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# Evaluating the relationship of online service quality dimensions with satisfaction, value and behavioral outcome

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**Evaluating and improving electronic service quality is critical for e-service providers as the pace of competition is high and service features can easily be replicated in the online world. Thus, understanding e-service quality is important for strategic and tactical planning. There is little scholarly research on the dimensions of e-service quality in developing market contexts and they impact customer satisfaction and future service outcomes. Thus there is a need for research to answer these questions which would help service identify the drivers of satisfaction, value and behavioural outcomes for their e-services. This study attempts to address this gap in research.**

**Key words:** E-service quality, SERVQUAL model.

## INTRODUCTION

Prior research shows that the dimensions of service quality and their impact on service outcomes varies across service sectors and country contexts. Firms need to understand better how different industry sectors and contexts lead to different relationships between tactical activities such as service quality management and their overall performance outcomes (Bolton et al., 2004). Piccoli et al. (2004) regret the "dearth of research-based insights and guidelines concerning the roles, functionalities, and effective design of web sites. This study attempts to determine the dimensions of online service quality and their consequences without focusing on any one particular service sector in an emerging market context of India.

Previous studies have used the adapted versions of SERVQUAL model which contains five dimensions, namely, tangibles, reliability, responsiveness, assurance and empathy for measuring service quality in e-commerce settings (Devaraj et al., 2002; Kim and Lee, 2002; Li et al., 2002; Kuo, 2003; Negash et al., 2003). However, service researchers have emphasized the need for more comprehensive customer evaluations of e-services, (Parasuraman and Grewal, 2000) due to the difference in consumer evaluations of online services.

Previous researchers have suggested that the study of influence of e service should include its effect on all customer responses such as perceived service quality, customer satisfaction and purchase intentions (Parasuraman and Grewal, 2000; Jeong et al., 2003). This study attempts to understand the dimensions of service quality and their influence on customer satisfaction, value and purchase intentions for online services which is important for both marketing researchers, and online service providers. Although service quality perceptions in online environments is an important determinant of the effectiveness of e-commerce (Yang and Jun, 2001; Janda et al., 2002), few studies have examined the relationship between different dimensions of e-service quality and their impact in predicting customer satisfaction, value and purchase intentions for online services.

In this paper, the dimensions of online service quality are derived through exploratory factor analysis and the effect of the e-service quality dimensions on satisfaction, value and behavioural outcomes of repurchase intentions and recommendation intentions is evaluated through multi-variate structural equation modeling using AMOS 6.0. Data was collected through an online survey of

internet users. 221 users responded, out of which 200 responses were found acceptable. The hypothesis were tested and conclusions drawn. The results are useful for formulating marketing strategy and programs for e services.

## LITERATURE REVIEW

### E-service quality

E-service quality is defined as the overall customer evaluations and judgments regarding the excellence and quality of e-service delivery in the virtual marketplace (Santos, 2003). Prior studies on service quality measures have been applied to assess the quality of virtual community web sites (Kuo, 2003), satisfaction with e-commerce channels (Devaraj et al., 2002) and determinants of web site success (Liu and Arnett, 2000).

### E-service quality dimensions

The most widely used scale to measure online service quality and its dimensions has been the adapted SERVQUAL scale; Parasuraman et al. (1988) conceptualized service quality as the relative perceptual distance between customer expectations and evaluations of service experiences and service quality using a multi-item scale called the SERVQUAL model which includes the five dimensions of tangibles (physical facilities and the appearance of personnel), reliability (ability to perform the promised service dependably and accurately), responsiveness (willingness to help customers and provide prompt service), assurance (employee knowledge base which induces customer trust and confidence) and empathy (caring and individualized attention provided to customers by the service provider). The SERVQUAL scale has recently been used to measure information system service quality (Pitt et al., 1997; van Dyke et al., 1999; Carr, 2002; Jiang et al., 2002); e-commerce system service quality (Devaraj et al., 2002; Kim and Lee, 2002) and in various contexts, including web-based service (Kuo, 2003; Negash et al., 2003), internet retail (Kaynama and Black, 2000; Barnes and Vidgen, 2001) and electronic banking (Zhu et al., 2002).

