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Internet Banking Portal Service Quality: Scale Development and Validation

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Abstract

The purpose of this research paper is to identify important dimensions of internet banking portal service quality and to validate scale for measuring internet banking portal service quality in India. This research adopts the dimensions of online service quality, internet banking service quality and web portal service quality to develop a framework that can be used to measure internet banking portal service quality. Data for the research was collected from a sample of 400 bank customers of some selected Indian public and private banks who use internet banking portal. Research model for measuring internet banking portal service quality is confirmed and validated using confirmatory factor analysis and ten important dimensions of internet banking portal service quality are identified. These include information quality, website design, ease of use, reliability, security and privacy, interactive interrogation, personalization/customization, basic service quality, other financial products' service quality and added values. A pool of indicators for the antecedent factors of internet banking portal service quality stood out, acting as a guide for Indian public and private sector banks to improve their internet banking portal service quality. The study provides reliable and valid scale for measuring internet banking portal service.

Keywords:

Service quality, dimensions of online service quality, assessment of reliability, assessment of validity, confirmatory factor analysis.

Introduction & Problem Statements

With the popularity of the internet, innovation in technology and the changing needs of customers, banking services have been undergoing tremendous transformation. In banking services new technological innovation is internet banking portal. Internet banking portal means that all stages of the financial transactions can be processed electronically. This is achieved by replacing personal interaction and physical facilities with technological solutions. As a consequence, customers are able to carry out different financial transactions at one site including paying bills, booking railway and air tickets, charging mobile phone and TV, donating money, paying tax, filing tax return, viewing bank statements, purchasing stocks

and other financial products (e.g. insurance) etc...Thus, internet banking portals transfer the "all in one" principle from the old economy-to the internet (Bauer & Hammerschmidt, 2002; Jun & Cai, 2001).

Service quality is an important determinant in differentiating service offering and building competitive advantage, since the costs of comparing alternatives are relatively low in online environments (Santos, 2003).Because of this, service quality is a crucial issue for internet banking portals.

According to a report by global management consultancy McKinsey & Company, as many as 7% of account holders in India are using the Internet for banking transactions in 2011 and it is 7 fold jump since 2007 (McKinsey & Company Report, 2010). Today most of all Indian public and private sector Banks have internet banking portal and competition between Indian banks are very high. Therefore, Internet banking Portals are required to put more emphasize on service quality due to growing competition in banking industry in India.

In 2009-10 Indian public sector banks and Indian private sector banks have got 14.21% and 27.66% of growth in its total net profit respectively (McKinsey & Company Report, 2010). There is cut throat competition between Indian public and private sector banks in India and so this study included only top five public and private sector banks for measuring and comparing service quality of internet banking portal. In order to enhance customer loyalty, banks are required to put a strong emphasis on their customers' demands related to internet banking portal quality, which are steadily increasing over time due to the growing competition in the banking industry (Jun & Cai, 2001).

The most important step in providing a sophisticated level of service through internet banking portal is to identify and measure the dimensions of portal quality. Based on the understanding of the key service quality dimensions and the perception of customers toward internet banking portal service quality, managers may discover methods to improve customer satisfaction, build customer trust, and create loyal customers. Despite of these, there are very few efforts devoted to the area of service quality of internet banking portal. In view of this, the following research objectives of the study were formulated.

Research Objectives

The importance of service quality and the challenges facing Internet-based services necessitate insights on the part of managers about what attributes customers use in their evaluation of internet banking portal service quality. However, a rigorous measurement instrument of Internet banking portal service quality has not been available. In order to improve that condition, the following research objectives were formulated:

1) To identify the salient internet banking portal service quality dimensions.

2) To confirm the identified major service quality dimensions of internet banking portal.

Literature Review

Internet Banking Portal Service Quality

Web portal is an innovative self-service technologies that offer a single point of access to services and it has an almost unlimited content as well as applications and excellent retrieval facilities that enable "one-stop shopping"(Gounaris & Dimitriadis,2003;Jun & Cai,2001).

With the popularity of the internet, innovation in technology and the changing needs of customers, banking services have been undergoing tremendous transformation. In banking services new technological innovation is internet banking portal.

In the context of bank web portal, this means that all stages of the financial transactions can be proceed electronically. This is achieved by replacing personal interaction and physical facilities with technological solutions. As a consequence, customers are able to carry out different financial transactions at one site including paying bills, booking railway and air tickets, charging mobile phone and TV, donating money,

paying tax, filing tax return, viewing bank statements, purchasing stocks and other financial products (e.g. insurance) etc...Thus, bank web portals transfer the "all in one" principle from the old economy-to the internet (Bauer & Hammerschmidt, 2002; Jun & Cai, 2001).

Development of simple banking websites into comprehensive bank web portals offering a variety of services in addition to traditional bank products and thereby enable customers to get many financial services from one source. Thus, the user no longer needs to make use of several different websites.

Service quality is an important determinant in differentiating service offering and building competitive advantage, since the costs of comparing alternatives are relatively low in online environments (Santos, 2003).Because of this, service quality is a crucial issue for internet banking portals.

Scale Development Framework

This research followed the scale development framework that was established by Menor and Roth (2007), as illustrated in figure 1.

