A Study Using SERVQUAL Model to Assess Service Quality and Customer Satisfaction of Internet Banking Usages in Burdwan District, West Bengal

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Abstract: *The technology innovation of electronic channel of service delivery has brought in a level playing for business economy. The Internet banking is thus an essential medium for banking economy. However customer satisfaction is crucial for building a profitable business model. In our study an exploratory survey with the help of a Liker based questionnaire was conducted to investigate the impact of Internet banking service quality on customer satisfaction in Burdwan district West Bengal. The result implicated that the internet banking service quality dimensions have a significant impact on the customer satisfaction of Internet banking customers in Burdwan district. The main objective of this study is to identify the various dimensions of Internet banking service quality and also examine the relationship between the customer perceptions of Internet banking service quality in Burdwan district West Bengal.*

Keywords: *Burdwan District, Customer satisfaction, Internet Banking, Perception, Service Quality.*

I. Introduction

Service quality has been the subject of considerable interest by both practioners and researchers in recent years. Definitions of service quality hold that this is the result of the comparison that customers make between their expectations about a service and their perception of the way the service has been performed (Caruana & Malta 2002; 1984; Parasuraman et.al, 1985, 1988, 1994). Several studies have been conducted to identify traditional service quality dimensions that contribute most significantly to relevant quality assessments in the traditional service environment (Parasuraman et.al., 1985, 1988; Johnston 1995; Pitt et.al., 1999; Berry et. Al., 1985). Johnston et. al. (1995) identification of the determinants of service quality is necessary in order to be able to specify measure control and improve customer perceived service quality. There are a number of different definitions as to what is meant by service quality. One that is commonly used defines service quality as the extent to which a service meets customer's needs or expectations (Lawis and Mitchell, 1990; Dotchin and Oakland 1994; Asubonteng et. al, 1996; Wisniewski and Donnelly, 1996). Service quality can thus be defined as the difference between customer expectations of service and perceived service. If expectation are greater than performance, then perceived quality is less than satisfactory and hence customer dissatisfaction occurs (Parasuraman et. al. 1985; Lewis and Mitchell, 1990). The service quality approach, which is studies in this research is most common method literature for measuring service quality.

II. Literature Review

Service quality is a concept that has aroused considerable interest and debate in the research literature because of the difficulties in both defining it and measuring it without no overall consensus emerging on either (Wisnie Wski, 2001). In conceptualizing the basic service quality model conducted by Parasuraman, Zeithmal and Berry (1985), identified ten key determinants of service quality as perceived by the company and the consumer reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/ knowing the customer and tangibility. They noted that discrepancies existed between the firms and the customers perception of the service quality delivered.

Parasuraman, Zeithmal and Berry (1985) assert that their framework can be used for identifying differences in the quality of goods and services by distinguishing between the properties of a good or service. They note that Nelson (1974) defined "search properties" as properties that can be determined before purchasing (such as credibility and tangibles), and "experience properties" as properties that can be determined only after purchase or consumption. Further Darby and Karni (1973) defined "credence properties" such as competence and security, as properties or characteristics that consumers often find. Therefore Parasuraman, Zeithmal and

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Berry (1985) concluded that consumers typically rely on experience properties when evaluating service quality. Based on their review of the literature Parasuraman, Zeithmal and Berry (1985) developed the SERVQUAL Scale. The scale was designed to uncover broad areas of goods or bad services service quality can be used to show service quality trends over time, especially when used with other service quality techniques. The SERVQUAL scale is based on a difference score between customer expectations of service and their perceptions after receiving the service. A review of the dimensions of Internet Banking service quality as follows:

