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# Modeling Customer Satisfaction in Combined Services Case Study: Payam Noor University

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## ABSTRACT

With the increasing expansion of Information Technology, tremendous evolution in the delivery of services is formed. This issue has been changed the nature, structure and method of the delivery of services and interaction of traditional and electronic services increase the level of customer satisfaction. Benefits of these two types of services are possible not be coordinating. Therefore, combination of electronic service quality and service quality should be considered in evaluating customer satisfaction. The present sturdy offers a model that these two kinds provide services with each other. Our sample is student of Payam Noor University. 10 hypotheses were evaluated using a questionnaire based on regression analysis and five of them have confirmed. The Result shows that the traditional service quality has a significant role and higher priority on student satisfaction.

Finally, a linear model is presented that determine relation between traditional service quality and electronic dimensions service quality and level of satisfaction.

Keywords: service quality, electronic service quality, level of Satisfaction.

### **INTRODUCTION**

There is no doubt that customers' influence is immense in organization as one of the environmental factors. Customer satisfaction is considered one of significant and main tasks of management professionals and customers are high on list of priorities of the organizations managements.

Nowadays, the Concept of customer is completely different. This means that customers are not only buyers of goods or services and they are an active and highly influential member at commercial enterprises. So having new strategy and considering important points in order to identify customer needs increase the level of efficiency and effectiveness of an organization to achieve the customer orientation goals and in long term make loyal customers.

Service is a kind of economic activity with intended outcome of modify that create values and provide benefits for customers in specific places and time [1].

In fact, nowadays, customer satisfaction and service quality are considered as the most critical issues in measure of organizations performance [2].

So the idea of services researches gradually changed into evaluation of customers' expectations and their assessment about service quality. Organizations were considered both customers' expectations and measurements of service quality as a strategic issue [3].

In today's competitive market, Institution will be successful in attracting people that provide best and most services for their customers. Organizations can consider the role customers in development of business activities as a foundation.

One of the main issues is that organizations should consider importance of each factor which involve in customers' satisfaction from their point of view. Therefore, huge budget of organizations spent in accurate and appropriate ways.

Research into service quality has been popular for more than two decades and there are various types of researches about that.

#### **1.2 Service quality**

## 1. MATERIALS AND METHODS

Service is an intangible activity that one side offers to other sides. Several authors [4,5,6,7] propose to discard quality scales that are based on specific service encounter characteristics and instead suggest using general categorizations of services as a framework for developing new quality models for internet-based services. Following

\*Corresponding Author: Rasoul Amirzadeh, Department of Management, Islamic Azad University, Neyshabur Branch, Neyshabur, Iran. Telephone: +989155517644 E-mail: am.rasoul@gmail.com this proposition, we draw on existing approaches, which employ global definitions of service quality. Some of the propositions put forward in these studies are outlined in the following.

Kano's (1984) method for measuring customer-defined quality and suggests three fundamental quality demands relevant to quality evaluation: basic demands, performance demands and enthusiasm demands [8]. These demands are fulfilled by three types of performance elements. Basic performances are regarded as obligatory (mustbe services) and are therefore, not explicitly voiced. Spoken attributes are typically voiced, while surprise attributes are again rarely voiced (as they are unexpected) and can therefore, achieve high levels of satisfaction in sense of excitement. The service model by Berry (1987) and the penalty-reward-approach by Brandt (1988) follow a similar logic but suggest two generic categories of service elements:

Minimum elements or routine services include all factors and processes that entail demerits if the provider fails to fulfill customer requirements. Value-enhancing services or non-routine-services encompass all elements that exceed customer expectations and are rewarded with bonus points.

One of the most prevalent and comprehensive accepted perspectives on service quality include the SERVQUAL model that propose by Parasuraman, Zeithaml and Berry (1988) to understand service quality.

This conceptual model indicates that customers' perception of service quality was influenced by a series of (expectations-performance) gaps that hinder the delivery of high service quality [9].