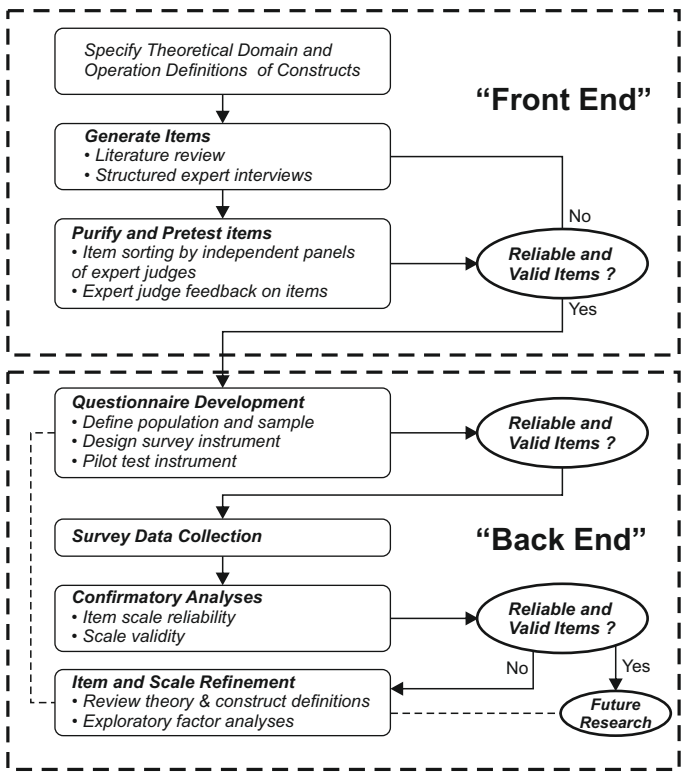

Figure 1: Framework for Developing Measurement Scales (by Mentor and Roth, 2007)

Internet Banking Portal Service Quality Dimensions

First, the following 49 dimensions related to internet banking portal service quality were identified from the literature review in the area of online, internet banking & web portal service quality. Summary of online service quality dimensions is given in the table 1.

Table 1: Summary of Online Service Quality Dimensions

Sr. NO.	Name of Online Service Quality Dimensions	Sr. NO.	Name of Online Service Quality Dimension
1	Accessibility	26	Interaction
2	Aesthetics	27	Interactive Interrogation
3	Assurance	28	Personalization/Customization
4	Attention	29	Preferential Treatment
5	Banking Service Product Quality	30	Privacy and Security
6	Basic Service Quality	31	Quality of Information
7	Collaboration	32	Quality of Layout
8	Content	33	Relevance
9	Convenience	34	Reliability
10	Core Services	35	Responsiveness
11	Credibility	36	Risk Reduction Benefits
12	Cross Buying Service Quality	37	Sense of Beauty
13	Customer Care	38	Site Design And Content
14	Customization	39	Specialty Information
15	Decision Making	40	Speed
16	Diverse Features	41	Supporting Services
17	Ease of Navigation	42	Timeliness
18	Ease of Use	43	Trust
19	Efficiency	44	Understanding The Customer
20	Enjoyment	45	User Experience
21	Feedback	46	User Friendliness
22	Format	47	User Involvement
23	Graphics Quality	48	Website Design
24	Individualization	49	Website Interface
25	Information Quality		

After that, these 49 online service quality dimensions were comprised in 10 internet banking portal service quality dimensions as per suggestions of experts of services marketing area and using operational definition of all dimensions. The table 2 shows list of online service quality dimensions with same operational definition.

Table 2: List of Online Service Quality Dimensions with Same Operational Definition

Internet Banking Portal Service Quality Dimensions	Other Online Service Quality Dimensions With Same Operational Definition
Information Quality	Content, Information Quality, Quality of Information, Relevance, Timeliness and Decision Making.
Website Design	Aesthetics, Quality of Layout, Sense of Beauty, Site Design and Content, Website Design, Website Interface, Format, Enjoyment, User Experience, Graphics Quality and User involvement.
Ease of Use	Convenience, Ease of Navigation, Ease of Use and User Friendliness.
Reliability	Speed, Reliability, Efficiency and Accessibility.
Security And Privacy	Trust, Risk Reduction Benefits, Privacy and Security, Assurance and Credibility.
Interactive Interrogation	Interaction, Interactive Interrogation, Feedback, Responsiveness and Customer Care.
Personalization/Customization	Specialty Information, Attention, Personalization/Customization, Preferential Treatment, Customization, Individualization and Understanding the Customer.
Basic Service Quality	Banking Service Product Quality, Basic Service Quality, Core Services
Other Financial Products' Service Quality Added Values	Cross Buying Service Quality, collaboration Diverse Features, Supporting Services

After completion of literature review and expert interview, 73 items for measuring 10 internet banking portal service quality dimensions were identified. Items for measuring these 10 internet banking portal service quality dimensions were taken from the previous research and some necessary changes were made in statements as per instructions of the experts. Detail of internet banking portal service quality dimensions is given in table 3.