Author(s)	Dimensions	Context
Dabholkar (1996)	Website designs, reliability, delivery, ease of use, enjoyment and control.	E-service
Zeithaml et al. (2000)	Efficiency, reliability, fulfillment, privacy, responsiveness, compensation, and contact.	Online retailing
Yoo and Douthu (2001)	Ease of use, aesthetic design, processing speed, and security.	Online retailing
Cox and Dale (2001)	Website appearance, communication, accessibility, credibility, understanding and availability.	Online retailing
Jun and Cai (2001)	Website design, information, ease of use, access, courtesy, responsiveness, and reliability.	Online Banking
Yang (2001)	Website design, security and information.	Online retailing
Wolfinbarger and Gilly(2002)	Website design, reliability, security, and customer service.	Online shopping sites
Zeithaml et al. (2002)	Security, communication, reliability, responsiveness and delivery.	E-service
Madu and Madu (2002)	Performance, features, structure, aesthetics, reliability, serviceability, security and system integrity, trust, responsiveness, service differentiation and customization, Web store police, reputation, assurance and empathy.	E-service
Loiacono et al. (2002)	Information, interactivity, trust, response time, website design, intuitiveness, flow, innovativeness, integrated communication, business process and substitutability.	Online retailing
Yang and Jun (2002)	Website design, security, reliability, responsiveness, accessibility and customization.	Online retailing
Surjadaja et al. (2003)	Security, interaction, responsiveness, information, reliability, delivery, and customization.	E-service
Santos (2003)	Ease of use, appearance, linkage, structure, content, efficiency, reliability, communication, security, incentive and customer support.	E-service
Yang et al. (2003)	Responsiveness, credibility, ease of use, reliability, convenience, communication, access, competence, courtesy, personalization, collaboration, security and aesthetics.	Online retailing
Yang et al. (2004)	Reliability, responsiveness, competence, ease of use, security and product portfolio.	Online shopping sites
Field et al. (2004)	Website design, reliability, security, and customer service.	E-service
Kim and Stole (2004)	Web appearance, entertainment, information, transaction capability, Responsiveness and trust.	Online retailing
Yang and Fang (2004)	Responsiveness, reliability, credibility, competence, access, courtesy, Communication, information, responsiveness and website design.	E-service

III. Service Quality

Parasuraman et al., (1985, 1988) Service quality is determined by the difference between customers' expectations of service provider's performance and their evaluation of the services they received. Asubontegn et al., (1996) Service quality can be defined as the difference between customers' expectations for service performance prior to the service encounter and their perceptions of the service received. Gefan (2002) Service quality as the subjective comparison that customers make between the quality of the services that they want to receive and want they actually get. Parasuraman et al., (1985) identified 10 detailed determinant of service quality are Tangible, Reliability, Responsiveness, Communication, Access, Competence, Courtesy, Credibility, Security, Understanding/ Knowledge of customer. Later this ten dimensions were further purified and developed five dimensions are- Tangible, Reliability, Responsiveness, Assurance and Empathy to measure service quality (Parasuraman et al., 1988).

1.1. Tangible: It refers to physical facilities, equipment and appearance of personnel. Tangible defines as visual appealing, physical facilities, equipment, employees and communicational materials.
1.2. Reliability: It measure ability to perform the promised service dependency and accurately. Reliability has the ability to provide the promised service regularly, consistently, timely and accurately to the consumers.
1.3. Responsiveness: It measure willingness to help customers and provide prompt service. Responsiveness is the prompt attention to requests and questions, willingness to sort the problem and help organization should provide the problem solution on demand.
1.4. Assurance: It indicates knowledge and courtesy of employees and their ability to inspire trust confidence. Assurance means knowledge of competence, courtesy of staff, respects of customers, probity and confidentiality, safety and security.
1.5. Empathy: It refers to caring, individualized attention the firm provides its customers. Empathy means treating the customers as individual and understanding the needs and wants. Customer easily access to the staff of the organization and to their service and information.

Walkey (1990) suggested that the key determinants are product reliability, a quality environment and delivery system that work to gather with good personal service- staff attitude, knowledge and skill.

IV. Research Methodology

The data for this study was collected through survey conducted in Burdwan district, West Bengal. A total of 250 questionnaires were distributed through mail to the people inhibiting in the Burdwan district regarding their usage of IB services, of which only 130 respondents provided their response to this survey with a 52 percent rate of response. The questionnaire consisted of two sections, in the first section it is concerned with the personal details of the respondents whereas in the second section it consisted of only likert five point scale (1= strongly disagree, 2 = disagree, 3= neutral, 4= agree, 5= strongly agree) regarding their perception with the IB services, shown in Table 1. In this research we have utilized SPSS (Statistical Package for Social Sciences) version 12 used as the analysis tool to determine the results for this research study. This SPSS software helped us to determine the impact of all the factors on adoption of internet banking and also to understand the relationship between the various factors on the adoption of internet banking.

Table 1: Formulated Questionnaire

STATEMENTS	SA	A	N	D	SD
1. Internet Banking enables people to conduct financial transactions more quickly.					
2. Internet banking makes it easier to conduct banking transactions.					
3. Internet banking provides convenience since it is available 24 hours, 7 days of the week.					
4. Internet Banking saves time compared to traditional banking.					
5. Learning to use internet banking is easy.					
6. Using Internet Banking is as safe as using other modes of banking.					
7. Internet banking is reliable and can be used for my banking transactions.					
8. I am aware of the services that could be done using internet banking.					
9. I am aware of the security and privacy issues of Internet Banking.					

