AN EMPIRICAL STUDY ON DEVELOPMENT OF MEASUREMENT SCALE FOR HYPOTHESIZED CONCEPTUAL MODEL OF E-SERVICE QUALITY, CUSTOMER SATISFACTION AND PATRONAGE INTENTION

Jyoti Kumari

Research Scholar, Department of IMCE, Shri Ramswaroop Memorial University, Lucknow

Email: jsinha572@gmail.com

Contact: 7784956455

Dr. Rinki Verma

Assistant Professor, Department of IMCE, Shri Ram Swaroop Memorial University, Lucknow

Abstract:

In online retailing, measurement of service quality is very crucial. The purpose of this research paper is to throw light on key methodological aspects of available literature related development of scale for the measurement of service quality in online retailing.55 research papers sourced from the renowned databases have been gone through for finding out the gap within research methodology, administration of survey, dimensionality of online service quality constructs and also the assessment of reliability and validity. A deep observation has been done for highlighting the constructs of online service quality and also for revealing the shortcomings in sample size, problems in item generation and its purification and deficiency in doing reliability and validity. By going through the available literature, a measurement scale for online service quality has been developed. Data has been collected through self administered questionnaire from snowball sampling from the population of online users who purchase product at least once from online stores. Analysis of data has been using SPSS. Exploratory factor analysis (EFA) has been performed for checking the reliability and validity of the developed scale. The study concludes Website Design, Fulfillment, Personalization, Customer Service; Rating & Reviews are the crucial factors influencing customer satisfaction and patronage intention. Through this study, a hypothesized model of the proposed study has also been given. At the end of the study future scope and implications for mangers have been given.

Keywords: ***E-Service Quality, Customer Satisfaction, Patronage intention, Exploratory Factor Analysis (EFA)***

1. Introduction

For any company delivering quality service is the most crucial aspect for winning the faith of customers. It is one of the important strategies for marketers who want to differentiate their services by providing value and satisfaction to customers (Ozment and Morash 1994).In context

of web presence, the aspect of service quality has been identified strategically important for online marketers because now-a-days customers are highly involved with companies over internet. As per the growing importance of online retailing, customers are mainly concerned mainly with the process of how services are being delivered.

Initially E-Service quality was developed by Zeithaml, Parasuraman & Malhotra (2000) and they defined e-service quality as "the extent to which a website effectively and efficiently facilitates delivery of service to customers. So ,many frameworks have been created by the researchers about how e-service quality can be created (Wolfinbarger & Gilly, 2003; Parasuraman, Zeithaml & Malhotra, 2005; Collier & Bienstock, 2006).According to Wolfinbarger and Gilly (2003, p. 183),"E-Service quality involves the actions of customer starting to end activities such as search of information, navigation of website, order, customer service interactions, the delivery of service and at last the result of consumption means satisfaction or dissatisfaction with the ordered product."E-Service quality differs from service quality because it lacks interpersonal contact which somehow result in risk and privacy issues (Bitner, Brown,and Meuter 2000; Dabholkar 1996).Therefore the dimensions of service quality cannot be totally substituted by e-service quality dimensions. As there is no such scale of e-service quality which can be used in all the type of industry and also it may not be suited in cross cultural settings so there is a need of such scale for measuring e service quality. This study develops a scale of measurement for hypothesized conceptual model of e-service quality. This hypothesized model explains the quality dimensions and their impact on customer satisfaction and patronage intention.

2. Literature Review:

The nature of e-services is very complex therefore it is very challenging for the marketers to measure electronic service. Following are the studies based on e-service quality:

Table 1: Common E-Sq measures and their dimensions

Sl.No	Studies	Dimensions of E-service Quality	Findings and further scope of study
1	Parasuraman et al. (1988) The SERVQUAL	• Reliability, • Assurance, • Tangibility, • Empathy and • Responsiveness	Developed a multi item scale named SERVQUAL for measuring service quality in service organizations. It is very general in nature and cannot be applied in specific industries.