Table 2: List of Online Service Quality Dimensions with Same Operational Definition

Sr. No.	Internet banking portal service quality dimensions	Reference
1.	Information quality	Ho and Lin (2010), Loonam and O'Loughlin (2008), Kuo et al. (2005), Yang et al. (2005), Rangnathan and Ganapathy (2002).
2.	Website design	Ho and Lin (2010), Kim et al. (2008), Tan et al. (2003), Rangnathan and Ganapathy (2002).
3.	Ease of use	Rod et al. (2009), Loonam and O'Loughlin (2008),
4.	Reliability	Rod et al. (2009), Sohail and Shaikh (2008), Loonam and O'Loughlin (2008).
5.	Security and privacy	Rod et al. (2009), Sohail and Shaikh (2008), Waite and Harrison (2002), Donthu (2001).
6.	Interactive interrogation	Chuang and Hu (2010), Ho and Lin (2010), Kim et al. (2008), Yang et al. (2005),Waite and Harrison (2002).
7.	Personalization/customization	Bauer et al. (2005), Ribbink et al. (2004), Wolfinbarger and Gilly (2003), Tan et al. (2003), Srinivasan (2002).
8.	Basic service quality	Chuang and Hu (2010), Bauer et al. (2005), Jun and Cai (2001).
9.	Other financial products' service quality	Srinivasan et al. (2002), Bauer et al. (2005).
10.	Added values	Yang et al. (2005), Van Riel et al. (2001), Bauer et al. (2005).

Next, a pretest of the questionnaire was conducted to assess face validity or content validity of measurement scales. Face validity can be evaluated by a group of judges, sometime experts, who read or look at a measuring technique and decide whether in their opinion it measures what its name suggests. Here, continuous-scale agreement exercise used to know correspondence between each item a presumed construct using Likert scale. In the continuous-scale agreement exercise, judges evaluated the correspondence between each item and a presumed construct using Likert scale (Hardesty and Bearden, 2004). After being reviewed by five academics, the questionnaire was revised, and sent to four bank managers who are specialized in internet banking portal. They all provided valuable feedback. Some items were further reworded, added or deleted. The separate questionnaire was used to measure face or content validity.

Next, the questionnaire with 63 items and 10 dimensions representing internet banking portal service quality was filled by 50 internet banking portal users who used internet banking portal in last four weeks to ensure reliability of the scale. Here participants gave answer and critique and made review of the given questionnaire. Several modifications were made based on the feedback of pilot test. The final questionnaire had 63 items and 10 dimensions representing internet banking portal service quality. The final list of items for measuring internet banking portal service quality dimensions is given in Appendix A.

Description of selected internet banking portal service quality dimensions is given in the following table:

Table 4. Internet banking portal service quality dimensions

Sr.No.	Dimension	Description
1.	Information Quality	Information quality dimension is related to ability of internet banking portal to provide sufficient, real time & accurate information and valid hyperlink for accessing information to users.
2.	Website Design	This dimension includes visually appealing and well designed web pages, fonts in proper size and color, well labeled hyperlink and easy browsing on internet banking portal.
3.	Ease of Use	This dimension makes search out, navigation and connectivity to other website very easy on internet banking portal for the users.
4.	Reliability	Reliability of internet banking portal means the ability of it to provide services as per commitment. This dimension includes provide correct services at first time to users and accessibility of internet banking portal from anywhere and 24 * 7 hours.
5.	Security And Privacy	Privacy involves the protection of personal information of internet banking portal users and security involves protecting users from the risk of fraud and financial loss from the use of credit cards or other financ ial information.
6.	Interactive Interrogation	This dimension provides opportunity and ability to share opinions & information on internet banking portal and ask problem or query about products and services on it. This dimension also includes facilities of electronic complaint form on internet banking portal.
7.	Personalization/Customization	This dimension is related to ability of internet banking portal to provide customized or personalized services to users. It includes recommendation of financial and nonfinancial products to users as per their personal needs and providing personalized investment tips, news and response to customer queries.
8.	Basic Service Quality	This dimension of internet banking portal service quality includes service quality of classic bank products such as payment processing (cash management, transfers, viewing bank statements), online request for credit card, debit card, check book or loan, online stock treading and online fixed deposit facility.
9.	Other Financial Products' Service Quality	This internet banking portal service quality dimension includes availability and performance of financial products like, insurance, mutual fund, gold ETF etc… on it.
10.	Added Values	This dimension is related to entertainment and non-financial products' services of internet banking portal. Entertainment includes connectivity with social networking websites and availability of news room and chat room on internet banking portal. Non-financial products' services of internet banking portal includes services like, railway or airline ticket reservation, hotel reservation, online shopping, donation facilities, paying bills online (e.g.Telephone, credit card, electricity etc…), recharge of mobile phone, TV and data card, paying income tax etc…

Research Methodology:

Scale Development and Instrument:

This research followed the scale development framework that was established by Menor and Roth (2007).

This study developed a measurement instrument for internet banking portal service quality and that was mainly based on the perceived service quality scales proposed by various researchers in the area of online, internet banking and web portal service quality. Items for measuring customer satisfaction towards the bank were taken and adapted from the studies of Yang et al. (2004), Rod et al. (2009) and Chuang & Shin (2010). Items for measuring overall internet banking portal service quality were taken and adapted from

the research work of Yang et al. (2004) and Rod et al. (2009).

