Measuring Internet Service Quality Of E-Commerce Web Sites By Using E-S-Qual In Turkey

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Abstract

All firms in the service sector are required to have better service quality in order to accomplish a superior position in competition in the market economy. This need is also valid for firms which are involved in e-commerce. They also need to measure their own service quality to acqure better service quality.

The purpose of this study is to review kpe internet service quality of e-commerce web sites in Turkey. There are many methods in the literature which are used to measure internet service quality. E-S-Qual model is one of these methods and it will be used for this survey.

This research study shall be carried out by using a structured questionnaire based on E-S-Qual model. The survey shall also attempt to find a relationship between the effects of E-S-Qual dimensions on customer perceived value, e-customer satisfaction, and e-loyalty.

Keywords: Internet Service Quality, E-S-Qual, Customer Perceived Value, E-customer Satisfaction, E-loyalty.

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Review of Literature

Measuring service quality is very important for all service organizations. By the development of technology and using internet as the way of selling goods and services, the measuring of the service quality for these companies that are selling goods and services via internet has became crucially important. When online retailing trade was introduced for the first time, the presence of a web and lower prices were key factors of success. But after the increase of competition in online retailing, service has become essential for improving customer satisfaction and creating customer loyalty (Kim et, al.,2006:51).

Some companies like Amazon sell their products only through internet. And many other companies are preparing web sites for giving

information about their products and services, as an alternative to buy products from shops, for expanding services, and for saving time (e.g. e-banking) (Parasuraman, et al, 2005:1). For this reason service quality can be analysed in two means: traditional service quality and electronic service quality (e-service quality). Traditional service quality refers the quantity of all non-internet-based customer interactions and experiences with companies. The studies about traditional service quality has started with Parasuraman, et al (1988) with servqual scale (Parasuraman, et al.,2005:2, Parasuraman, et al., 1988).

According to Johnson (2005), over the past years, the business to customer online shopping market has grown rapidly and changed the business pattern. To obtain a superior advantage in competition, marketers have adopted electronic business in order to provide superior service quality that satisfies customers, creates customer value and ultimately develop customer loyalty (Lee, Petrick Crompton, 2007).

With a growing interest in service in online shopping, the number of research studies about understanding the online service quality has been increased. Most of these studies are summarised in Table 1.

Table 1: Online Attributes Investigated by Various Scholars

Article	Dependent variable(s)	Independent variable(s)
Alpar (2001)	Satisfaction with website	Ease of use, info content, entertaintment, interactivity
Chen and Wells (1999)	Attitude toward the site	Entertaintment, informativeness, organization
Childers et al (2001)	Online shopping attitudes	Navigation, convenience, substitutability of personal examination
Dabholkar (1996)	Intention to use	Speed of delivery, ease of use, reliability, enjoyment, control
Eroglu, Machleit, and DAvis (2001)	Approach/avoidance	High task relevant info, low task relevant info
Koufaris, Kambil, and LaBarbera (2001-2002)	Website success	Info and service quality, system use, playfullness, system design quality
Loiacono et al. (2002)	Intention to purchase, intention to revisit	Ease of understanding, intutitive operation, information quality, interactivity, trust, response time, visual appeal, innovativeness, flow,
Montoya-Weiss, Voss, and Grewall (2000)	Online channel use	Navigation structure, info content, graphic style
Muyllei Moenaert, and Despontin (1999)	Satisfaction	İnfo relevancy, info accuracy, info comprehensibility, info comprehensiness, ease of use, layout, entry guidance, website structure, hyperlink connotation, website speed, language customization, marketplace anchorage,
Rice (2002)	Intent to return	Design and technical evaluation, emotional experience
Schlosser and Kanfer (2001)	Attitudes toward site, intentions to buy	Person interactivity (customer service), machine interactivity (navigation and role playing), traditional marketing content
Yoo and Donthu	Overall site quality,	Ease of use, design, speed, security.

(2001)	attitude toward site, online purchase intention, site loyalty, site equity	
Novak et al. (2000)	Compelling online experience	Easy to conduct, easy ordering, easy payment, easy returns, easy to cancel, quick delivery, customer support, cutting edge, variety, quality info, reliability, security, low prices.
Srinivasan et al. (2002)	Customer loyalty	Customization, contact interactivity, care, community, cultivation, choice, character
Szymanski and Hise (2000)	Satisfaction	Convenience, merchandising, site design, financial security
Yang, Peterson, and Huang (2000)	Satisfaction/dissatisfaction	Product cost and availability, customer service, online info systems quality.
Zeithaml et al. (2002)	Quality	Efficiency, reliability, fulfillment, privacy, customer service (responsiveness, compensation, contact).
Francis and White (2002)	Intentions	Web store functionality, product attribute description, ownership conditions, delivered products, customer service, security.

