Empathy	0.84	0.77	0.87	0.99						
Satisfaction	0.71	0.82	0.86	0.97	0.97					
Purchase engagement	0.79	0.69	0.88	0.94	0.94	0.91				
Referral engagement	0.79	0.77	0.87	0.93	0.93	0.92	0.93			
Influence Value engagement	0.79	0.77	0.89	0.94	0.93	0.92	0.94	0.94		
Knowledge engagement	0.76	0.75	0.90	0.92	0.91	0.90	0.93	0.91	0.95	

All values are significant at 0.01%

Table 5 One sample t-test for gaps in service quality attributions and dimensions

Service quality attributions	*E*	*P*	*E–P*	*t*-value		*p* value	
	M	*M*		*E*	*P*	*E*	*P*
Tangible	22.75	22.58	0.17	78.35	101.4	0.001	0.001
Reliability	28.52	28.03	0.49	80.48	83.46	0.001	0.001
Responsiveness	22.50	22.85	-0.35	88.54	91.64	0.001	0.001
Assurance	22.40	22.56	-0.16	80.73	73.90	0.001	0.001
Empathy	28.59	28.34	0.25	76.73	74.00	0.001	0.001

Bootstrap values considered

The results of one sample *T*-test for gaps in service quality attributions and dimensions are shown in Table 5. The grand mean scores of all five service dimensions are considered based on gap ratings. The t-test was used to investigate the importance of the discrepancy between expectation and experience of all five service quality dimensions. At the 95 percent significance level (p <0.05), the premeditated *t*-values suggest a substantial difference between expectation and experience regarding tangibility, reliability, responsiveness, assurance, and empathy. Regarding responsiveness and assurance, consumers' perception is higher than the expectation. On the other hand, tangibility, reliability, and empathy perception are low than the expectation. Thus, the *t*-test findings show a significant gap between customers' expectations and perceptions of service quality in general.

Table 6 displays the effects of a one-sample *t*-test comparing service quality expectation and service quality reality. Since expectations are higher and perceptions are lower, India's public sector banks fall short of in-service quality.

Figure 2 represents the mediation analysis. The values of mediated regression test the hypothesis that perceived service quality is positively linked to customer engagement when mediated by consumer satisfaction shown in Table 7. The model fits well, according to the results of the multiple regression analysis. Customer satisfaction and engagement are greatly affected by perceived service quality. On the other hand, customer satisfaction significantly affects customer engagement. The overall customer engagement model is presented in the following equations:

Table 6 One sample t-test for overall service quality

Overall service quality	Values	t	SE	Lower	Upper	Conclusion
Service Quality (Expectation)	124.78	82.32	1.53	121.80	127.76	–
Service Quality (Perception)	124.39	89.23	1.41	121.59	127.13	Unsatisfactory
E-P	0.39					Unsatisfactory