After completion of literature review, the questionnaire with 73 items and 10 dimensions representing internet banking portal service quality, 2 items representing overall internet banking portal service quality and 4 items representing customers overall satisfaction toward the bank was prepared.

Next, a pretest of the questionnaire was conducted to assess face validity or content validity of measurement scales. Face validity can be evaluated by a group of judges, sometime experts, who read or look at a measuring technique and decide whether in their opinion it measures what its name suggests. Here, continuous-scale agreement exercise used to know correspondence between each item a presumed construct using Likert scale. In the continuous-scale agreement exercise, judges evaluated the correspondence between each item and a presumed construct using Likert scale (Hardesty & Bearden, 2004). After being reviewed by five academics, the questionnaire was revised, and sent to four bank managers who are specialized in internet banking portal. They all provided valuable feedback. Some items were further reworded, added or deleted.

Next, the questionnaire with 63 items and 10 dimensions representing internet banking portal service quality, 2 items representing overall internet banking portal service quality and 4 items representing overall satisfaction towards the bank was filled by 50 internet banking portal users who used internet banking portal in last four weeks to ensure reliability of the scale. Here participants gave answer and critique and made review of the given questionnaire. Several modifications were made based on the feedback of pilot test. The final questionnaire had 63 items and 10 dimensions representing internet banking portal service quality and 2 items representing overall internet banking portal service quality.

Sampling Design

This empirical study was conducted in Gujarat State, India in April – August, 2014.The population of the study was bank customers who are using internet banking portal of selected Indian public and private sector banks in four large cities (Ahmedabad, Baroda, Surat and Rajkot) of Gujarat state, India.

This study was included only top five public and private sector banks for measuring and comparing service quality of internet banking portal because of several reason. First, these companies contribute significantly in total revenue and market share of Indian banking sector. And second, these banks have well established internet banking portal. The list of top 5 Indian public and private sector banks is given in the table 6.

Table 6. Top five Indian public and private sector banks

Top Five Indian Public Sector Banks	Net Profit in Cr. Rupees (Year 2011 -12)	Top Five Indian Private Sector Banks	Net Profit in Cr. Rupees (Year 2011-12)
State Bank of India	11707.29	ICICI Bank Ltd.	6466.50
Bank of Baroda	5006.96	HDFC Bank Ltd.	5167.07
Punjab National Bank	4879.95	Axis Bank Ltd.	4229.19
Canara Bank	3281.71	Kotak Mahindra Bank Ltd.	1085.05
Bank of India	2677.50	Yes Bank Ltd.	976.99

Source: Capitaline-Corporate Database, Retrieved on June 30, 2012.

In this study total target population is unknown and sampling frame is not available so non-probability sampling technique was used. Judgmental sampling, a form of convenience sampling was used to identify respondents for the study because here a judgment was taken by researcher that maximum number of internet banking portal users of selected banks were easily got at branches of selected banks. To ensure that the Instrument reached the target, a filter question was asked at the beginning of the questionnaire as to whether respondent was using an internet banking portal of the selected Indian public and private sector banks. Respondents were also asked to focus on the internet banking portal they use most often. Only those answering affirmatively proceeded to respond to the remaining questions. Respondents who answered in the negative were not included in the study.

Responses were sought from 400 respondents. The sample was collected from four highest populated cities of Gujarat state, i.e. Ahmedabad, Vadodara, Surat and Rajkot in equal size for increasing representativeness of sample. data was collected from 200 internet banking portal users of selected Indian public sector banks and 200 internet banking portal users of selected Indian private sector banks. Data was collected from 10 respondents for each bank in every city to increase sample representativeness.

Profile of Respondents

Table 7 shows the demographic variables (gender, age, education, marital status, occupation and monthly income), internet usage and internet banking portal usage profile of the 400 respondents.

Table 7. Profile of Respondents

Sr. No.	Classification	Percentage (%)
1.	**Gender:**	
	Male	67.25
	Female	32.75
2.	**Age (In Years):**	
	Below 20	6.50
	21 to 30	25.50
	31 to 40	30.00
	41 to 50	27.50
	More than 50	10.50
3.	**Education:**	
	School	2.50
	Under Graduate	38.00
	Post-Graduate	42.75
	Professional	12.75
	Doctorate	4.00
4.	**Marital Status:**	
	Single	26.00
	Married	74.00
5.	**Occupation:**	
	Salaried	47.00
	Businessman/Self Employed	41.50
	Housewife	1.50
	Student	7.00
	Retired	2.50
	Unemployed	0.50

6.	**Monthly Income (In Rupees):**	
	Less than 25000	19.50
	25001 to 50000	26.25
	50001 to 75000	22.50
	75001 to 100000	19.75
	More than 100000	12.00
7.	**Internet Usage in a Week:**	
	Less than 1 hour	4.75
	1 to 5 hours	12.00
	6 to 10 hours	23.25
	11 to 15 hours	32.25
	More than 15 hours	27.75
8.	**Internet Banking Portal Usage in a Month:**	
	Less than 1time	10.00
	1 to 3 times	29.50
	4 to 6 times	43.00
	7 to 9 times	14.75
	More than 9 times	2.75

Data Analysis:

Confirmatory factor analysis was used for validating the model. SPSS and AMOS were used for data analysis in this research.