However, there are challenges in measuring web-based service quality due to the differences between web-based and traditional customer service (Li et al., 2002). Parasuraman and Grewal (2000) suggested that research is needed on whether "the definitions and relative importance of the SERVQUAL dimensions change when customers interact with technology rather than with service personnel."

There has also been significant variation in the attributes and dimensions of e-service quality in research based on the scope of the study, that is, multi industry

sector versus single industry and the purpose of the study, that is, antecedents or consequences. There have also been variations in service performance attributes selected for the study within these scope dimensions. In prior studies based on multi-industry perspective, Wolfinbarger and Gilly (2003) identified four factors as predictive of e-service performance outcomes: web site design, fulfillment/reliability, privacy/security, and customer service. Agarwal and Venkatesh (2002) studied web site usability via the dimensions of content, ease of use, promotion, made-for-the-medium, and emotion in the airline, bookstore, auto manufacturer, and car rental web sites while Kim and Lee, (2002) studied online service quality in virtual malls, stock brokerages, search portals, and networked gaming e-services through six hypothesized architectural dimensions measuring different aspects of web site design, content, security and privacy. Choi et al. (2004) estimated a model including dimensions of functional and technical web site service quality, product quality and customer value by assigning a sample of shoppers several general shopping tasks.

In single industry sector studies, Tsiriktsis (2002) examined the linkage between customer culture and web site quality in online banking, based on web site quality dimensions of interactivity, trust, responsiveness, design appeal, visual appeal and flow-emotional appeal. Jayawardhena (2004) discussed the measurement of service quality in online banking, measuring e-service dimensions of web site interface, trust, attention, credibility, and access. Chen and Hitt (2002) examined quality factors related to customer retention or attrition in online retail brokerage services and identified system quality, product line breadth and product line quality as factors that reduce customer switching and attrition. Montoya-Weiss et al. (2003) studied how navigation, information content, graphic style and security risk affected customers' overall satisfaction in online financial services. Balasubramanian et al. (2003) studied online investing services, and concluded that formation of trust between an investor and an online investing site depends upon operational competence, availability of timely and accurate stock market info, quality of stock market research, timeliness of order execution, availability of wide range of services, ease of use of the web site interface and number of steps required to execute a transaction. van Riel et al. (2003) studied the online travel industry in terms of the effect that pre-transaction services have on a customer's perception of overall service quality and concluded that the user interface, which included navigation, design and accessibility, explained most of the variation in the overall perception of the quality of the web site. Gefen (2003) studied book retailing using adapted SERVQUAL dimensions of tangibles, responsiveness, reliability, assurance and empathy. van Riel et al. (2001) studied associations between e-service quality, satisfaction and loyalty in medical portals and analyzed e-service quality based on

on core online services and supporting offline services offered by the portal.

Overall, measures related to the overall web site quality, the web site user interface and supporting services were found to be significantly associated with positive service outcomes. Viitanen et al. (2003) examined e-service quality in the context of a medical portal and discovered that, technical functionality of the user interface, responsiveness, need fulfillment, security and trust were significantly associated with service performance. Thus its hypothesized that the e-service quality is a multi dimensional construct, dimensions are context specific and need to be extracted by measuring customer perceptions of performance and then deriving the dimensions through exploratory method.

### **E-service quality and value**

There has been increasing focus on the relationship between service quality and value. Based on the functional conceptualization of service value suggest by Zeithaml (1988), service quality is postulated as a direct antecedent of value (Sirohi et al., 1998). Most studies support this directionality suggesting service value as a tradeoff between whatever a customer gets versus whatever he or she gives (Zeithaml, 1988). The e-service quality (e-SQ) literature seems to support this causal order, but more research is needed (Parasuraman et al., 2005). It is hypothesized that e-service quality is direct antecedent of customer value perceptions.

### **E-service quality and satisfaction**

There has been considerable research on the causality direction between service quality and satisfaction. The pre-dominant view suggests service quality as an antecedent of satisfaction based on the theoretical justification of Bagozzi's and Yi (1992) appraisal-emotional response-coping attitudinal framework. Thus, service quality is conceptualized as a cognitively oriented construct while satisfaction is an affective construct. Bagozzi's and Yi (1992) construct postulates that satisfaction also involves emotional reactions to consumers post consumption appraisal which finally drive behavioral intentions.

