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Assessing the Service Quality of Banks by a Modified SERVQUAL Model

This paper tries to study the relationship between various constructs, such as tangibility, reliability, responsiveness, accuracy, security, ease of doing business, convenience and empathy with the quality of services provided by the banking sector in the state of Odisha, India.

This study uses a modified 'SERVQUAL' model/scale comprising seven constructs/ dimensions to measure the quality of services provided by the banks in the Odisha state. . The respondents selected are the customers from both private and public banks operating in Odisha.

The result of the study shows that, the constructs/dimensions studied in the modified SERVQUAL model and used in the study significantly and positively contribute to the customer service quality of the banks, except one construct, i. e, reliability, which significantly affects the service quality – but negatively. Further, the result points out that the banks in the state of Odisha are giving priority to the ease of doing business and facilitating convenience aspects that are followed by the responsiveness of the banks.

Keywords: SEM – PLS – SERVQUAL – Tangibility – Reliability – Responsiveness

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Introduction

Liberalization of the economy in the 1990s brought about significant changes in the regulatory as well as in the structure of the Indian banking industry. This change helped various private and global banks to launch banking business in India. This led to a change in the competitive environment in the banking industry (Choudhury, 2013). Prior to the liberalization of the Indian economy, the public banks dominated the market, but post liberalization, all players, given a level-playing field, the incumbents were exposed to tough competition from both the MNC banks from beyond the boarders and the new private sector banks within the borders. This welcome change increased the bargaining power of the customers, and propelled the bankers to initiate innovations to differentiate their products and services by increasing the service quality in their offerings. This study is deemed to have significant value because service quality has emerged as a crucial factor that experts and researchers had to reconsider. This is because service quality affects business performance, customer satisfaction levels, customer loyalty and the overall business success. Various researchers, like Leonard (1982), Cronin (1992), Newman (2001), Guru (2003), have highlighted the importance of service quality in their respective studies. Hence, research has been intense on service quality, definitions, its models, methods of measurement, analysis and various concerns related to providing qualitative service, leading to a comprehensive and dedicated model designed for future researcher/s as well Service quality is nothing but meeting the customer's need-satisfaction by proactively fulfilling their expectations. But in the banking industry, service quality implies constantly forecasting the customers' expectations and satisfying them (Howcroft, 1991). The current state of service quality in the banks has been highlighted in various research studies and the benefit has been greater profit for the bankers. In addition to this, Parsuraman (1991) suggests that the high quality of service has helped also in better market penetration.

In the 21st century the banking scenario has been vastly transformed. Now banks are forced to change strategies, reinvent and project their individual unique identities to deliver their improved services and products. Currently, banks have perforce to maintain global standards, strong commitment to provide satisfaction to the employees, shareholder and meet individualized customer expectations and services. Besides, they

also need to play a prominent role in their own differentiated sectors (Balachandran, 2005). In this constantly changing banking scenario, the customers also demand better service quality. With the multiple options now available, the customers are not in a mood to compromise with the quality. So it is a vital motivation to remain afloat and need also to excel.

This article utilizes a SEM (Structural Equation Model) in order to explore the links between the factors that impact the quality of banking services in Odisha. The article starts by delving into the theoretical framework for the SEM. Then, the demographic data is described and the statistical descriptive analysis of the sample is stated. Finally, the proposed model is described and the results are presented.

Review of Literature

In the year 1985, Parsuraman, Zeithaml & Berry (1985) undertook a research that most of the researchers consider it to be the most intense investigation in the area of service quality. They opined that the quality and function of service is to allay the pre-purchase anxiety of the customers, the process followed and the expected output's quality. Further, the researchers defined service quality as the bridge between the expectations of the customer towards services and the effect of the experience towards the services rendered. Finally, they formulated the multiple assessment tool, i,e. "SERVQUAL Model" (Parsuraman & Berry, 1988). The SERVQUAL model was proposed by Parsuranam and Berry in 1988, and, Parsuraman further refined it in 1991 (Parsuraman, (1991). It has since become a valuable tool for the marketing industry for assessing service quality. The model is widely used by both practitioners and academicians including Babakus (1992) and Cronin (1992) to examine customer's perception towards the quality of banking services, like, credit card, telephone services, etc. The concept of service quality was proposed by Parsuraman & Berry (1988), as mentioned above. The thrust of the SERVQUAL model consists of two sections of 22 items; each section is primarily intended to assess customer's expectations on different aspects of service quality, and, secondly, the customer's perception of the service received from the providers (Parsuraman & Berry, 1988). Basically, the SERVQUAL model is grounded on the gap theory (Parsuraman, Zeithaml, & Berry, 1985), and recommends that the perception of customers towards the service quality is the difference between the expectations of the