Items Deleted

In the internet banking portal service quality model, some indicators were loaded on the constructs that they were not supposed to represent and some residual covariance of the indicators representing different constructs were released in order to improve the model fit. There were 63 items in the questionnaire and retained items in the scale were 40. Detail of original items and retained items are given in the appendix.

Assessment of Reliability

Reliability was gauged via the standardized Cronbach's alpha coefficient (Cronbach, 1951). Hair et al. (2007) recommended that 0.6 Cronbach's alpha value is deemed the lower limit of acceptability. After reexamining each dimension and deleting items based on the SPSS recommended criteria, Cronbach alpha was computed for each distinct construct of internet banking portal service quality. The final Cronbach's alpha coefficients of all items range from 0.601 to 0.752 (see table 5), suggesting good internal consistency among items within each construct and the reliability of the constructs. Moreover, the combined scale reliability for the 40 items of internet banking portal service quality is 0.880. The high alpha value of the combined scale indicates that both the reliability and the convergent validity of the scale were met (Parasuraman et al., 1991). Cronbach's alpha scores were shown in table 8 indicated each scales used in this study exhibited strong internal reliability.

Table 8. Reliability of the Scale

Sr. No.	Dimension Name	Cronbach's Alpha Scores
1.	Information Quality	0.625
2.	Website Design	0.706
3.	Ease of Use	0.642
4.	Reliability	0.705
5.	Security and Privacy	0.752
6.	Interactive Interrogation	0.601
7.	Personalization/Customization	0.726
8.	Basic Services Quality	0.622
9.	Other Financial Products' Service Quality	0.640
10.	Added Values	0.696
11.	Reliability of Overall Scale	0.880

Assessment of Validity

Validity is an extent to which research is accurate. Validity of a scaling procedure implies that the data must be unbiased and related to the construct being measured. Content/face and construct validity were measured for validating the model.

Content Validity

The degree to which the measure spans the domain of the construct's theoretical definition is defined as the construct's content validity (Rungtusanatham, 1998). The internet banking portal service quality dimensions were identified from literature and content validity of the instrument used in the present study is ensured by professionals of banking sector and academicians of marketing area.

Construct Validity

Construct validity is the extent to which a set of measured items actually reflects the theoretical latent construct thus it deals with the accuracy of measurement (Hair, 2007). Construct validity is further divided into convergent, discriminant and nomological validity (Churchill, 1979). Construct validity can be established by empirically assessing uni-dimensionality of constructs (O'Leary-Kelly & Vokurka, 1998).

Confirmatory Factor Analysis (CFA) provides better control for assessing uni-dimensionality. In this research study, convergent and discriminant validity were assessed using confirmatory factor analysis.

Convergent Validity

The items that are indicators of a specific construct should coverage or share a high proportion of variance in common, known as convergent validity (Hair et al., 2007). In this study convergent validity was measured using the following methods:

1) Analysis of factor loading

2) Average variance extracted

3) Construct reliability

In the case of high convergent validity, high loading on a factor would indicate that they converge on some common point and factor loading more than 0.5 indicates good convergent validity (Hair et al., 2007).The

factor loading of all the items of the internet banking portal service quality scale are given in the table 6. The values of factor loading for all the items are near to or greater than 0.5 and it indicates good convergent validity of the scale.

Hair et al. (2007) noted that convergent validity can also be determined by calculating the average variance extracted (AVE) value of the construct. AVE should be near or above 0.5 to indicate convergent validity. Table 6 shows that all AVE values of all internet banking portal service quality factors are near or above 0.5 indicating strong convergent validity.

High construct reliability indicates that internal consistency exists, meaning that the measures all consistently represent the same latent construct. The rule of thumb for construct reliability estimate is that 0.7 or higher suggests good construct reliability. Table 9 shows that for all constructs related to internet banking portal service quality value of construct reliability is greater than 0.7 and it indicates good construct reliability.

Table 9. Factor loading values for all items of internet banking portal service quality scale

Internet Banking Portal Service Quality Dimensions	Statements	Factor Loading	AVE Values	CR Values
Information Quality	IQ1	0.74	0.54	0.78
	IQ3	0.72		
	IQ6	0.74		
Website Design	WB2	0.77	0.51	0.84
	WB3	0.72		
	WB5	0.72		
	WB6	0.69		
	WB7	0.68		
Ease of Use	EU2	0.79	0.56	0.79
	EU3	0.75		
	EU4	0.70		
Reliability	RE3	0.80	0.60	0.82
	RE4	0.77		
	RE5	0.75		
Security and Privacy	SC1	0.75	0.50	0.86
	SC2	0.73		
	SC3	0.76		
	SC4	0.64		
	SC5	0.69		
	SC6	0.68		
Interactive Interrogation	II1	0.74	0.46	0.71
	II3	0.66		
	II6	0.61		