In prior studies, Wolfinbarger and Gilly (2003) found a significant positive relationship between overall service quality evaluations and satisfaction in the context of fixed web retailing context and Montoya-Weiss et al. (2003) found empirical evidence for the relationship between service quality and overall satisfaction in their study on determinants of online channel preference for a multi-channel service provider.

Thus, it is hypothesized that e-service quality is a direct antecedent of post purchase satisfaction of the customer with the service experience.

### **E-service quality and behavioural outcomes**

Many studies have investigated the relationship between service quality, satisfaction and value and their consequences such as behavioral intentions (Choi et al., 2004). In the e- service quality (e-SQ) literature, empirical evidence supports the direct effect of service evaluation constructs on loyalty intentions (Wolfinbarger and Gilly, 2003). Dabholkar (1996) found empirical support for the direct relationship between service quality perceived for a technology based-self service ordering system and intention to adopt. Though there have been numerous studies on the impact of off line service quality perceptions and their direct and indirect effect on behavioural intentions of repurchase and recommendation, there is a dearth of such studies in the online context. This study postulates that e-service quality has direct significant effect on repurchase and recommendation intentions as has been empirically found in off line studies.

Thus, though previous studies show that perceived service quality positively influences customer satisfaction and purchase intentions (Rust and Zahorik, 1993; Martensen et al., 2000), there have been lack of studies in a developing country context where internet usage is evolving due to low penetration and access and consumer perceptions of service quality, evaluations of satisfaction and value and behavioral outcomes may vary, Malhotra,. Thus this paper aims to:

- (1) Determine the dimensions of e-service quality based on study of consumer perceptions and their consequences in the emerging market context of India.
- (2) Understand the causal path of e-service quality dimensions with overall customer satisfaction, value perceptions and re purchase and recommendation intentions.

### **METHODOLOGY**

Initially, 14 attributes of online service performance were identified based on literature review of prior research. The lists of attributes were pilot tested with online users for relevance and wording. The 11 service quality attributes which were finally selected for the study were web site related, which includes "ease of access, ease of navigation, efficiency of site, level of flexibility, reliability of site, level of personalization of site, privacy of transactions and trust for the online site, which implies that site is aesthetically designed, variety of offering and prompt service".

Data was collected in the month of May, 2009 from online users through an online survey. The questionnaire was put on an online site wherein 221 participants responded. 200 responses were found usable.

The participants were asked to rate the important e service quality attributes of the web sites of the online service providers on a scale of 1-7 based on their prior experience. The respondents were self selected and were of less than 35 years of age. They were frequent online users and were exposed to diverse online service sectors. The variables were operationalized thus: the eleven service quality attributes were measured on a seven point likert

**Table 1.** E-service quality attributes and dimensions.

Service quality attribute	Factor loading	Service quality dimension
ease of access	0.836	Process dimension
Flexibility of site	0.723	Process dimension
Reliability of site	0.812	Process dimension
Site personalization	0.716	Process dimension
Privacy of transactions	0.706	Process dimension
Trust	0.859	Process dimension
Aesthetical design	0.726	Process dimension
Prompt service	0.820	Outcome dimension
Variety of offering	0.908	Outcome dimension

scale as 1=strongly disagree and 7=strongly agree. The service performance/quality attributes were measured as (the site is easy to access; the site is easy to navigate; the efficiency of the site is high; the site has high level of flexibility; the site is reliable; the site has high level of personalization; the privacy of transactions on the site is high; I trust the online site; the site is aesthetically designed; when they promise to do something by a certain time, they will do so; the site has high variety of offerings). The data was reduced by exploratory factor analysis based on principal component method of extraction and varimax method of rotation.

Two service quality dimensions were extracted by principal component analysis of the 11 online service quality attributes identified from literature review and pilot testing. The two dimensions of online service quality were labeled as process dimension (seven attributes of ease of access, flexibility, reliable site, personalization, privacy, trust and aesthetical design) and outcome (prompt service and variety of offering) dimension which is aligned with Gronroos 1982 model of service quality wherein two dimensions of service quality were defined as functional (how the customer receives) and technical quality (what the customer receives) and Lehtinen (1983) definition of service quality wherein the two dimensions were defined in terms of "process quality" (judged by a customer during a service) and "output quality" (judged by a customer after a service has been performed).