In this research the factor analysis using PCA has sorted the items V1 to V9. The factor loading > .600 are retained. The components are QFT (quick financial transaction), EBT (easy banking transaction), CONV (convenience 24 x 7 operation), and TIMSAV (time saving operation compared to traditional banking). EASUSE (easy to use), SAFE (safety of operation), RELIBILITY (reliability in transaction), SERVAWARE (awareness of services), SECPRIVAWARE (awareness about safety and security).

V. Correlation Analysis

		QFT	EBT	CONV	TIMSAV	EASUSE	SAFE	RELIBILITY	SERVAWARE	SECPRIVAWARE
Table-2: Correlation Matrix[a]										
Correlation	QFT	1.000	.604	.515	.591	.483	.455	.467	.363	.348
	EBT	.604	1.000	.618	.756	.504	.424	.517	.589	.383
	CONV	.515	.618	1.000	.567	.436	.264	.325	.454	.401
	TIMSAV	.591	.756	.567	1.000	.455	.351	.440	.488	.409
	EASUSE	.483	.504	.436	.455	1.000	.567	.503	.556	.377
	SAFE	.455	.424	.264	.351	.567	1.000	.725	.473	.337
	RELIBILITY	.467	.517	.325	.440	.503	.725	1.000	.558	.447
	SERV AWARE	.363	.589	.454	.488	.556	.473	.558	1.000	.692
	SECPRIV AWARE	.348	.383	.401	.409	.377	.337	.447	.692	1.000
a. Determinant = .006										

This is the determinant of the matrix (9 x 9), and the value is located under the correlation matrix shown in Table 2. We got a value of 0.006, its neither exact zero or exact one, which is greater than the cut-off value of 0.00001. Therefore, we can conclude that the correlation matrix is neither an identity matrix nor a singular matrix. This value confirms the assumption that there are sufficient interrelationships among our study items.

VI. Kmo And Bartlett's Test

Table-3: KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.845
Bartlett's Test of Sphericity	Approx. Chi-Square	624.309
	df	36
	Sig.	.000

Table-3 has shown the results of KMO and Bartlett's test (Bartlett 1950). Bartlett's test of Sphere city tests the null hypothesis that the correlation matrix is an identity matrix means there is no relationship between items and follows Chi square distribution. Larger the value of Bartlett's test indicates greater likelihood the correlation matrix is not an identity matrix and null hypothesis will be rejected. In this study, The Bartlett's test value (chi-square: 624.309, df: 36, sig.: .000) is significant (i.e. a significance value of less than 0.01); this means that we may reject the null hypothesis that our correlation matrix is an identity matrix and will conclude that the variables are correlated highly enough to provide a reasonable basis for factor analysis. The KMO test is a measure of sampling adequacy. The KMO measure should be greater than 0.70 and is inadequate if less than 0.60. We got a KMO measure of .845 which indicates that adequate sample was used for the test. All these three measures (determinant, Bartlett's test and KMO) show the evidence that there are good interrelationships between study items and measures. Therefore, we can go for extracting factors using these items.

VII. Extraction Method And Principal Component Analysis

Table-4: Communalities		
	Initial	Extraction
QFT	1.000	.585
EBT	1.000	.779
CONV	1.000	.694
TIMSAV	1.000	.752
EASUSE	1.000	.575
SAFE	1.000	.758
RELIBILITY	1.000	.755
SERVAWARE	1.000	.642
SECPRIVAWARE	1.000	.447
Extraction Method: Principal Component Analysis.		

Table 4 presents the communality of each item or measure to the common factor (i.e. the proportion of variance in each variable accounted for by the common factors). While using PCA for factor extraction, we could get as many factors as variables. When all factors are included in the solution, all of the variance of each variable is accounted for by the common factors. Thus, the proportion of variance accounted for by the common factors, or the communality of a variable is 1 for all the variables.

Table 5: Total Variance Explained								
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.896	54.401	54.401	4.896	54.401	54.401	3.008	33.425	33.425
2	1.091	12.120	66.521	1.091	12.120	66.521	2.979	33.096	66.521
3	.885	9.829	76.350						
4	.539	5.991	82.341						
5	.472	5.248	87.589						
6	.417	4.638	92.227						
7	.281	3.121	95.347						
8	.242	2.687	98.035						
9	.177	1.965	100.000						
Extraction Method: Principal Component Analysis.								