assurance and the actual performance of that service provider in the same class (Cronin, 1992). The various results of the SERVQUAL model, that was published in earlier research indicate the dimensions of the quality of the services, such as tangibility, assurance, reliability, empathy, responsiveness, etc. Brensinger (1990), Parsuraman (1991), Parsuraman, Zeithaml & Berry, 1985) are materialized across a wide range of services (Parsuraman & Berry, 1988). The tangible factor represents the physical facilities provided by the service providers like allotment of personnel, tools or equipment's to provide the promised services. The concept of Assurance in the SERVQUAL model pertains to the knowledge and employees' capability to deliver the services, create trust and enhance confidence among the customers. The reliability factor concerns about the consistent performance by the service providers. Empathy indicates the caring proactive-ness of the service provider towards the customers and lastly the responsiveness indicates the preparedness and alertness of the employees to provide the desired, service.

Service Quality Perspective in Banking Services

In assessing the quality of services offered by the banks, the SERVQUAL model has attracted significant attention, especially in developing countries. Quality in service rendered is clearly connected with the bank personnel (Yavas, 1997), and it also plays a significant role in upholding the bank's reputation (Wang & Lo, 2003). The SERVQUAL model is one of the mostly acknowledged tool that measures the service quality. It is a multi-item scale that bridges the gap between the customer's expectations and the customer's perception with the various determinants of the service quality provided (Narayan, 2009; Azam, 2012; & Choudhury, 2013). SERVIQUAL model (Parsuraman & Berry, 1988) can be used across different service industries to assess the service quality rendered by using the five universal determinants like tangibility, responsiveness, reliability, assurance and the empathy.

On the contrary, some researchers have also questioned accuracy of the five dimensions of quality services selected. They debated that the quality of services is contextual and needs to assess the nature of service provided through the different service settings (Cronin, 1992 & Ekinci, 1999). Though the SERVQUAL model is a multi-dimensional model, Angur (1999), Ladhari, (2011) and Choudhury, (2008) they have questioned

particularly about the nature of service quality proportions that are definitely different in the banking service context. Lam (2002) assessed the quality of services provided by the banking sector in Macau and got six factors to assess the quality of services. In the year 2005, another study completely in the banking sector shows a three-dimensional factor of the service quality (Arasli, 2005). Whereas some studies also support Ladhari (2009), the five-dimension model was proposed by Parsuraman & Berry (1988). Another study uses six dimensions to measure the service quality. Othman, (2001,2002) and Choudhury (2013) used a modified SERVQUAL model to assess the quality of services provided by the banks in India. They identified four factors: behaviour, reliability, tangibility and convenience. Choudhury (2013) and Bandyopadhyay (2015) also used the same four dimensions of service quality provided by the banking sector in their research study. In 2020, Ray (2020) included two dimensions: functional and technical, and added convenience as a sub-dimension under the technical dimension to measure service quality. In the present study, convenience is considered as one of the dimensions of the proposed SERVQUAL model.