Parasuraman, Berry and Zeithaml (1985) initiate a research stream that many consider to be the most comprehensive investigation into service quality. Briefly, Parasuraman et al.'s (1985) propose service quality to be a function of pre-purchase customer expectations, perceived process quality, and perceived output quality. They define service quality as the gap between customers' expectations of service and their perceptions of the service experience, ultimately deriving the now-standard SERVQUAL multiple-item survey instrument [10]. This instrument has been widely utilized to assess customer perceptions of service quality for a variety of services.

The SERVQUAL instrument indicates that five dimensions of service quality emerged across a variety of services. These dimensions include tangibles, reliability, responsiveness, assurance, and empathy [10].

Subsequent research conduct in a diversity of settings suggests that the five SERVQUAL dimensions may not be universal across all services, and that it is probably unnecessary to supervise the expectation items every time SERVQUAL is administered [10, 11, 12].

However, many established models of service quality have inclined to focus on expectations and marginalize the issue of importance [9].

#### **1.3 E-services quality**

In the past decade, Electronic services quality has been one of the significant issues that scholars have done various researches about that. These investigations cover different aspects of E-SQ, a range from determining edimension to measurement of that.

Method to evaluate the electronic services quality is different at the international level in varied cultures and environments.

The main question is that whether the findings in traditional service quality are extensible in term of electronic services quality. Various researches showed that there are remarkable differences between online and offline conditions.

Despite vital importance of the internet development, studies about costumer evaluation of self-service technologies such as web portals has been limited [13]. As a result, increasing attention is being paid to the differences between the assessments of service offerings on the internet as compared to the physical marketplace [14].

Varied scholars describe portals as innovative self-service technologies that offer a particular point of access to services, an almost unlimited content as well as applications and excellent retrieval facilities that enable "one-stop shopping" [14].

Before discussing how e-service quality might be measured it is important to define what is meant by e-service. At its simplest e-service can be defined as the electronic provision of a service to customers [15].

Some definition of service quality:

The e-service encounter is the initial landing on the home page until the requested service has been completed or the final product has been delivered and is fit for use [15].

Electronic service quality has defined as "extend to which a web site facilities efficient and effective shopping, purchasing, and delivery of products and services. In this definition E-SQ consider as a role of service in cyberspace. [16].

The concept of service quality in e-commerce can be define as a customer's overall evaluation and judgment of the excellence and quality of e-service offering in virtual marketplace . In contrast the their evaluation of traditional

service, customer are less likely to evaluate each sub-process in detail during a single visit to a Web site; rather they are likely to perceive the service as an overall process and outcome [15].

There are various attempts to determine dimension of service quality in electronic bases. Dabholkar (1996), Szymanski and Hise (2000), Gefen (2002), Abels et al. (1999), Yoo and Donthu (2001) have introduced a variety of different dimension of E-SQ [17,18,19,20]. Some of those elements showed in table 1.

Table1- Literature Review

Dimension	scholar
Use, content, structure, linkage, search, appearance	Abels, and White (1999)
Ease of use, appearance, linkage, structure and layout, Content (incubative). Reliability, efficiency, support, communication, security, and incentives(active)	Santos (2003)
Ease of use, aesthetic design, processing speed, security	Yoo and Donthu (2001)
Tangibles, a combined dimension of responsiveness, reliability and assurance; empathy(from SERQUAL model)	Gefen (2002)
Expectation of speed of delivery, ease of use, reliability, enjoyment and control	Dabholkar (1996)

Table 2 demonstrates all e-indicators which extract from the e-service quality dimensions that used in our study [21].

Table 2-Electronic Service Quality Dimension

Dimension	Definition
Reliability	Correct technical functioning of the site and the accuracy of services.
Responsiveness	Quick response and the ability to get help if there is a problem or question.
Access	Ability to get on the site quickly and to reach the company when needed.
Flexibility	Choice of ways to pay, ship, buys, search for, and return items.
Ease of navigation	Site contains functions that help customers find what they need without difficulty.
Efficiency	Site is simple to use, structured properly, and requires a minimum of information to be input by the customer.
Assurance/trust	Confidence the customer feels in dealing with the site.
Security/privacy	Degree to which the customer believes the site is safe from intrusion and personal information is protected.
Price knowledge	Extent to which the customer can determine shipping price, total price, and comparative prices during the shopping process.
Site aesthetics	Appearance of the site.
Personalization	How much and how easily the site can be tailored to individual customers' preferences, histories, and ways of shopping.