Source: Author's Estimations
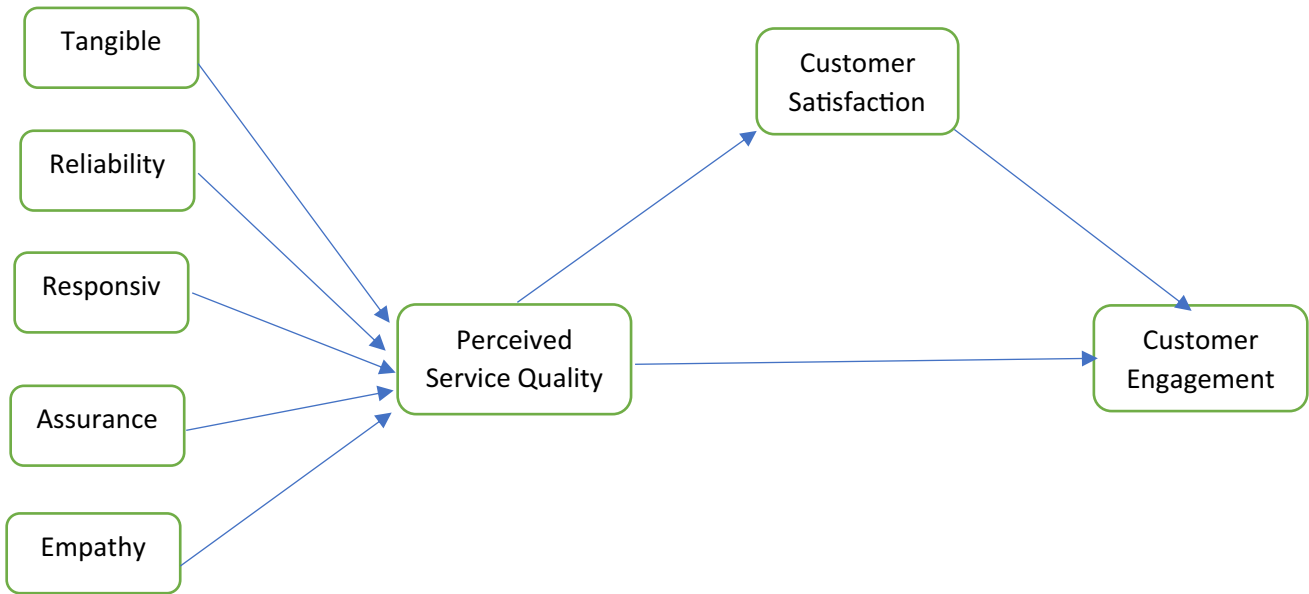
Fig. 1 Proposed research model

Fig. 2 Mediation analysis

Table 7 Hierarchical multiple regression of perceived service quality, customer satisfaction, and customer engagement

Independent variable	Dependent variable	R	R^2	Adj R^2	β	F	T	SE	P
Perceived service quality	Customer satisfaction	0.95	0.90	0.90	0.17	2367.71	48.65	0.004	0.000
Perceived service quality	Customer engagement	0.94	0.89	0.89	0.76	2129.04	46.14	0.17	0.000
Consumer Satisfaction	Customer engagement	0.99	0.98	0.98	4.24	12,020.85	109.6	0.039	0.000
Perceived service quality	Customer engagement	0.05			0.04	6065.87	1.67	0.24	0.095
Consumer Satisfaction		0.99	0.98	0.98	4.04		32.28	0.125	0.000

Equation 1: Perceived service quality and customer satisfaction

Customer Satisfaction = Constant (−5.14) + Perceived Service quality (0.17).

Equation 2: Perceived service quality and Customer engagement

Customer Engagement = Constant (−20.21)

+ Perceived Service quality (0.765).

Equation 3: Perceived service quality, customer satisfaction, and customer engagement

CustomerEngagement = Constant (0.618) + Perceived Service Quality (0.04)

+ Customer Satisfaction (4.04)

From the above equations, there is evidence that customer satisfaction impacts customer engagement.

We used Baron and Kenny's (1986) four-step to determine the mediation.

Hypothesis 1: Step-1

There was a significant relationship between perceived service quality and customer satisfaction ($r = 0.95$, $p = 0.000$), with perceived service quality accounting for 90% of the customer satisfaction variance. For every unit increase in perceived service quality, customer satisfaction will enhance by 0.17. From the above results, Hypothesis 1 was statistically significant and hence accepted.

Hypothesis 2: Step-2

The second step has met a significant correlation between perceived service quality and customer engagement ($r = 0.94$, $p = 0.000$), with perceived service quality for 89% of the variance in customer engagement. For every unit increase in perceived service quality, customer engagement will enhance by 0.76. From the above results, Hypothesis 2 was statistically significant and hence accepted.

Hypothesis 3: Step-3

The results of the third step revealed that customer satisfaction significantly impacts consumer engagement ($r = 0.99$, $p = 0.000$). For every unit, increased customer satisfaction, increased customer engagement by 4.24. The two variables are significantly correlated; we have evidence for the mediated pathway. From the above results, Hypothesis 3 was statistically significant and hence accepted.