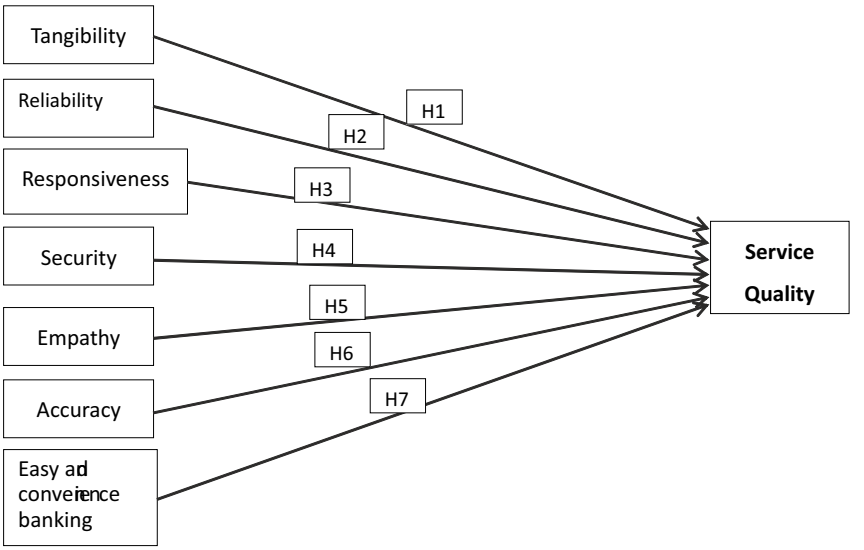
Recently, the researchers have included other dimensions and measures in addition to the SERVQUAL models to make the existing model more explanatory and improved. For example, Zeithaml (1994) recommends that the effects of finance on the SERVQUAL model are effective, when the behavioural concerns of the service quality is being considered as the mediating between the service quality and financial profit or losses.

Research Objectives

This research attempts:

- To study the relationship between service quality and the factors affecting the service quality of the banking sector in Odisha, India
- To analyse the quality of services provided by the banking industry in Odisha, India

Conceptual Framework and Hypothesis Development



Hypotheses

- **Hypothesis 1 (H1):** Tangibility contributes significantly to the service quality of a bank.
- **Hypothesis 2 (H2):** Reliability contributes significantly to the service quality of a bank.
- **Hypothesis 3 (H3):** Responsiveness contributes significantly to bank's service quality.
- **Hypothesis 4 (H4):** Security contributes significantly to the service quality of a bank.
- **Hypothesis 5 (H5):** Empathy significantly contributes towards service quality of a bank.
- **Hypothesis 6 (H6):** Accuracy significantly contributes towards service quality of a bank.
- **Hypothesis 7 (H7):** Ease and Convenience in banking contributes significantly to the service quality of a bank**.**

Research Methodology

The main aim of this paper is to evaluate the quality of services provided by banks in the state of Odisha. The conceptual model employed in the study begins with the SERVQUAL measurement scale (Parsuraman & Berry, 1988), which consists of 5 dimensions:

(i) Tangibles,

(ii) Reliability,

(iii) Responsiveness,

(iv) Assurance, and

(v) Empathy.

Additionally, the researchers added two more dimensions:

(vi) Accuracy, and

(vii) Ease and Convenience banking.

These dimensions are based on the literature review conducted to assess the quality of services provided in the banks operating in Odisha. Each of the above-listed hypotheses will also be tested on the seven dimensions of parameters of the SERVQUAL measurement scale proposed in this study.

The exploratory research model being used is meant to find out the new insights and to assess the situations in a new context. Here the respondents' responses, regarding the quality of services provided by the banks, were measured by the five-point Likert- scale ranging from *'very dissatisfied'* to *'very-satisfied'*. A total of 384 responses were received. The questionnaire was designed in Google format and sent to the respondents through emails and their what's-App numbers. In this study, the service quality was considered the dependent variable, while tangibility, reliability, responsiveness, security, accuracy, empathy, ease & convenience in banking were used as independent variables.

Population and Sampling

In this study, the residents of Odisha have been considered as the 'study population'. There

are approximately 4 million people in Odisha. Initially we approached 400 people via personal contacts and emailed them to respond to the research study. A total number of 396 individuals responded to the data collection process. However, 12 respondents were disqualified due to the incomplete information they provided. Hence 384 respondents were selected as the sample size with a 5% margin of error. A convenient method of sampling has been used to collect the data between August 2022 to September 2022.