In Table 5, total variance is divided into 9 possible factors, because the use of Principal Component Analysis. In our factor extraction option in SPSS, we have selected factor extraction option as 'Based on Eigen value and Eigen value>1' criteria. Which means that the factor should explain more information than a single item would have explained. Based on Eigen value criteria, we have retained only two factor solution. These two factors account for 33.425 and 33.096 % of the total variance, respectively. That is, almost 66.521 % of the total variance is attributable to these two factors. The remaining seven factors together account for only approximately 33.579 % of the variance. Thus, a model with two factors may be adequate to represent the data. From the scree plot, it again appears that a two-factor model should be sufficient to represent the data set. Shown in figure 1.
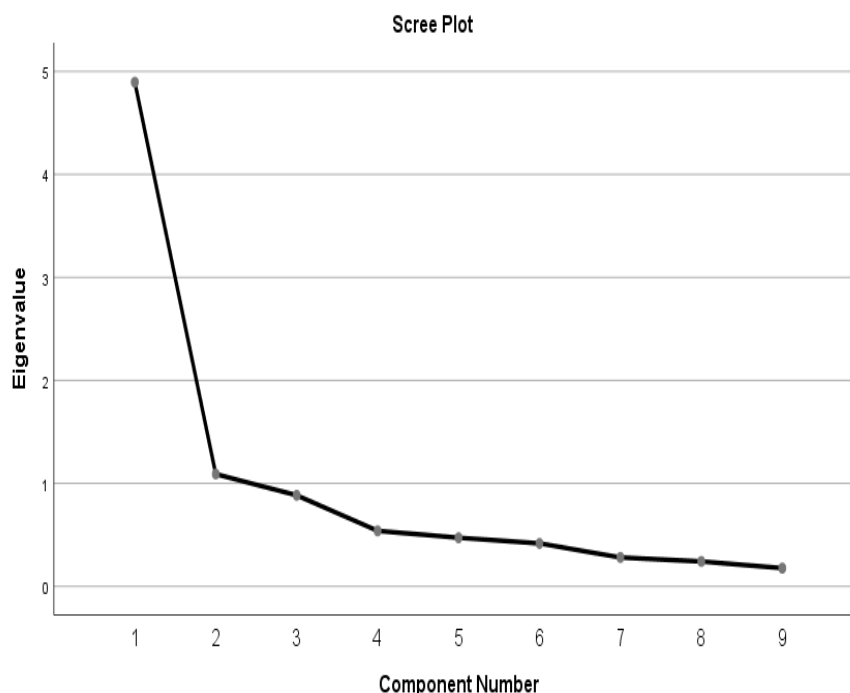

Figure 1: Scree Plot

VIII.   Rotated Component And Component Transformation Matrix

		Table-6: Rotated Component Matrix[a]	
		Component	
		1	2
V1	QFT	.681	.349
V2	EBT	.808	.355
V3	CONV	.819	.153
V4	TIMSAV	.827	.259
V5	EASUSE	.394	.647
V6	SAFE	.114	.863
V7	RELIBILITY	.225	.839
V8	SERVAWARE	.430	.432
V9	SECPRIVAWARE	.365	.676

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table 6 shown the Rotated Factor Matrix, which contains four loadings, is key for understanding the results of the analysis. The factor analysis using PCA has sorted the items (V1 to V9) into two overlapping groups of items or components. The factor loading > .600 are retained. The first component has QFT (quick financial transaction), EBT (easy banking transaction), CONV (convenience 24 x 7 operation), and TIMSAV (time saving operation compared to traditional banking). Therefore this dimension can be named as **Convenience.** The second component has EASUSE (easy to use), SAFE (safety of operation), RELIBILITY (reliability in transaction), SECPRIVAWARE (awareness about safety and security). Since these factors talk about safety, security and privacy of operations, the dimensions can be named as **Reliability.**

Table-7: Component Transformation Matrix			
Component		1	2
1	.710	.704	
2	-.704	.710	
Extraction Method: Principal Component Analysis.			
Rotation Method: Varimax with Kaiser Normalization.			

The loading coefficients in this table generated through an orthogonal rotation (Varimax), which shows the correlation coefficient of each item to the component or factor, so they ranges from -1.0 to +1:0. The negative loading coefficient simply means that the relationship of the respective item to the component or factor in opposite direction. As a rule of thumb, it is considered that a factor loading lower than |0.40| is considered as bad, greater than |0.40| considered as good shown in Table 7.

IX.   Conclusion

In this research shows that there was a positive significant relationship between all the variables of service quality and overall customer satisfaction. In SERVQUAL model there are so many factors but here the factor reliability is satisfied based on customer perception of our proposed work and also we identified a new factor that is convenience. It can be concluded that factor analysis of the usages of Internet banking in Burdwan district has identified two factors one is Reliability and another is Convenience from the list of 9 variables. In the main, these factors are represented by the specific statements written to reflect the two different perception constructs of service quality of internet banking in Burdwan district. This study can be conducted in a more elaborate manner considering the full set of variables used in SERVQUAL and with a bigger sample size to identify the dimensional distribution of service quality in internet banking.

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