Personalization/Customization	P1	0.77	0.46	0.81
	P2	0.73		
	P3	0.71		
	P4	0.57		
	P5	0.60		
Basic Services Quality	BSQ2	0.76	0.49	0.79
	BSQ3	0.65		
	BSQ4	0.62		
	BSQ5	0.75		
Other Financial Products' Service Quality	OFQ1	0.82	0.54	0.77
	OFQ2	0.72		
	OFQ3	0.65		
Added Values	AV1	0.77	0.49	0.82
	AV2	0.69		
	AV3	0.70		
	AV4	0.68		
	AV5	0.62		
Overall Internet Banking Portal Service Quality	OSQ1	0.60	0.52	0.71
	OSQ2	0.829		

Descriminant Validity

Disccriminant validity is the extent to which a construct is truly distinct from other constructs thus, high discriminant validity provides evidence that a construct is unique and captures some phenomena other measures do not (Hair et al., 2007). Discriminant validity is assured if a measure does not correlate very highly with other measures from which it is supposed to differ (O'Leary-Kelly and Vokurka, 1998). Accordingly to Fornell and Larcker (1981) discriminant validity is established if the AVE is larger than the squared of correlation coefficient of each constructs. In table 10 shown that the AVE value is larger than the squared of correlation coefficient of each constructs so it can be concluded that all the constructs of internet banking portal service quality scale supported discriminant validity.

Table 10: Discriminant Validity Analysis

Internet Banking Portal Service Quality Dimensions	I	II	III	IV	V	VI	VII	VIII	IX	X
I. Added Values	**0.49**									
II. Interactive Interrogation	0.25	**0.46**								
III.Website Design	0.21	0.27	**0.51**							
IV .Ease of Use	0.18	0.08	0.34	**0.56**						
V. Other Financial Products' Service Quality	0.12	0.11	0.21	0.13	**0.54**					
VI. Basic Services Quality	0.25	0.24	0.41	0.14	0.12	**0.49**				
VII. Personalization/ Customization	0.05	0.13	0.10	0.04	0.05	0.08	**0.46**			
VIII. Security and Privacy	0.27	0.26	0.29	0.24	0.09	0.27	0.03	**0.5**		
IX. Reliability	0.32	0.21	0.17	0.13	0.07	0.26	0.10	0.10	**0.6**	
X. Information Quality	0.33	0.35	0.39	0.21	0.23	0.24	0.06	0.24	0.24	**0.54***

Model Fit:

To check model fit of internet banking portal service quality model Chi Square/df statistic, Tucker Lewis Index (TLI) value, Comparative Fit Index value (CFI), root mean square error of approximation (RMSEA) value and expected cross- validation index (ECVI) were used (Table 11).

Table 11. Model fit indices

Type of Model Fit Index	Model Fit Index	Values
Absolute Fit Index	Chi-square/df	1.584
Relative Measure Indices	Comparative Fit Index (CFI)	0.892
	Tucker Lewis Index (TLI)	0.902
Residual Matrix Based Indices	Root Mean Square Error of Approximation (RMSCA	0.038
	Expected Cross- Validation Index (ECVI)	3.586

In this research, Chi-square/df was used as an absolute fit index. As per Hu and Bentler (1999), value of Chi-square/df less than 2 indicate good model fit. For the model of internet banking portal service quality Chi-square/df value was 1.584 and it indicates good model fit.

As per Hair et al. (2007), Tucker Lewis Index (TLI) value and Comparative Fit Index value (CFI) near to 0.9 indicates good model fit. The TLI and CFI values for the internet banking portal service quality model were near to 0.9 and these values were indicating good model fit.

RMSEA value between 0.03 to 0.08 for CFA at 0.05 significant level indicate good fit of model (Hair et al., 2007). RMSEA value for the model of internet banking portal service quality was 0.038 and it indicates good model fit. Another indication that the model fits well was that the expected cross- validation index (ECVI) for the model (3.586) is less than the ECVI for the saturated model (4.521). The ECVI value is also within the 90% confidence interval, ranging from 3.369 to 3.822 and it was shown good model fit.

The goodness-of-fit indices suggested that the factor structure of the proposed ten constructs was well-established and it was concluded that internet banking portal service quality comprises the facets of (1) Information quality, (2) Website design, (3) Ease of use, (4) Reliability, (5)Security and privacy, (6)Interactive interrogation ,(7) Personalization/ Customization, (8) Basic service quality, (9) Other financial products' service quality and (10) Added values. The following research model was validated on the basis of previous analysis (See Figure 1):