Table 1. Demographic Data of the Respondents

Controls	*Range*	*Frequency*
Sector	Private	77
	Government	307
Gender	Male	225
	Female	159
Age	18-25	176
	26-30	22
	31-40	98
	41-50	61
	51-60	24
	Above 60	3
Banking Experience	Less than 1 year	20
	1-5 years	64
	6-10 years	190
	More than 11 years	110

Source: Compiled by the authors

Data Analysis

For data analysis, the researchers used the Smart PLS (4) software to examine the data with the help of dedicated PLS-SEM model. The rationale of using this model is that this mode of approach to analysis has gained greater acceptance in the different fields it was employed to predict the dependent variables' effects. Hence the proposed model was deemed to be appropriate for determining the necessary equations and establishing relationship among the different variables. This model facilitates both the inner and outer model analyses that can study the relations between the independent and dependent variables. It also helps to discover the relationship among the latent constructs and the pointers too. PLS concentrates on the analysis of variance that can be prepared by Smart

PLS. These are the reasons for the researchers to employ this approach of analysis for the study.

The Results

Table 2: The Measurement Model

Construct	*Item Code*	*Loading*	*Outer Weight*	*CA*	*CR*	*AVE*
Accuracy				0.789	0.877	0.705
	ACC1	0.886	0.406			
	ACC2	0.851	0.412			
	ACC3	0.777	0.373			
Ease and Convenient Banking				0.867	0.910	0.716
	EC1	0.822	0.276			
	EC2	0.828	0.292			
	EC3	0.874	0.306			
	EC4	0.859	0.307			
Empathy				0.892	0.925	0.755
	EMP1	0.850	0.300			
	EMP2	0.877	0.291			
	EMP3	0.895	0.285			
	EMP4	0.853	0.275			
Reliability				0.845	0.896	0.683
	REL1	0.842	0.265			
	REL2	0.862	0.319			
	REL3	0.798	0.289			
	REL4	0.802	0.338			
Responsiveness				0.810	0.888	0.726
	RES1	0.784	0.358			
	RES2	0.882	0.410			
	RES3	0.887	0.404			
Security				0.858	0.904	0.701
	SEC1	0.818	0.307			
	SEC2	0.853	0.298			
	SEC3	0.835	0.285			
	SEC4	0.843	0.304			
Service Quality				0.808	0.886	0.772
	SQ1	0.856	0.419			
	SQ2	0.809	0.335			
	SQ3	0.883	0.420			
Tangibility				0.810	0.875	0.638
	TAN1	0.770	0.302			
	TAN2	O.745	0.258			
	TAN3	0.857	0.337			
	TAN4	0.817	0.351			

Source: Compiled by the authors

Note: Here AVE, CA & CR are used respectively for indicating the average variances extracted by Cronbach Alpha and Composite test reliability.

Measurement Model

In order to assess the reliability and validity of the constructs, the researchers employed the measurement model approach consisting of Cronbach Alpha (CA), Composite Reliability (CR) and Average Variance Extracted (AVE) . The results of CA, CR and AVE are given in Table 2.

For example:

(a) For Accuracy (.789, .877, .705);

(b) For Ease & Convenience (.867, .910 .716);

(c) For empathy (.892, .925, .755),

(d) For Reliability (.845, .896, .683),

(e) For Responsiveness (.810, .888, .726);

(f) For Security (.858, .904, .701);

(g) For Service Quality (.808, .886, .722), and

(g) For Tangibility (.810, .875, .638).

According to Hair, Risher, SARSTEDT & Ringle (2019), the threshold values for CA & CR value should be more than 0.70 and the threshold value for AVE should be more than (AVE>= .50). In this study all the values of CA and CR are found to be under the acceptance range, i.e more than .70. Further, this study examines the convergent validity to get the AVE values which were more than .50 (in all the constructs). In addition to this, Table 2 shows that the indicator loading of all the constructs are >=.708 (Hair, Risher, SARSTEDT & Ringle, 2019). Hence, this model gives the reflective measurement model.

The researchers also used the Fornell-Larcker and Heterotrait-Monotrait (HTMT) ratio to check the discriminant validity (Fornell & Larcker, 1981). Table 3 shows the Fornell Larcker's test values are more than the correlation values among the variables. It indicates the discriminant nature of the constructs. As per Henseler, Hubona and Ray (2016), the HTMT ratio is robust over Fornell-Larcker test value. The HTMT values of all the

constructs are presented in Table 4, which shows that the values are less than the threshold value, i. e .90.