Hypothesis 4: Step-4

The last step requires evidence that customer satisfaction mediates the relationship between perceived service quality and customer engagement. The relationship between perceived service quality and engagement when controlling customer satisfaction is $r = 0.05$ and insignificant at a 5% significance level ($p = 0.095$). On the other hand, the relationship between customer satisfaction and customer engagement is 0.99 and significant at a 5% significance level ($p = 0.000$). From the above results, Hypothesis 4 was rejected. So, we conclude that complete mediation exists.

The relationship between customer satisfaction and customer engagement is 0.99, accounting for 98% of the variance. For every unit increase in customer satisfaction, customer engagement will enhance by 4.04. An increase from 90% of shared variance to 98% of the shared difference in step four indicates that the mediating pathway accounts for most of the observed association between perceived service quality and customer engagement.

The amount of mediation is called the indirect effect and note that the Total Effect = Direct effect + indirect effect. i.e, 0.40+0.725= 0.765

Perceived service quality directly impacts 0.40 and indirect effect (with the mediation of customer satisfaction) 0.725, total= 0.765.

The Sobel test results are summarized. An observed p value of less than 5% of significance confirmed that customer satisfaction significantly mediates perceived service quality and customer engagement ($z= 39.58$, $p < 0.01$). Therefore, the Sobel test results established that customer satisfaction is fully mediated.

Discussion

According to the findings, public sector banks in India lack service quality, and customers are not satisfied. So, banks need to be careful about tangibility, reliability, and empathy by providing the necessary service to meet their expectations.

First, service quality also significantly impacts customer engagement (Table 7). This finding is supported by Roy et al. (2018b) and Verleye et al. (2014); they have highlighted the significant effect of service convenience on customer engagement and assert that overall service quality will significantly influence customer engagement behavior.

The impact of service convenience, fairness, and quality on customer engagement was explored by Roy et al. (2018b). They discovered that the quality of service had a substantial impact on customer engagement. When an Islamic bank provides exceptional service, it establishes a bond with its

customers. Customer involvement will be increased due to the bonding, or more interaction between the customer and the company will be created due to the bonding.

Positive customer engagement refers to behaviors that have favorable financial and non-financial effects for the company in the short and long term. Depending on the valence of the material, specific consumer actions (e.g., WOM activity, blogging, and online reviews) may turn out to be beneficial or adverse for the company (Doorn et al. 2010).

Individual customer characteristics and predispositions can also influence the likelihood and intensity of consumer interaction. Many of these unique features can have predictable effects on cognitive processes and decision making and the behaviors that result. So, public sector banks in India should understand the customer engagement aspects and meet the expectations. This will result in repetitive purchasing, influencing, referring, and increasing knowledge about public sector banks.

Secondly, according to this report, the service standard has an essential and positive effect on customer satisfaction (Table 7). Ananda and Devesh (2018) consumers would be pleased if the service is high quality. They investigated the factors that influence the service quality dimensions that contribute to customer satisfaction using exploratory factor analysis. Principal component analysis was used to factor analyze all 25 service quality attributes. The rationale of factor analysis implementation was tested using the Keiser–Meyer–Olkin (KMO) measure of sampling adequacy (Kaiser 1974) and Bartlett's test of sphericity (Bartlett 1954).

Further, it is essential to note that service quality is the strategic factor consumers can discriminate against service products. Excellent quality goods and services may gauge customer loyalty (Getty and Getty 2003; Gupta and Chen 1995). Customer engagement and use of e-banking are strongly influenced by perceived e-service quality, which means that better e-service quality can enhance satisfaction and, as a result, higher use of e-banking (Ayo et al. 2016). Customer satisfaction in retail banking will increase if the service quality dimensions are better (Ananda and Devesh 2018).

Customer satisfaction in Bangladesh private banking sector is correlated with responsiveness, visibility, employee commitment (Islam et al. 2020). The factors of service quality, customer satisfaction, and customer loyalty have a positive relationship. Service quality and customer satisfaction, in particular, have a strong positive association. Customer loyalty and service quality have a moderately positive association (Fida et al. 2020). Ali and Raza (2017) found that the unidimensional scale of customer satisfaction is positively and strongly connected with the multidimensional service quality scale.