When consider this recent part of work, several similar and common dimensions emerge that seem to be particularly relevant for online environment. Researchers perceive security/privacy to be a significant service quality dimension. Ease of use /navigation in another dimension that appears in many of studies. Another common dimension is appearance/ site aesthetics [15].

However, many established models of service quality have inclined to focus dimensions of e-service quality and marginalize the issue of importance which this is main question of this research [9].

Comparison of dimensions in traditional and electronic services quality indicates some similarities and differences. Reliability and responsiveness dimensions are common dimensions. Empathy is not required in internet unless make transactions more effective [21].

#### **1.4 Satisfaction**

The most frequently maintained outcome of the marketing process is satisfied customer, with various and different definitions. Customer satisfaction is an important issue for marketing manager, especially in services

organization and has numerous advantages [1] and various aspects of satisfaction have been investigated, having high level of customer satisfaction lead to more loyalty [15]. Customer satisfaction is one of the internal issues of organizations. Customers' satisfaction is a condition that customers feel the product features are based on their expectations

Customer satisfaction is often used as a strong and significant point for loyalty and other outcomes [1].

The need to improve responsiveness and reduce overheads is focusing management consideration on the major internal business functions. Previous research indicated that satisfaction does not always have disconfirmation antecedents.

Customer's satisfaction is a psychological-emotional process that is made in comparison of products information with the needs and desires of customers [22].

Satisfaction is defined as an emotional post-consumption response that may occur as the result of comparing expected and actual performance (disconfirmation), or it can be an outcome that occurs without comparing expectations [23].

Firms usually measure customer satisfaction on an attribute-by-attribute basis in order to identify and improve potential weaknesses, and to fortify their strengths in service delivery.

Examines methods of identifying customer satisfaction, measuring and using the result to improve the quality of products and services is vital for firms and organization. Contends that complete customer satisfaction is only possible when full information about customer requirements is in the hands.

The literature assumes that satisfaction and loyalty are related, but does not always present empirical evidence for divergence, however Bennett and Thiele investigated that satisfaction and loyalty in a business services setting are different constructs, and that, while the relationship is positive, high levels of satisfaction do not always yield high levels of loyalty [1].

This should be noted, satisfaction should not be the sole purpose and goal for marketing practitioner. While satisfaction itself is an emotional construct, its antecedents or drivers can be either emotional or cognitive, depending on the situation [24].

#### 2. Methodology

In present study, all dimensions of SERQUAL and five dimensions of Parasuraman's model in E-SQ are tested.

#### **1.2 Research hypotheses**

The main hypotheses of research are as follows:

H1: There is a meaningful relationship between Access dimension in E-SQ and customer satisfaction.

H2: There is a meaningful relationship between Reliability dimension in E-SQ and customer satisfaction.

H3: There is a meaningful relationship between Security/privacy dimension in E-SQ and customer satisfaction.

H4: There is a meaningful relationship between Site Aesthetics dimension in E-SQ and customer satisfaction.

H5: There is a meaningful relationship between Flexibility dimension in E-SQ and customer satisfaction.

H6: There is a meaningful relationship between Tangibles dimension in traditional SQ and customer satisfaction.

H7: There is a meaningful relationship between Responsiveness dimension in traditional SQ and customer satisfaction.

H8: There is a meaningful relationship between Reliability dimension in traditional SQ and customer satisfaction. H9: There is a meaningful relationship between Empathy dimension in traditional SQ and customer satisfaction.

H10: There is a meaningful relationship between Assurance dimension in traditional SQ and customer satisfaction.