Table 3: Discriminant Validity: Fornell-Larcker Ratio

(Latent variable correlation and square root of AVE)

	Accuracy	*Easy convenient*	*Empathy*	*Reliability*	*Responsive*	*Security*	*Service quality*	*Tangibility*
Accuracy	0.839							
Easy/ convenient	0.614	0.846						
Empathy	0.729	0.719	0.869					
Reliability	0.625	0.675	0.691	0.826				
Responsiveness	0.581	0.704	0.764	0.713	0.852			
Security	0.582	0.740	0.711	0.615	0.629	0.837		
Service Quality	0.619	0.737	0.750	0.544	0.711	0.693	0.850	
Tangibility	0.661	0.645	0.692	0.705	0.636	0.580	0.611	0.799

Source: Compiled by the authors

Table 4: HTMT (Heterotrait-Monotrait) Ratio

	Accuracy	**Easy & Convenient**	**Empathy**	**Reliability**	**Responsiveness**	**Security**	**Service Quality**
Easy and convenient	0.742						
Empathy	0.870	0.816					
Reliability	0.763	0.786	0.791				
Responsive	0.723	0.838	0.897	0.855			
Security	0.708	0.860	0.811	0.725	0.749		
Service Quality	0.763	0.868	0.876	0.638	0.870	0.824	
Tangibility	0.829	0.763	0.808	0.841	0.783	0.690	0.737

Source: Compiled by the authors

Assessment of the Structural Model

Smart PLS (4) has been used in this study to examine the structural equation model, using 5000-boot strapping with significance level of .05. The Standardized Root Means Square (SRMR) should be less than 0.08, if the size of the sample is greater to 100 (Cho, Hwang, Sarstedt & Ringle (2020). In this study, the SRMR value was .062, hence, this model seems to be fit for further analysis as per the values shown in the Table 5. The coefficient of determination value (R^2) was .693. This seems to be a moderate indicator of model fit

((Hair, Risher, SARSTEDT & Ringle, 2019), which is shown in the table. This indicates 69% variance in service quality, explained by accuracy, easy and convenient banking, empathy, reliability, responsiveness, security and tangibility. The researchers also evaluated the predictive relevance of the PLS-path model and found it to be significant with a Q^2 (predictive relevance) value of 0.067 (Hair, Risher, SARSTEDT & Ringle, 2019) as shown in Table 5).

Moreover, the researchers assessed the PLS predictive power of the model by examining the normality of the error term distribution. If the error term distributions are following the normality, then it is better to use RMSE over MAE for checking the predicting power of the model (Danks & Ray, 2018; Shmueli, Sarstedt, Hair, Cheah, Ting & Vaithilingam, 2019). Figure 1 shows that all the error term distributions follow normality. Hence, this study has adopted RMSE (Root Mean Square Error) over MAE (Mean Absolute Error) to check the projecting power of the structural model. Likewise, this study has examined the multi Co-Linearity issue with the data being used by considering the Variance Inflation Factor (VIF). According to Hair, Risher, SARSTEDT & Ringle (2019), the VIF value should be less than 5 (VIF<=5), whereas in this study the VIF of all the constructs were less than 5 (see Table 6). Hence, the model being used in this study is free from multi co-linearity issues.

Table 5 : Saturated Model Results

Construct	R^2	Adj.R^2	Q^2	SRMR
Service Quality	0.693	0.687	0.677	0.062

Source: Compiled by the authors

Note: Here R^2 stands for determination of coefficient, predictive relevance (Q2) and SRMR for standardized root mean square.