Paul et al. (2016) found that knowledge of products, responding to needs, answering inquiries, quick service, connecting with the proper person quickly, and attempting to reduce queue time were variables that are positively associated with overall satisfaction in private sector banks. Customer satisfaction is adversely correlated with customer assistance, appearance, and follow-up. In the case of public sector banks, however, understanding of the product and quick service is the only criteria that are positively associated, with appearance being the only negatively associated element.

Several previous studies have found a link between service quality and customer satisfaction, indicating that higher levels of service quality are more likely to result in higher levels of customer satisfaction (Pooya et al. 2020; Kant and Jaiswal 2017; Vazifehdoost et al. 2014). So, it is very much essential to for the banks to provide the service quality to provide the satisfaction for customers.

Third, we find customer satisfaction substantially impacts customer engagement (Table 7). Customer satisfaction and customer engagement have been related in previous studies (Thakur 2018; Gopalakrishna et al. 2012; Carlson et al. 2017; Simon and Tossan 2018). Customer satisfaction serves as an affecting (moderating) variable between brand experience and customer engagement value, according to Carlson et al. (2017).

Customer satisfaction, it was claimed, is a forerunner of brand Facebook page interaction. As a result, customer satisfaction with a product or service affects consumer interaction with the brand/product (Simon and Tossan 2018). Thakur (2018) found a solid and meaningful relationship between customer satisfaction and customer engagement in a retail mobile app review. Customer engagement also facilitates contact between marketers, consumers, and society at large, resulting in a macrolevel feedback loop (Garber et al. 2009).

Doorn et al. (2010) said businesses could also affect customer engagement behaviors by creating and implementing processes and platforms that enable specific customer activities. Many companies have established tools and methods to allow customers to directly communicate their problems, compliments, comments, and ideas to the company and its personnel.

This study finds that perceived service quality and satisfaction lead to customer engagement because customers feel happy and continue to get the bank's service and promote the brand. In addition, the customer will share their experiences and influence friends and relatives. Another benefit to the bank is that consumers provide the proper feedback suggestions for improving the services.

Fourth, according to our findings, consumer satisfaction significantly mediates the relationship between perceived

service quality and customer engagement (Table 7). Anand and Selvaraj (2012) found that service quality is an antecedent of customer satisfaction and customer loyalty as its consequences. Thakur (2018) told customers that interests positively influence customers' willingness to post online evaluations. Because of responsiveness, this is critical in-service quality. The association between contentment and the intention to submit an online review and the desire to write an online review are assumed to be mediated through customer interaction. Confidence was discovered to influence the association between customer interaction and the intention to submit an online review

Doorn et al. (2010) explained that the firms may offer methods and platforms to make customer-to-customer interactions easier in other circumstances. Customer gatherings (for example, alumni meetings and events for a college), online chat forums, contests, and sweepstakes that allow customers to exchange their thoughts with one another, and so on are examples. Customers can also be engaged by building consumer learning procedures (e.g., online training).

Carlson et al. (2017) found that customer satisfaction mediates the relationship between VIBE and customer engagement. In this study, we have seen that customer satisfaction and customer engagement are the antecedents of service quality.

While wide-ranging previous research has demonstrated customer satisfaction's influence on loyalty behavior (e.g., Kumar et al. 2013), empirical service research shows that consumption satisfaction influences various non-transaction-related customer engagement behaviors. Verleye et al. (2014) discovered that consumer effect toward the service provider influenced customer feedback to the service provider and positive word of mouth (WOM) behavior.

Customer satisfaction was positively associated with providing comments, recommendations, and supporting other customers, according to Zhu et al. (2016), in the context of online brand communities. When these ideas are applied to mobile social media, it is stated that customers who are happy with the brand's mobile social media consuming experience are more likely to have good customer engagement behavioral intentions.

Conclusion

This study aims to determine the impact of perceived service quality on customer satisfaction and engagement in the Indian retail banking sector (only public sector nationalized banks). The effect of customer satisfaction on consumer engagement is the second point to consider. Finally, consider the role of customer satisfaction in mediating the relationship between perceived service quality

and consumer engagement. The overall service quality is limited (Brown et al. 1993).