2	Doll and Torkzadeh (1988)	• Content • Accuracy • Format • Ease of use and • Timeliness.	Developed a scale having five dimensions which measures end user satisfaction with information systems but it cannot be applied in e-shopping behavior.
3	Joseph et al.(1999)	• Convenience/Accuracy • Feedback/complaint management • Efficiency • Queue management • Accessibility and • Customization	This study was conducted for measuring service quality factors related to electronic banking but measuring these factors in e-retailing needs to be checked. This study was conducted in Australia so it was suggested to do the same in Indian Context.
4	Zeithaml, Parasuraman, and Malhotra's (2000)	• Reliability • Responsiveness • Access • Flexibility • Ease of use • Efficiency • Assurance/trust • Security/privacy • Price knowledge • Site aesthetics • Customization/personalization	This scale was developed for measuring the effectiveness of website quality but not the experience got by customers through online as whole
5	Yoo and Donthu's (2001)	• Ease of use • Aesthetic design • Processing • speed and • Interactive responsiveness	In this study SITEQUAL was developed and like WEBQUAL, this scale does not cover all aspects of purchasing process so it was also not considered a comprehensive model for assessing service quality performance
6	Cox and Dale (2001)	• Website appearance • Communication • Accessibility • Credibility • Understanding and • Availability	This study mainly focuses on factors for using internet and it has been suggested in this study that future research can be done by knowing the determinants of e-commerce environment.

7	Zeithamal, 2002 seven dimensions that form two scales: a core e-SQ scale and a recovery scale	Core e-SQ consists of four dimensions – • Efficiency, Reliability, • Fulfillment • Privacy. And The recovery scale includes • Responsiveness • Compensation and • Contact.	This scale was tested in e-retailing context about product purchase over internet but missed the behavioral aspects, experiential aspects and demographic aspects.
8	Wolfinbarger and Gilly (2002, 2003)	• Website design • Reliability • Security and • Customer service	In this study random sampling was not used .Online panel was selected for collecting responses. This survey was also conducted on American consumers so future research can be done in less techno savvy consumers by using these four dimensions.
9	Yang Zhilin et al. (2004) six dimensions	• Reliability • Responsiveness • Competence • Ease of use • Security and • Product portfolio	This study was conducted on respondents belonged to American and only concerned with banking services so future researches have been suggested by authors that studies can be conducted by verifying these dimensions in other forms of online businesses and in some other geographical area.
10	Markus blut, Nivriti Chowdhry ,Vikas Mittal & Christian Brock(2015)	• website design, • fulfillment, • customer service and • security	They have suggested future researchers that a more comprehensive study can be done in cross cultural settings.

The above given literature highlights the lacking of a global set for the measurement of e-service quality dimensions. Various studies have been conducted in specific areas like banking, financial, shopping, travel,education so there is a requirement for the development of an appropriate scale which may be applied in online settings and also in cross cultural setting. The validity and reliability of the developed instruments is indentified and also there is a need to redefine or reorganize the constructs and dimensions used.

3. Research Methodology:

The Research Process for the assessment of e-service quality dimensions is presented in Figure 1.