Figure 1 : Error Term Distribution

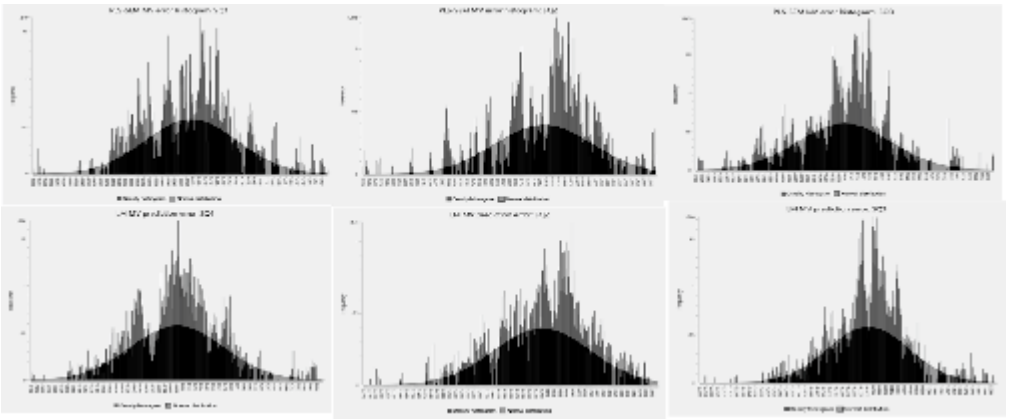


Table 6 : VIF-Inner Model

	Service Quality
Accuracy	2.445
Easy & convenient	3.096
Empathy	4.020
Reliability	2.813
Responsiveness	3.052
Security	2.616
Service Quality	
Tangibility	2.572

Source: Compiled by the authors

Table 7 : MV Prediction Summary

	Q^2 predict	PLS-SEM-RMSE	PLS-SEM	LM-RMSE	LM-MAE
SQ1	0.5515859	0.698078982	0.551618	0.696017	0.5301
SQ2	0.3435005	1.018347886	0.787789	1.020115	0.803976
SQ3	0.5530891	0.66703918	0.505969	0.687878	0.509672

Source: Compiled by the authors

In Table 7, the Q^2 prediction values of all service quality (DV indicators show >0. This indicates that the model outperforms the most naive bench marks. Further, the PLS-SEM RMSE was compared with LM-RMSE to check the predictability power of the model since the PLS-SEM RMSE of Q1 is more than LM-RMSE, whereas the PLS-SEM RMSE

of SQ2 and SQ3 are less than LM-RMSE of the same. As a result, the model used in this study was found to have lower predictive power, as only a minority of the indicators met the condition for predictability (Danks & Ray, 2018).

Structural Equation Modelling

The findings of the model PLS-SEM show that:

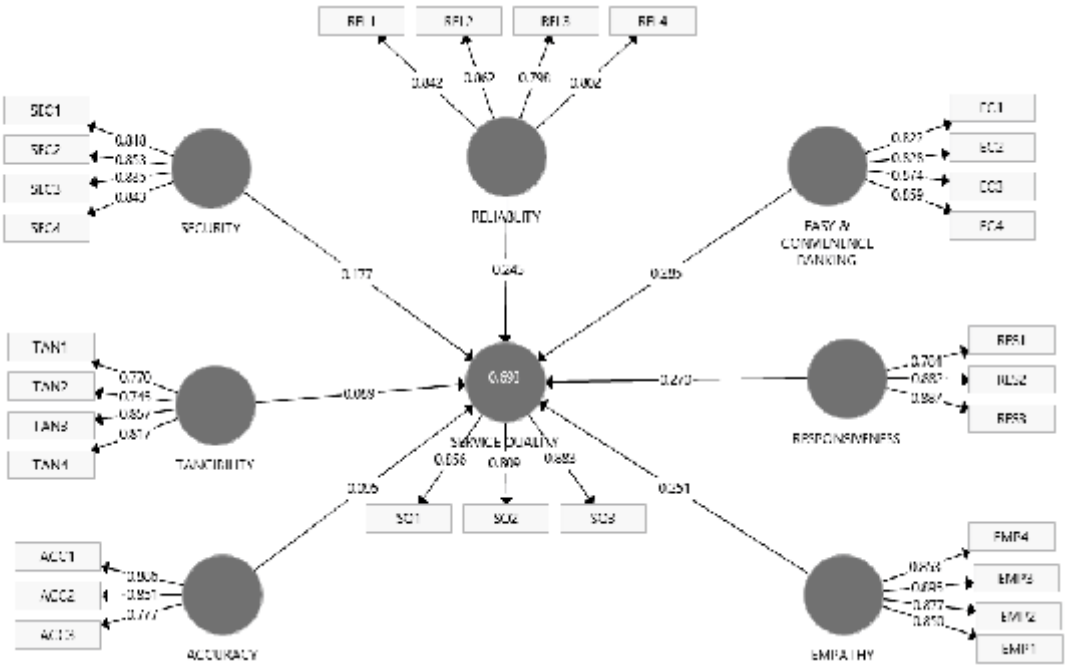
- **(H1) Tangibility** does not affect the service quality of the bank significantly (β=.089,t=1.408.p=>.05). Hypothesis 2
- **(H2) Reliability** is found to be true as it has significant contribution towards service quality, but negatively (β= -.245, t=4.245, p=<.05).
- **(H3) Responsiveness** has positively and significantly impacted on the service quality of the bank as Table 8 shows (β=.270, t=5.220, p=<.05).
- **(H4) Security** has also positive and significant relation with the service quality (β=.177, t=4.001, p=<.05).
- **(H5) Empathy** affects the service quality of the banks positively and significantly (β=.251, t=3.410, p=<.05).
- **(H6) Accuracy** does affect the service quality, but not significantly, the values being (β=.095, t=1.813, p=>.05)
- **(H7) Ease and convenient** banking has significantly positive effect on the service quality of the banks shows (β=.285, t=4.670, p=<.05).