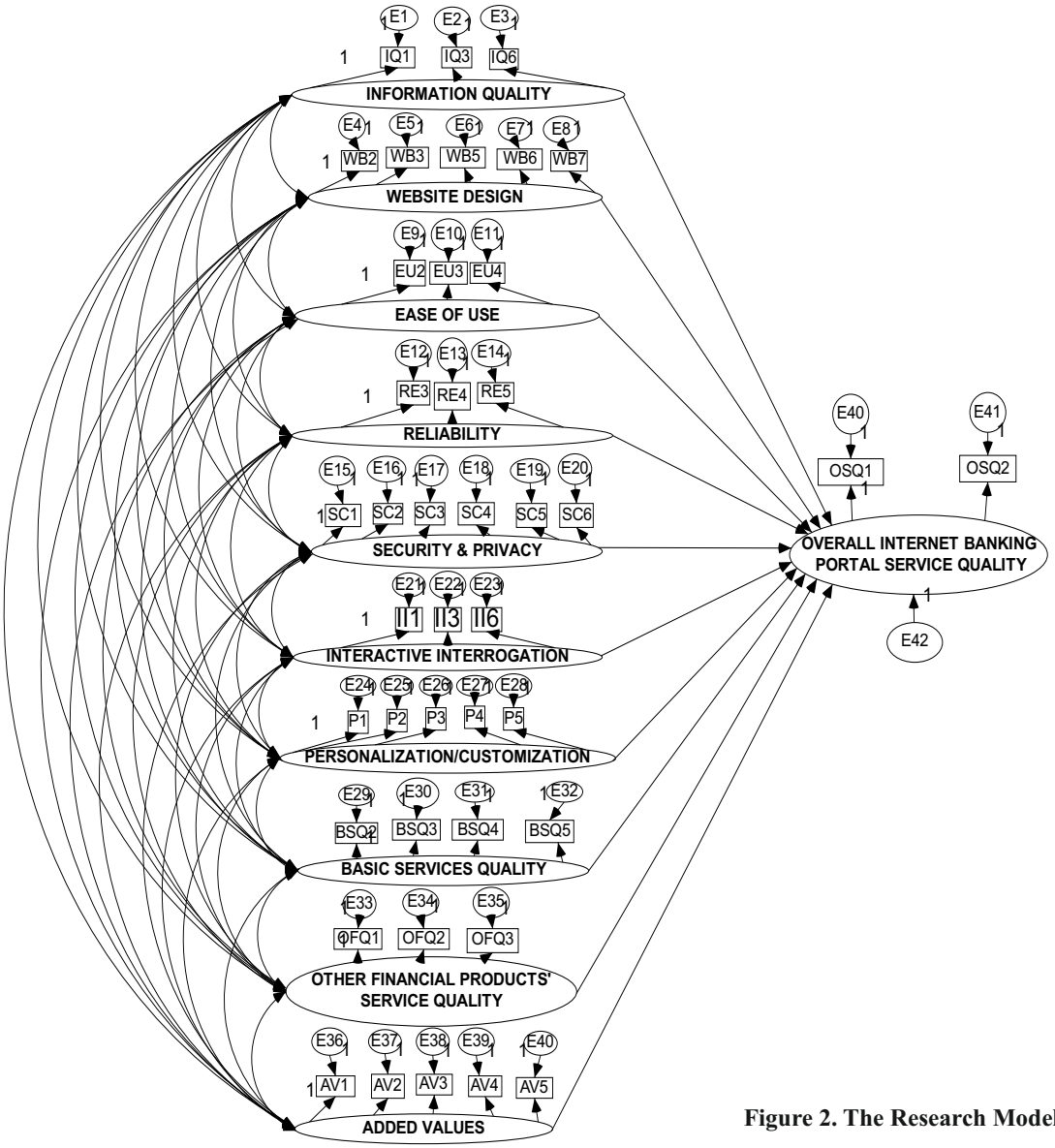

Figure 2. The Research Model

Conclusion of the Study

This empirical research provides reliable and valid scale to measure internet banking portal service quality. The facets of internet banking portal service quality were measured and validated using confirmatory factor analysis. Ten dimensions of internet banking portal service quality were identified and these dimensions were: (1) Information quality, (2) Website design, (3) Ease of use, (4) Reliability, (5) Security and privacy, (6) Interactive interrogation, (7) Personalization/Customization, (8) Basic service quality, (9) Other financial products' service quality and (10) Added values.

Implications of the Study

The interpretation of the research model developed in the study has potential to help indian banks in understanding how internet banking portal users assess the internet banking portal service quality. A pool of indicators for the antecedent factors of internet banking portal service quality stood out, acting as a guide for Indian public and private sector banks to improve their internet banking portal service quality. Similarly, items measuring internet banking portal service quality dimensions and Overall internet banking portal service quality were tested and refined. The reliable and valid instrument confirmed in this research can be used by further studies detecting the relationships among these constructs in an extended context.

Future Research

The subject of the survey is individual internet banking portal user. The differences between individual customers and business customers may not be enormous. However, given the huge amount of business-to-business (B2B) online transactions, it would be interesting and beneficial to investigate what business customers perceive about internet banking portal service quality. The comparison between business customers and individual customers' perception for internet banking portal service quality dimensions may provide new insights. This study was conducted in Gujarat state of India. Due to geographical limitations, participants may possess certain attributes that differ from those in other parts of the world. Future research may use more diversified random samples to verify the dimensions developed in this study

Finally, this study included only the Indian public and private sector banks and it was not included foreign and cooperative banks in India. Therefore, future studies should examine internet banking portal of other types of bank to check if the model developed in this study is consistent across different types of bank. Many Indian banks are providing facilities of mobile banking and various applications to use mobile banking on smart phones. To measure service quality of mobile banking applications on smart phones may give important findings to Indian banks.

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APPENDIX A

Questionnaire Items for Internet Banking Portal Service Quality

Items of internet banking portal service quality were measured using 5 points Likert scale (1=Strongly Disagree, 2= Disagree, 3= Neither Agree Nor Disagree, 4= Agree, 5=Strongly Agree).