The service outcomes were measured by single item scales. Overall customer satisfaction was measured on a Likert scale as 1=strongly disagree and 5=strongly agree by asking respondents to rate their overall satisfaction with the web sites visited as "my overall service satisfaction with online service websites is good". Their evaluation of value was measured by asking respondents to rate their response to the Likert statement "overall, the value offered by the online experience is "very poor =1; very good= 5. The behavioural intentions of the respondents were measured by asking them to rate the following item "I am likely to recommend the site I visited from to someone who seeks my advice on a scale of 1-5 as 1= Not at all likely; 5 Highly likely and "I will consider the site I purchased/visited from my first choice if I were to require this product/ information again" on a scale of 1-5 as 1= Not at all likely; 5 Highly likely. The effect of the dimensions of service quality on satisfaction, value and behavioural outcomes of repurchase and recommendation intentions were empirically tested using OLS linear regression using SPSS ver 15. Service quality dimensions were measured by average score on the attributes loading on them for each customer.

## FINDINGS

The purpose of the study was to determine the important

e-service quality dimensions and their impact on the service outcomes of customer satisfaction, value and behavioural intentions in an emerging market context of India. The eleven e-service quality attributes selected through literature review and pilot testing with online users were reduced to two dimensions, that is, process and outcome dimensions of e-service quality (Table 1) using exploratory factor analysis by principal component method of extraction and varimax method of rotation to get orthogonal dimensions with low correlation between the dimensions therefore reducing the probability of collinearity for subsequent linear regression analysis. The KMO test measure of sampling adequacy was 0.737 (> 0.5) and the Bartlett's test of sphericity chi-square measure was 522.258 ( $p=0.000$ ) thus rejecting the null hypothesis of identity matrix and accepting the results of the factor analysis as valid.

OLS regression was done with the independent variables of e-service quality of process and outcome dimensions with the service outcome variables of overall satisfaction (Table 2), service value (Table 3), repurchase intention (Table 4) and recommendation intention (Table 5). The causal effect of the independent variables of process and outcomes e-service quality dimensions was empirically tested by OLS multiple regression with step method of independent variable entry. The effect of outcome dimension was found to be significant ( $p<0.001$ ) in all the multivariate regressions whereas effect of process dimensions was not found to be significant in any of the regressions. The standardized beta of effect of core service quality on overall satisfaction is 0.202 which is significant ( $p=0.041$ ). The effect is moderate at 95% confidence level. The standardized beta of effect of core service quality on value is 0.550 which is significant ( $p=0.000$ ). The effect is very high and explains most of the variance in value.

The standardized beta of effect of core service quality on recommendation intention is 0.384 which is significant ( $p=0.000$ ). The effect is moderately high as it explains almost 40% of the variance of recommendation intentions.

The standardized beta of effect of core service quality

**Table 2.** Regression of e service quality dimensions with overall customer satisfaction.

<b>Model summary</b>									
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std error of the estimate	Change statistics				
					R <sup>2</sup> change	F change	Df1	Df2	Sig. F change
1	.228 <sup>a</sup>	0.052	.033	.69737	.052	2.744	2	100	.069

  

<b>ANOVA<sup>b</sup></b>						
Model		Sum of squares	df	Change statistics		
				Mean square	F change	Sig
1	Regression	2.669	2	1.334	2.744	.069 <sup>a</sup>
	Residual	48.632	100	.486		
	Total	51.301	102			

  

<b>Coefficient<sup>a</sup></b>								
Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. error	Beta			Tolerance	VIF
1	Constant	2.785	.436		6.392	.000		
	Processor quality	.103	.090	.112	1.148	.254	.999	1.001
	Coreserqual	.197	.095	.202	2.069	.041	.999	1.001

<sup>a</sup>Predictors: (Constant), Coreserqual, Processor quality.<sup>b</sup>Dependent variable: Overallsat.**Table 3.** Regression of e service quality dimensions with value.