Table 8 : Hypothesis Constructs

Relationship	*β*	*Mean*	*Std-deviation*	*T-statistics*	*P-values*
Tangibility>service quality (H1)	0.089	0.091	0.064	1.408	0.159
Reliability>service quality (H2)	-0.245	-0.244	0.058	4.245	0.000
Responsiveness>service quality(H3	0.270	0.267	0.052	5.220	0.000
Security>service quality(H4)	0.177	0.177	0.044	4.001	0.000
Empathy>service quality(H5)	0.251	0.255	0.074	3.410	0.001
Accuracy>service quality(H6)	0.095	0.095	0.052	1.813	0.070
Easy & convenient banking> service quality(H7)	0.285	0.283	0.061	4.670	0.000

Source: Compiled by the authors

Figure 2: Relative Importance of Various Constructs towards Service Quality



Limitations and Scope for Further Research

As everything has its own limitations, so too, this study is not without some limitations. Future studies should aim to gather more comprehensive information on the quality of bank's services and the factors affecting it. Such studies should aim at enhancing the understanding of the intricacies of the service quality and it should further lead to the development of more effective strategies for improving it. Researchers are often constrained to reach out to willing respondents to respond to collecting the data. This happens because of lack of interest or lack of online reading habits since the questionnaire is currently circulated through online over emails facility. The lacuna in data collection exists because the questionnaire is distributed via e-mail and/or what's-app groups. But not personally. In future research, the researchers should aim at increasing the sample size as well as the number of proportions of the service qualities in comparison to those considered here in order to enhance its scope and validity.

Discussion and conclusion

This study has examined the relationship between the service quality of banks with regard to factors like tangibility, reliability, responsive, security, empathy, accuracy, ease and convenient banking. On the basis of the literature available on SERVIQUAL model, there were 10 determinants, such as access, to communication, competence, courtesy, credibility, reliability, responsiveness, security, tangibles and understanding/knowing the customers. Those were used to predict the service quality (Parsuraman, Zeithaml, & Berry,1985). It is interesting to note that the study highlights the importance of regional language and user-friendly interfaces for customers in Odisha. This finding underscores the importance of understanding local customer preferences, language and needs when providing banking services. It also highlights the need for banks to invest in technology and infrastructure that can provide convenient and easy-to-use banking services to customers.

However, it is important to note that the negative significant relation between reliability and service quality is a bit surprising and warrants further investigation. The study could have explored the reasons behind this relationship and how banks can address all issues related to reliability to improve the overall service quality. Overall, this study provides valuable insights into the factors that affect service quality by the banks operating in Odisha, and highlights the importance of providing easy and convenient banking services to customers.

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