In the previous studies, we have a lot of literature related to service quality, customer satisfaction, and customer loyalty in various countries and banks globally. When it comes to a country like India, researching by targeting the public sector banks is limited. This backdrop has allowed carrying out the research work, which contributes to the existing literature in customer engagement. The study's primary outcome is that customer satisfaction is essential for customer engagement.

A comprehensive study of attributes establishes the effects of the consumer's expectation and understanding of service quality. To avoid bias, all twenty-two statements have been reorganized so that the questions relevant to each calculation are not grouped. Among the service quality dimensions, responsiveness and assurance expectation are more minor, whereas the perception is high.

Similarly, tangibility, reliability, and empathy expectation are high, and perception is low. Finally, service quality expectations have the upper hand on service quality perception in the Indian retail banks (public sector nationalized banks). So, there is a little bit of gap between expectation and perception (unsatisfactory). According to the hierarchical multiple regression model, consumer satisfaction completely mediates the relationship between perceived service quality and consumer engagement.

The main contribution of this study is the usage of the complex relationship between the variables (Independent variable, dependent variable, and mediating variable). This study revealed that service quality is a significant element in consumer satisfaction with banking services, but reliability is the most important characteristic of service quality in determining customer satisfaction.

Service quality acts as an extraordinarily effective instrument for the public sector banks in India to build and establish their core advantage in today's highly competitive marketing environment for consumer satisfaction and consumer engagement. Customer engagement is a new way of thinking about marketing, if not the new marketing.

Managerial implications

The study's overall findings may help policymakers, and banks develop the appropriate strategies to increase consumer satisfaction and consumer engagement. The banks should pay much attention to service quality (e.g., tangible, reliability, and empathy) by providing value-added services and benefits for women and senior citizens. The executives of the public sector banks in India will understand that the most influencing factor is consumer satisfaction from the viewpoint of consumers.

Customers are happy with bank employees because of responsiveness and assurance. In the same way, banks must target tangibility (for ex: providing the necessary infrastructures), reliability (for ex: employees keep up for promise), and empathy (for ex: convenient operating hours) for the overall development. The managers need to know the psychological aspects of the consumers. They are responsible for customer satisfaction.

Therefore, banks should take the appropriate steps to train their staff to provide customers with the same service level. Furthermore, employees should interact with the consumers and consider problem-solving techniques to enhance the right relationship.

These techniques may help the banks to satisfy the consumers and regularly engage with the bank transactions.

By pushing sophisticated technologies and growing the number of personally devoted staff, top management and senior executives are responsible for details the perception of service quality. As a result, service-generating organizations must choose to follow the idea of making things happen, which focuses on quality generation to customer satisfaction and customer engagement in the banking sector.

Limitations of the study

This study information is collected from the public sector nationalized banks in India. This study is a cross section, and the research outcome is limited to a particular time. Therefore, the overall sample size is significantly less. In this study, we used snowball sampling. Even though a complicated relationship is used in the hierarchical regression model, only one mediating variable is considered to analyze the data. There is a chance to add the different aspects of customer behavior in the service quality, such as customer knowledge as mediating or moderating variables. It is also helpful to study the three-way interactions with the process macro to know the customer mindset.

Future research

Future studies can collect the diversified respondents' data, a large sample size, and geographical locations. There is a chance to research service quality and its impact on other consumer behavior attributes by comparing India's private and public sector banks. The service quality attributes can be studied concerning technology adoption among customers. Consumers' perceptions can measure with India's public and private sector banks. Further, there is also the opportunity to research from the viewpoint of Regional Rural Banks in India.

The researchers may consider different sampling methods that can be used for future studies. The sample size can be drawn from metropolitan cities and non-metropolitan cities.

A longitudinal study will better examine the long-term cause and effect and interrelationship with the independent and dependent variables. The researchers can use the three or more mediating (brand image, brand loyalty, brand love) and moderating variables (digital banking options) between independent and dependent variables. A mixed method of approach can be used for better outcomes. This will help the researchers to know the significance of perceived service quality

Declarations

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