Source: Wolfinbarger and Gilly, 2003:184.

And many different scales which are used for measuring the online service quality have been developed (Kim, et al, 2006:51). Those that are most frequently used among them are as shown below:

Webqual (Barnes and Vidgen, 2001): They develop ten sub-categories to evaluate the quality of the web sites. These are aesthetics, navigation, reliability, competence, responsiveness, access, credibility, security, communication, understanding the individual aspects. Then they aggregated these categories into five main categories as shown below: tangibles, reliability, responsiveness, assurance, and empathy.

Webqual (Loiacono and et al, 2002): According to Loiacono and et al, web sites are both information systems and also a marketing interaction means. And they use twelve distinct constructs in their scale to measure online service quality. These are: informational fit-to-task, tailored communications, trust, response time, ease of understanding, intuitive operations, visual appeal, innovativeness, emotional appeal, consistent image, on-line completeness, and relative advantage. They analysed the effects of these factors as for their impact on intention to purchase and intention to revisit the sites.

Sitequal (Yoo and Donthu, 2001): Ease of use, aesthetic design, processing speed, and securtiy are four dimensions to measure online service quality according to Yoo and Donthu. They try to measure overall site quality attitude toward site; online purchase intention; site loyalty; site equity by these factors.

eTailQ (Wolfinbarger ve Gilly 2003): Their scale includes four factors: website design, fulfillment/reliability, privacy/security and customer service.

E-S- Qual (Parasuraman et al., 2005): E-S-Qual scale is consists of 22 items on four dimensions. These dimensions are as follows:

- Efficiency: Using the site easily, the speed of accessing and using the site.
- Fulfillment: The degree of what the site promises about the service and how the service is fulfilled.
- System availability: The exact technical functioning of the online site.
- Privacy: The safety of the site in the mean of protecting customer information.

This model is also includes e-recovery service scale (E-RecS-Qual), a scale which is used for problem resolution. E-RecS-Qual has three dimensions. These are:

- Responsiveness: Getting the problems and product returns in hand effectively through the site.
- Compensation: The degree to which the site compensates customers for the problems they face with.
- Contact: The availability of the site through telephone or online representatives.

The Impact of E-Service Quality Dimensions On Perceived Value And Loyalty Intentions

Creating customer loyalty via internet is both difficult and expensive process. Service quality is very important for the satisfaction of customers (Cristobal ve Guinaliu, 2007). It can also be said that loyal customers buy more products than the customers who are not loyal. But it is not easy to gain loyal customers via internet (Gommans, Krishnan ve Scheffold, 2001). On the other hand in many studies the important effect of service quality on e-loyalty and perceived value is observed (Wolfinbarger ve Gilly, 2003; Yen ve Lu, 2008; Yoon ve Kim, 2000).

Method

Research strategy

E-s-qual scale which is developed by Parasuraman et al., 2005 is used in order to measure the service quality of e-commerce web sites and to measure the effect of service quality on perceived value and loyalty intentions. According to this scale there four dimensions of E-S-Qual scale and three dimensions of E-RecS-Qual scale. These are the independent dimensions of this research study. And two dependent dimensions are the perceived value and loyalty intentions. This survey consisting of E-s-Qual

scale is used. This Research survey is carried out in three parts. These are as follows:

1. Demographic Information: This section contains 5 questions. These questons were used to define the sample.
2. E-Service quality scale: For this section the E-S-Qual scale developed by Parasuraman et al (2005) is used. The scale contains 4 dimensions and 17 questions:
   a. Efficiency: 5 questions
   b. System availability: 4 questions
   c. Fulfillment: 5 questions
   d. Privacy: 3 questions
3. Quality of recovery provided by web sites scale: For this section the E-RecS-Qual scale developed by Parasuraman et al (2005) is used. The scale contains 3 dimensions and 11 questions:
   a. Responsiveness: 5 questions
   b. Compensation: 3 questions
   c. Contact: 3 questions
4. The scale for perceived value and loyalty intentions: Again for this section the scale developed by Parasuraman et al (2005) is used. According to these scales the dimensions are:
   a. Perceived value: 4 questions
   b. Loyalty intentions: 5 questions

Sample Selection

The sample is selected among the academicians and university students. The reason of this selection is isolate the tendencies of young and highly educated people to do shopping from internet (Dündar and Yörük, 2009). Because of the limited time, the sample selection is made by at convenience sampling method. The sample is selected from the students and academicians of Pamukkale University. 340 surveys were made face to face. 314 surveys were found to be viable.