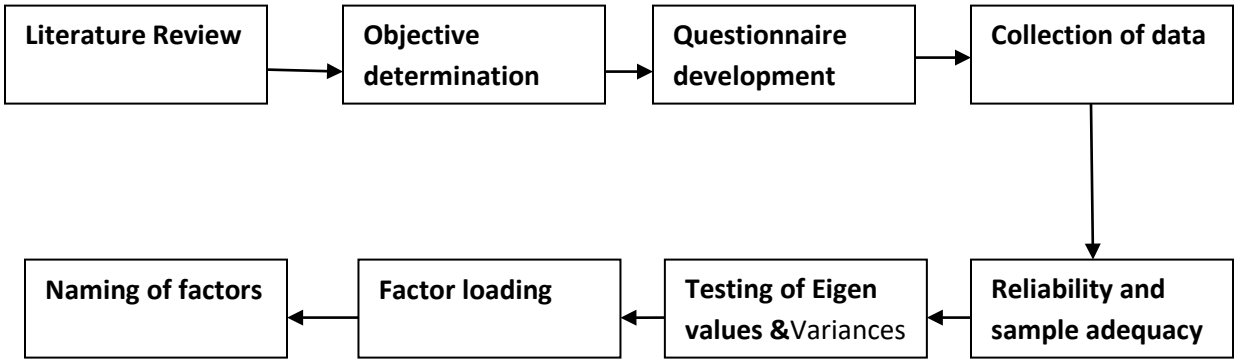


Figure 1: Research Process for Assessment of E-service Quality Dimensions

3.1. Objectives of the study:

- To identify the dimensions of e-service quality in E-retailing
- To propose a hypothesized model of e-service quality, customer satisfaction and patronage intention

3.2. Research Instrument: The data was collected by designing a structured questionnaire. The instrument consisted of three sections. The first section included the demographic details. Second section included consumers' internet usage pattern and also preference of product category, store and payment option while the third section included the degree of agreement or disagreement of opinion with reference to online store performance a 5 point likert scale of measurement.

3.3.Study Area: Uttar Pradesh was selected as population of the study because of the most populous state as per census 2011.This population was divided into four strata i.e .Eastern, Western, Central and Bundelkhand. From each stratum, responses were collected on random basis by distributing questionnaires. A total of 400 questionnaires was sent in which 286 questionnaires were filled properly then reviewing of mistakes or missing answers of each questions and finally 260 responses were complete and can be used for data analysis.

3.4. Analysis tool: For the identification of factors, an exploratory factor analysis method was used by the researcher. This method is used for exploring the unobserved variable from a set of complex interrelated observed variables. The goal was to obtain a better understanding of the correlated variables and underlying dimensions (Pitt and Jeantrout, 1994). For the application of

EFA, the data must be first measured through the Bartlett test of sphericity and Kaiser–Meyer–Olkin (KMO) test of sampling adequacy (Costello and Osborne, 2005).

4. Data Analysis:

After collection of data, SPSS has been used in order to analyze the data. The first step i.e. coding was done in order to prepare the data. The proposed dimensions contain several statements.

4.1. Descriptive Analysis

Table.1. Demographic details of the respondents (N=260)

		Frequency
Age	18-25	88
	26-35	130
	36-45	32
	46-55	6
	above 55	4
Gender	male	154
	female	106
Marital status	Married	109
	Single	147
	Separated	4
Education details	Up to 12th	7
	Graduate	80
	Postgraduate	153
	Others	20
Employment Status	Govt. job	28
	Private job	147
	Business	20
	Student	51
	Housewife	14

4.2 Testing of Reliability and sample adequacy

Reliability analysis (Chronbach's Alpha) result, if comes to be more than 0.6 is considered to be acceptable. In this research Croanbach's alpha test has been conducted for all the dimensions of e-service quality scale. The result shows that the value of croanbach's alpha of all the dimensions is more than 0.7 as shown in Table 2.

Table 2 Reliablity Croanbach's Test

Dimension	No of Items	Croanbach's alpha
Factor 1	14	0.927
Factor 2	5	0.949
Factor 3	5	0.795
Factor 4	7	0.881
Factor 5	4	0.801
Factor 6	17	0.959

4.3 Factor analysis

For more precise judgment of data in performing factor analysis, the KMO and Bartlett's test of sphericity was conducted. KMO with a value above 0.5 refers to the convenience of factor analysis for a dimension (George and Mallery, 2005). Since the KMO value was above 0.7, the variables were considered to be interrelated and having shared common factors.