Internet Banking Portal Service Quality Dimensions	Statements
Information Quality	IQ1: This internet banking portal provides sufficient and real time financial information (e.g. interest rate, foreign exchange rate, stock market, bank charges etc…).
	*IQ2: This internet banking portal has sufficient information regarding how to use various services of it.
	IQ3: All information on this internet banking portal is accurate.
	IQ4: This internet banking portal allows comparing information related to various financial and nonfinancial products.
	IQ5: There is availability of decision making aids (e.g. graphical tools, calculator) on internet banking portal.
	IQ6: This internet banking portal has all valid hyperlinks.
Website Design	*WB1: This internet banking portal has proper layout of text and graphics.
	WB2: This internet banking portal is visually appealing.
	WB3: Fonts on this internet banking portal are in proper size and color.
	*WB4: Contents on this internet banking portal are structured and organized.
	WB5: All the hyperlinks are well labeled on this internet banking portal.
	WB6: Design of this internet banking portal enables me to complete my online transaction quickly.
	WB7:It is fun to browse and see what can be found on this internet banking portal.
Ease of Use	EU1: This internet banking portal allows easy login.
	EU2: This internet banking portal allows searching out something very easily in it.
	EU3: It is very easy to navigate from one page to other page in this internet banking portal.
	EU4: This internet banking portal provides easy connectivity with website of other service providers.
	EU5: This internet banking portal gives option of use it in other language also.
	EU6: This internet banking portal has comprehensive help menu.
	EU7: It is easy to complete online transaction using this internet banking portal.
Reliability	RE1: Any online transactions through this internet banking portal are accurate.
	RE2: This internet banking portal completes task in prescribed time limit.
	RE3: This internet banking portal performs the service correctly at the first time.
	RE4: This internet banking portal offers its services on 7 days and 24 hours.
	RE5: This internet banking portal allows accessing it from anywhere.
	RE6: After entering transaction information, the page neither locks nor freezes on this internet banking portal.
	RE7: This internet banking portal initiates and operates immediately.

Security and Privacy	SC1: This internet banking portal gives feeling of security in providing sensitive information (e.g. credit card number) for online transaction on it.
	SC2: This internet banking portal provides the information of privacy policy and security mechanism.
	SC3: The privacy policy and security mechanism of this internet banking portal are good.
	SC4: This internet banking portal informs customer when any online transaction is finished.
	SC5: This internet banking portal has easy options for cancelling any online transactions.
	SC6: This internet banking portal protects online transaction data and bank information.
Interactive Interrogation	II1: When problem occurs, this internet banking portal gives guidance.
	II2: This internet banking portal sends prompt response to customer request by email or service link.
	II3: This internet banking portal allows exchanging opinion regarding services provided by it with other customers using discussion forum available on it.
	II4: This internet banking portal has frequently asked questions page.
	II5: In the case of problem, this internet banking portal offers live chat with a bank employee.
	II6: This internet banking portal provides electronic complain form.
Personalization/Customization	P1: This internet banking portal makes purchase recommendations of financial and nonfinancial products that match individual needs.
	P2: This internet banking portal sends personalized investment tips according to customer's financial portfolio.
	P3: This internet banking portal provides regular news regarding customer's investment.
	P4: This internet banking portal gives personalized response to queries.
	P5: This internet banking portal gives feeling of unique customer.
Basic Services Quality	BSQ1: This internet banking portal allows seeing account balance.
	BSQ2: This internet banking portal allows online money transfer.
	BSQ3: This internet banking portal provides stock trading services.
	BSQ4: This internet banking portal allows putting online request for debit card, passing book, cheque book etc….
	BSQ5: This internet banking portal allows investing money in bank fixed deposit.
	BSQ6: This internet banking portal allows getting online loan very quickly and easily.
Other Financial Products' Service Quality	OFQ1: This internet banking portal allows investing money in financial products like, insurance, mutual funds, gold ETF etc…
	OFQ2: Reputed companies' financial products (mutual fund shames, insurance plans, Gold ETF etc…) are available on this internet banking portal.
	OFQ3: Financial products (e.g. Mutual funds, insurance plans, Gold ETF etc..) available on this internet banking portal gives good return on investment.
Added Values	AV1: This internet banking portal allows paying bills online (e.g. mobile phone, credit card, electricity etc…).
	AV2: This internet banking portal allows recharging mobile phone, TV and data card online.
	AV3: This internet banking portal allows booking hotels and travelling tickets online.

	AV4: This internet banking portal allows doing online shopping. AV5: This internet banking portal allows paying income tax online. *AV6: This internet banking portal allows reading versatile daily news on it. *AV7: This internet banking portal allows calculating useful and funny things, e.g. calculation of when I would be a millionaire with certain monthly savings. *AV8: This internet banking portal allows sharing its information on social networking websites. *AV9: This internet banking portal allows me to interact with other customers of it using chat room. AV10 This internet banking portal never creates any problem in online transaction with third party service provider (e.g. mobile, T.V. and internet serv ice provider, electricity provider, online shoppers etc…).
Overall Internet Banking Portal Service Quality	OSQ1: Over all, service quality of this internet banking portal is excellent. OSQ2: Over all, this internet banking portal comes up to my expectation.