Results

Table 2: Demographic Variables

	Frequency	%		Frequency	%		Frequency	%
Gender			**Age**			**Annual Income (TL*)**		
Female	174	55,4	Below 20	64	20,4	0-599	138	43,9
Male	140	44,6	21-29	219	69,7	600-1199	111	25,4
			30-39	20	6,4	1200-2999	28	89
Education			40-49	10	3,2	3000-4999	24	7,6
Associate degree	79	25,1	50-59	1	0,3	5000-9999	10	3,2
Graduate degree	206	65,6	59 and above	0	0	10000 and above	3	1,0
Postgraduate degree	13	4,1	**Occupation**					
Doctoral degree	16	5,1	Student	283	90,1			
			Academician	31	9,9			

*TL is shortly denoted to indicate the Turkish Lira currency

The percentages of female and male participants in Table 2 have become 55,4% and 44,6% respectively. The highest percentage for education is culminated among the graduate degree participants which were 65,6%. The distribution of the occupation of the sample is 90,1% student and 9,9% academician. As for the age distribution of the sample the highest percentage which is 69,7% is between 21-29 years of age and the remaining 20,4% is under 20 years of age. As for the distribution of income within the sample, the percentage of who gained montly income between 0-599 TL is 43,9% and the percentage who gained between 600-1199 TL per month is 25,4%.

Reliability Analyses

The reliability test was made for all the variables of the survey and Cronbach's Alpha value is found as 0,939. Because said value is calculated as above 0,70, we can assert that the reliability of the survey is very high.

Normality Test

To decide the methods for analysing the survey one sample Kolmogorov Smirnov test was applied. After the analyses it is found that all the given answers for the questions are not normally distributed (for all question p=0,000). For this reason non-parametric tests are used for the assumptive statistics which are use to test the hypothesses.

Testing The Hypothesis and Statistical Analyses

Table 3: The Effect of Service Quality Attributes on Loyalty Intentions

	Perceived Value						
		Not Agree	Have no idea	Agree	Total	Chi-Square	p
Efficiency	N	27	10	183	220	46,699	**0,000****
	Mean Rank	40,59	61,30	123,50			
System Availability	N	23	40	102	165	12,619	**0,002***
	Mean Rank	61,98	69,05	93,21			
Fulfillment	N	23	40	102	165	13,512	**0,001****
	Mean Rank	54,15	75,36	92,50			
Privacy	N	23	40	102	165	17,158	**0,000****
	Mean Rank	51,33	73,70	93,79			
Responsiveness	N	23	40	102	165	11,904	**0,003***
	Mean Rank	56,17	75,50	91,99			
Compensate	N	23	40	102	165	3,024	**0,220***
	Mean Rank	67,11	85,64	85,55			
Contact	N	23	40	102	165	15,446	**0,000****
	Mean Rank	68,89	62,26	94,31			

According Table 3 “H1: Service quality dimensions have effect on perceived value” hypothesis is accepted for all the variables except compensate. Because p value for all these dimensions is below 0,05. However for compensate said value is taken as above 0,05.

Table 4: The Effect of Service Quality Attributes on Loyalty Intentions

	Loyalty Intentions						
		Not Agree	Have no idea	Agree	Total	Chi-Square	p
Efficiency	N	12	30	123	165	27,037	0,000**
	Mean Rank	35,46	57,42	93,88			
System Availability	N	12	30	123	165	21,392	0,000**
	Mean Rank	46,46	57,02	92,90			
Fulfillment	N	12	30	123	165	27,208	0,000**
	Mean Rank	42,46	53,22	94,22			
Privacy	N	12	30	123	165	21,438	0,000**
	Mean Rank	41,71	59,80	92,69			
Responsiveness	N	12	30	123	165	19,959	0,000**
	Mean Rank	53,25	55,18	92,69			
Compensate	N	12	30	123	165	6,497	0,039*
	Mean	54,50	74,83	87,77			

	Rank						
Contact	N	12	30	123	165	11,128	0,004**
	Mean Rank	51,79	67,13	89,91			

According Table 4 “H2: Service quality dimensions have effect on loyalty intentions” hypothesis is accepted. Because p value for all the dimensions is below 0,05. So we can say that all service quality dimensions have effect on loyalty intentions.

Table 5: The effect of demographic variables on perceived value and loyalty intentions

Perceived Value			Loyalty Intention		
	Pearson Chi-Square			Pearson Chi-Square	
	Value	p		Value	p
Gender	1,484	0,476	Gender	1,937	0,380
Income	19,119	0,039	Income	19,257	0,083
Age	9,007	0,342	Age	5,295	0,507
Education	16,289	0,038	Education	13,247	0,104
Occupation	13,463	0,036	Occupation	3,775	0,437

According to Table 5 “H3: Demographic variables have effect on perceived value” is rejected for gender and age. In other words, no significant correlation is observed between gender and age on the perceived value.

Also “H4: Demographic variables significantly correlated with the perceived value” is rejected for all demographic variables. This indicates that demographic variables do not have any effect on loyalty intentions.