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.886
Bartlett's Test of Sphericity	Approx. Chi-Square	14089.001
	df	1275
	Sig.	.000

The Bartlett's Test of Sphericity (Bartlett =1275, p=0.000) and the value of KMO is 0.886 which indicates a good applicability of the research data for EFA. As per, interpretive indicators for the Kaiser-Meyer-Olkin Measure of Sampling Adequacy are: in the 0.90 as excellent, in the 0.80's as meritorious, in the 0.70's as average. (Hair et al., 2009)

4.4 Testing of Eigen value and variances

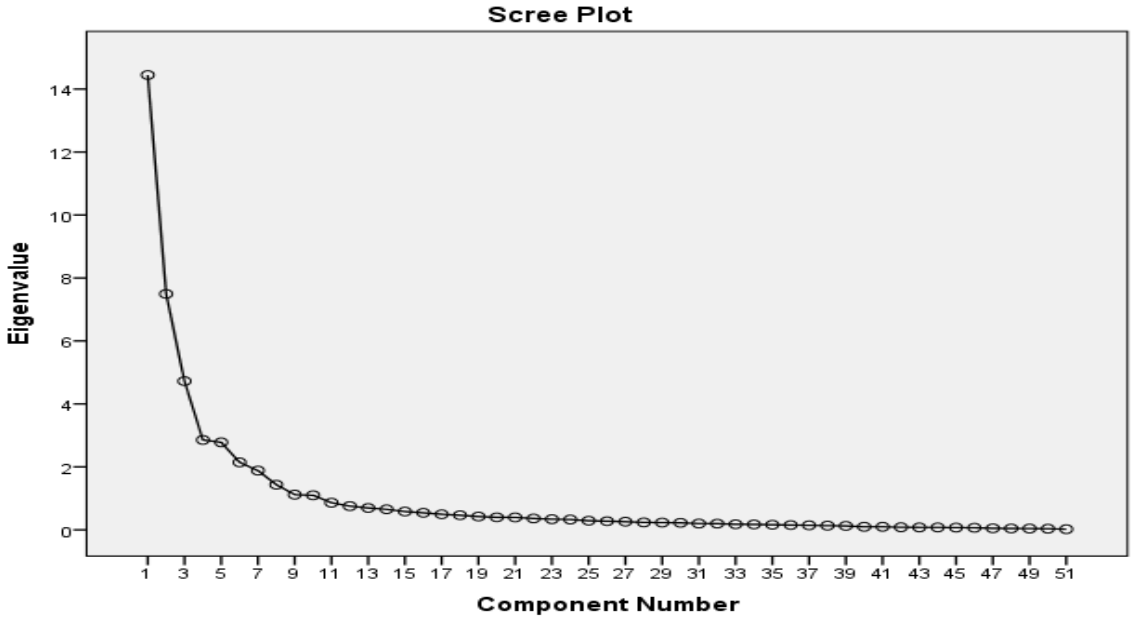
After checking the reliability, validity of the scale and testing appropriateness of data, factor analysis has been carried out for measuring e-service quality. For this purpose, Principle component analysis has been employed and then followed by the Varimax rotation. After conducting EFA by the way of Principle Component Analysis method, 7 eigen value are extracted and 71 percentage cumulative variance have been explained. The total of 71.22 % variance has been explained by the 7 obtained dimensions. The explained variances are as per the

recommended limits (Hair *et al*., 2015; Cooper and Schindler, 2003) and hence it is acceptable. As shown in table 4.

Table 4 Eigen value and variances

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	14.447	28.328	28.328	14.447	28.328	28.328	10.951	21.473	21.473
2	7.493	14.693	43.021	7.493	14.693	43.021	7.589	14.880	36.353
3	4.724	9.262	52.283	4.724	9.262	52.283	5.430	10.648	47.001
4	2.856	5.599	57.883	2.856	5.599	57.883	3.693	7.242	54.243
5	2.779	5.449	63.331	2.779	5.449	63.331	3.464	6.793	61.036
6	2.144	4.203	67.534	2.144	4.203	67.534	2.815	5.520	66.556
7	1.881	3.689	71.223	1.881	3.689	71.223	2.380	4.667	71.223

Extraction Method: Principal Component Analysis.