<b>Model summary</b>									
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std error of the estimate	Change statistics				
					R <sup>2</sup> change	F change	Df1	Df2	Sig. F change
1	.550 <sup>a</sup>	.303	.296	.79291	.303	43.911	1	101	.000

  

<b>ANOVA<sup>b</sup></b>						
Model		Sum of squares	df	Change statistics		
				Mean square	F change	Sig
1	Regression	27.607	1	27.607	43.911	.000 <sup>a</sup>
	Residual	63.499	101	.629		
	Total	91.107	102			

  

<b>Coefficient<sup>a</sup></b>								
Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. error	Beta			Tolerance	VIF
1	Constant	1.035	.404		2.562	.012		
	Coreserqual	.718	.108	.550	6.627	.000	1.000	1.000

<sup>a</sup>Predictors: (Constant), coreserqual, processor quality.<sup>b</sup>Dependent variable: Value.

on repurchase intention is 0.611 which is significant ( $p=000$ ). The effect is very high as it explains more than

60% of the variances of repurchase intentions. Thus, the outcome dimension of e service quality significantly

**Table 4.** Regression of e-service quality dimensions with recommendation intentions.

<b>Model summary</b>									
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std error of the estimate	Change statistics				
					R <sup>2</sup> change	F change	Df1	Df2	Sig. F change
1	.389 <sup>a</sup>	.152	.135	.68995	.152	8.942	2	100	.000

  

<b>ANOVA<sup>b</sup></b>						
Model		Sum of squares	df	Change statistics		
				Mean square	F change	Sig
1	Regression	8.513	2	4.257	8.942	.000 <sup>a</sup>
	Residual	47.603	100	.476		
	Total	56.117	102			

  

<b>Coefficient<sup>a</sup></b>									
Model		Unstandardized coefficients		Standardized coefficients		t	Sig.	Collinearity statistics	
		B	Std. error	Beta				Tolerance	VIF
1	Constant	2.521	.431			5.849	.000		
	Processer quality	.056	.089	-.058		-.629	.531	.999	1.001
	Coereserqual	.393	.094	.384		4.165	.000	.999	1.001

<sup>a</sup>Predictors: (Constant), coereserqual, processer quality.<sup>b</sup>Dependent variable: Recco.**Table 5.** Regression of e-service quality dimensions with repurchase intentions.

<b>Model summary</b>									
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std error of the estimate	Change statistics				
					R <sup>2</sup> change	F change	Df1	Df2	Sig. F change
1	.611 <sup>a</sup>	.374	.361	.82059	.374	29.862	2	100	.000

  

<b>ANOVA<sup>b</sup></b>						
Model		Sum of squares	df	Change statistics		
				Mean square	F change	Sig
1	Regression	40.216	2	20.108	29.862	.000 <sup>a</sup>
	Residual	67.337	100	.673		
	Total	107.553	102			

  

<b>Coefficient<sup>a</sup></b>									
Model		Unstandardized coefficients		Standardized coefficients		t	Sig.	Collinearity statistics	
		B	Std. error	Beta				Tolerance	VIF
1	Constant	.238	.513			.464	.644		
	Processer quality	.051	.106	.038		.482	.631	.999	1.001
	Coereserqual	.867	.112	.611		7.723	.000	.999	1.001

<sup>a</sup>Predictors: (Constant), coereserqual, processer quality.<sup>b</sup>Dependent variable: Repurch.

affects overall customer satisfaction, value and intentions of repurchase and recommendation. Process dimension of e-service quality has no effect on any of the service outcomes.

## DISCUSSION AND CONCLUSIONS

The results provide empirical evidence for the antecedent effect of outcome dimension of e-service quality on customer outcomes. The core service quality dimension is the most significant antecedent of overall customer satisfaction, perceived value and loyalty outcome behaviours of repurchase and recommendation intentions. This is in line with findings of Wolfinbarger and Gilly (2003) who developed eTailQ scale to suggest that e-retail's service quality is predictive of customer judgments of satisfaction, loyalty and attitude towards the website. The process dimension has insignificant effect on customer outcomes.

This study adds to existing theoretical knowledge as there are no studies on online service quality dimensions and their effects on satisfaction, value and behavioural outcomes in a developing country context. Further, this study extends the broad research stream linking the service constructs and behavioural outcomes (Cronin et al., 2000) to an online context.

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