Factor Analyses

Table 6: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,849
Bartlett's Test of Sphericity	Approx. Chi-Square	2825,721
	Df	171
	Sig.	0,000

According to Table 6, the KMO value is 0,849. Therefore we can conclude that the size of the sample is sufficiently big for the factor analyses. Bacause according to Sharma (1996:116) KMO value of 0,80 is very good.

Table 7: Eigenvalues and 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	6,736	35,452	35,452	6,736	35,452	35,452	4,260	22,422	22,422
2	1,919	10,101	45,553	1,919	10,101	45,553	2,801	14,740	37,163
3	1,636	8,610	54,163	1,636	8,610	54,163	2,444	12,865	50,027
4	1,198	6,305	60,468	1,198	6,305	60,468	1,984	10,441	60,468
5	,999	5,259	65,727						
6	,915	4,816	70,543						
7	,776	4,086	74,629						
8	,674	3,548	78,178						
9	,629	3,309	81,486						
10	,610	3,210	84,696						
11	,536	2,822	87,519						
12	,481	2,533	90,052						
13	,408	2,145	92,197						
14	,378	1,989	94,186						
15	,319	1,677	95,863						
16	,278	1,464	97,327						
17	,218	1,145	98,472						
18	,194	1,021	99,493						
19	,096	,507	100,000						

Consequently, four factors are obtained after the factor analyses which is made to statements. These four factors can explain the 60,468 of the total variance as seen in Table 7.

Table 8: Information About the First Factor

First Factor: Fulfillment				
Reliabilty 0,880	Mean 3,7334	Median 3,8571	Standart deviation: 0,9585	Factor loading
1	It loads its pages fast.			0,736
2	This site is always available for business.			0,761
3	This site launches and runs right away.			0,844
4	This site does not crash.			0,792
5	Pages at this site do not freeze after I enter my order information.			0,793
6	It has in stock the items the company claims to have.			0,522
7	This site handles product returns well.			0,493

Acording tho the factor analyses the seven statements are defined as first factor which is defined as fulfillment as seen in Table 8.

Table 9: Information About Second Factor

Second Factor: Responsiveness and Compensation				
Reliabilty 0,772	Mean 3,3822	Median 3,400	Standart deviation: 0,8581	Factor loading
1	It does not share my personal information with other sites.			0,569
2	It takes care of problems promptly.			0,509
3	This site compensates me for problems it creates.			0,788
4	It compensates me when what I ordered doesn't arrive on time.			0,800
5	It picks up items I want to return from my home or business.			0,585

Acording tho the factor analyses the five statements are defined as second factor which is defined as responsiveness and compensation as seen in Table 9.

Table 10: Information About Third Factor

Third Factor: Contact				
Reliabilty 0,819	Mean 3,6947	Median 3,8333	Standart deviation: 1,049	Factor loading
1	This site provides a telephone number to reach the company.			0,770
2	This site has customer service representatives \available online.			0,842
3	It offers the ability to speak to a live person if there is a problem.			0,725

Acording tho the factor analyses the three statements are defined as third factor named as contact as seen in Table 10.

Table 11: Information About Fourth Factor

Fourth Factor: Reliability				
Reliabilty 0,881	Mean 3,9602	Median 4,00	Standart deviation: 2,508	Factor loading
1	It is truthful about its offerings.			0,936
2	This site protects information about my credit card.			0,921

According tho the factor analyses, the two statements are defined as fourth factor are defined as reliability as seen in Table 11.

Conclusion

The study is carried out in order to evaluate the effect of service quality on perceived value and loyalty intentions. The sample is selected among the academicians and students of Pamukkale University. A survey is administered after having developed from E-s-Qual scale of Parasuraman et al (2005). Variable that are collected are analysed with SPSS Sttistics 22 demo version. The effects of dependent variables (efficiency, system

availability, fulfillment, privacy, responsiveness, compensate, and contact) on perceived value and loyalty intentions are analysed according to the existence of a significant correlation between the independent and dependent variables.

The results indicated that the efficiency, system availability, fulfillment, privacy, responsiveness, and contact have effect on perceived value. Degree of their effect is same to each other except responsiveness. Only compensate dimension has no effect on perceived value. Efficiency, system availability, fulfillment, privacy, responsiveness have more effect on perceived value than responsiveness.

All the dimensions have effect on loyalty intentions. Efficiency, system availability, fulfillment, privacy, and responsiveness have the same effect to each other and their correlation is found to be more significant that that of the compensate and contact.

The effect of demographic variables on loyalty intentions and perceived value is also analysed. The results indicated that all the demographic variables have no effect on loyalty intentions. On the other hand income, occupation, and education appear to be significantly correlated with the perceived value. However gender and age do not significantly correlate with the perceived value.

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