The inspection of the scree plot and eigen values produced a departure from linearity coinciding with 7 factor result. Therefore this screen test indicates that the data should be analyzed into 7 factors

4.5 Factor Loading

The selection of the variables into the component factors can be seen from the most major variable correlation value among the 7 components of existing factors. In the given below table, it can be seen that the column is the greatest value of correlation variable between seven components that form factor.

Table 5:Rotated Component Matrix

	Component						
	1	2	3	4	5	6	7
Q40	.894						
Q35	.877						
Q36	.876						
Q31	.871						
Q34	.857						
Q44	.853						
Q32	.776						
Q47	.759						
Q39	.757						
Q46	.745						
Q45	.732						
Q38	.696						
Q41	.694						
Q43	.692						
Q37	.631						
Q42	.612						
Q33	.534						
Q4		.894					
Q3		.892					
Q12		.885					
Q10		.865					
Q11		.864					
Q5		.845					
Q14		.844					
Q13		.832					
Q6		.750					
Q2		.746					
Q1		.484					
Q27			.941				
Q28			.932				
Q25			.920				
Q29			.908				
Q24			.880				
Q30			.587				
Q26			.559				
Q20				.894			
Q22				.889			

Q19				.824			
Q23				.739			
Q21				.650			
Q17					.855		
Q16					.849		
Q18					.832		
Q15					.822		
Q49						.813	
Q51						.800	
Q48						.782	
Q50						.604	
Q8							.749
Q9							.706
Q7							.675

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

5. Naming of factors:

Factor 1

First factor has been named as website design which means how well the website has been designed for giving easi in accessing the required products to customers.It involves the design and layout of the website,availability of merchandise and the purchase process. (Cox andDale, 2001; Wolfinbarger and Gilly, 2003; Parasuraman *et al*., 1988; Lee and Lin 2005 etc). **Hence, this factor can be named as —*Website Design***

Factor 2

The second dimension has been named as fulfillment because it shows that how competent online stores are able to fulfill their promises in terms of timely delivery of ordered product and order accuracy.(Sahadev and Purani,2008; Parasuraman *et al*., 2005 etc). **Therefore, this factor can be named as —*Fulfillment***

Factor 3

The third dimension has been renamed as personalization. It means paying attention on individual customer preferences and consumption pattern.These online stores ability to make their customer as special as they are. (Parasuraman *et al*., 1988; Yang and Jun 2002). **So, this factor can be named as —*Personalization*.**

Factor 4

The fourth factor explains the capabilities of online stores in handling and resolving customers grievances and issues. How promptly they are in replying the queries of customers.The level of services offered by these online stores are also explained by this dimension (Madu and Madu, 2002; Surjadjaja *et* al., 2003; Yoo and Donthu, 2001; Al-Tarawneh, 2012; Kim and Lee, 2002; Lee and Lin, 2005; Parasuraman *et al*.,2005). **Therefore , this factor can be named as —*Customer service***

Factor 5

The fifth dimension can be named as Rating and reviews means the feedback given on every product by other unknown user influences the selection decision of customers. Now a days customer see rating and reviews given on the products then consider that product for getting information, evaluating and finally selecting the product.(Lackermair, G., Kailer, D., & Kanmaz, K. ,2013) **So it can be named as--- *Rating and Reviews***

Factor 6

The sixth Dimension can be named as customer satisfaction.It is one of the most important considerations from marketers point of view. They just feel priviledged to make customer satisfied by the overall service quality. Anderson and Srinivasan (2003) Lin and Lekhawipat (2014) .**So it can be named as----- C*ustomer satisfaction.***

Factor 7

The last factor in this study can be named as Patronage intention. This state basically come at post purchase stage. It can also be the outcome of satisfaction and overall quality of service provided by these online stores. Badrinarayanan,V,2018. Thamizhvanan,A(2012)Thomson et al., 2005; Park et al., 2010 also agree with this factor. **Therefore this factor can be renamed as----- Patroange Intention.**

6. Result and conclusion:

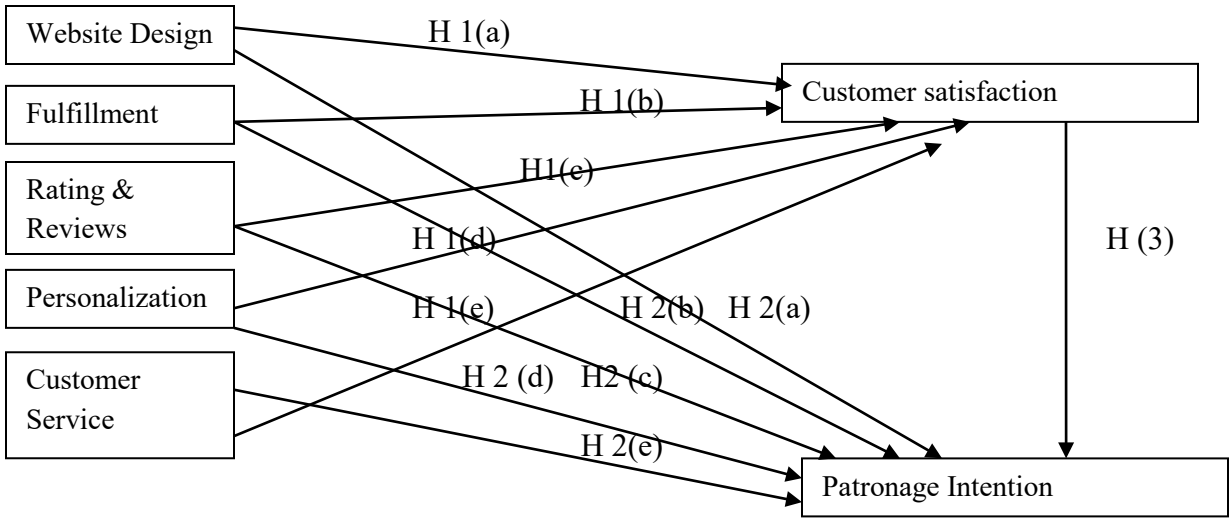
Table.6.The factors are given below in the table with the latent constructs and also with their respective codes:

Sl. No.	Dimensions	Items	Coding of statements
1	Website design	Website Aesthetics	WA,WA2,WA3,WA4,WA5
		Information Quality	IQ1
		System Availability	SA1
		Merchandise availability	MA1,MA2
		Purchase process	PP1,PP2
2	Fulfillment	Timeliness of delivery	TOD1,TOD2,TOD3
		Accuracy of order	OA1

3	Rating & Reviews	Availability of feed back	RR1,RR2,RR3
4	Personalization	Empathy	EM1,EM2,EM3,EM4
		Uniqueness	UQ1
5	Customer Service	Return handling policies	RH1
		compensation	COM1,COM2
		contact	CON 1,CON2,CON3
		level of service	LOS1
6	Customer Satisfaction		SATIS1,SATIS2,SATIS3,SATIS4
7	Patronage Intention	Entertainment value	EV1,EV2
		Emotional value	EMV1,EMV2,EM3
		Prior online experience	POE1
		Store Attachment	SA1,SA2,SA3,SA4,SA5,SA6,SA7
		Relative advantage	RA1,RA2,RA3,RA4

Hypothesized conceptual model based on EFA

E-Service Quality Dimensions



As per the study, four dimensions of online service have been identified and on this basis a model for measuring customer satisfaction and patronage intention has been proposed. Future researches can be conducted for knowing validity of the adopted scale and model fit can be tested out by using available tools and for a larger sample size by probability sampling techniques. This research helps online as well as offline service companies or retailers in delivering superior quality of service which helps them in knowing about the factors determining the future repeating behavior of customers.

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