#### **3. RESULTS**

This section presents statistical analyses based upon data collected from the survey. According to objectives and questions of research, this article is descriptive. The analysis method is based on regression analysis.

This article is applicable with a view to objective. The article objective is to scan the influence of Service Quality and Electronic Service Quality factors on the Level of satisfaction in University. This sample was selected because educational system, especially universities, is one of the very competitive sectors in Iran. Universities have a variety of plan to attract students. Payam Noor University is the largest network of state university in the Iran. Our sample was Payam Noor University of Mashhad with more than 17000 students.

Based on these identified factors, we use a questionnaire for collecting students' opinions of university with a total 11 questions. The questionnaire was designed in two parts. In first part, E-SQ and SQ elements was measured by 10 questions using a five-point Likert Scaling method (from strongly agree to strongly disagree). In part two,

satisfaction was measured by one question with (1-5) spectrum (from very satisfied to very unsatisfied). Our population was containing all students of Payam Noor University.

To specify the poll sample size we used Cochran's formula (1977) and consequently our sample was equal to 320 (approximately). Out of 380 questionnaires sent, a total of 338 were returned. Two trained investigators distributed questionnaires. Cronbach's alpha coefficient calculated for total sample size is 0.782 indicating high reliability of the research questionnaire. The data concerning respondents is shown in Table 3.

Factor Fraguency	Dorcontago	
ractor rrequency	Fercentage	
Gender		
Male	136	39
Female	202	61
Age		
20 to 25	171	51
25 to 30	144	43
Over 30	23	7
Degree		
Bachelor	246	73
Master	85	25
PhD	7	2

Table 5-Data about respondents	Table	3-Data	about	respondents
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Eviews software use to analyze our data. Eviews can be used for general statistical analysis and econometric analyses, such as cross-section and panel data analysis and time series estimation and forecasting. There were 10 independent variables that were Responsiveness, Empathy, Reliability, Tangibles, Assurance related to SERQUAL model and Site Aesthetics, Security/privacy, Access, Reliability, Flexibility related to Electronic service quality. Dependent variable was students' satisfaction.

The main aim of paper was to determine a statistical statement about the relationship between variables.

For this study we identified the effect of Service Quality and electronic Service Quality on students' satisfaction in that we use the following regression model:

$$V=\alpha_0 + \alpha_1 S + \alpha_2 T + \alpha_3 U + \alpha_4 W + \alpha_5 Z + \alpha_6 L + \alpha_7 M + \alpha_8 N + \alpha_9 P + \alpha_{10} Q$$

Table 4 indicates each element which defined in software.

Table4-Definition of software dimensions

50	S	Т	U	W	Ζ
sų	Responsiveness	Empathy	Reliability	Tangibles	Assurance
E-SQ	L	М	N	Р	Q
	Site aesthetics	Security/privacy	Access	Reliability	Flexibility

Considering more variables in the model might cause the test of hypotheses become not testable and if some variables delete in the model the risk of inadequate or pseudo of model is increased.

Data type is qualitative and scale of them is ordinal and Non-parametric.

Results of software can be seen in table5.

Outcomes of software divided into following three main parts:

1. Dependent variable, the type of estimation, date and time estimation, the range and number of sample observations.

2. Coefficients results

3. Calculated statistical quantities

Some elements of software describe here:

Coefficient: It estimated coefficients of independent variables with intercept. C is the intercept in the model that shows the influence of variables.

Prob: Least likely of confirmation of the hypothesis H0

#### Table5. Computer output

Dependent Variable: V Method: Least Squares Date: 01/27/12 Time: 10:37 Sample: 1 300 Included observations: 298 Excluded observations: 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	14.275601	0.9815107	14.544518	0.0000
L	0.0645233	0.1418247	0.4549516	0.6494
М	0.4831521	0.1571478	3.0745074	0.0023
Ν	0.0738114	0.1284944	0.5744334	0.5661
Р	0.2790402	0.1075809	2.5937690	0.0099
Q	0.0296454	0.1052222	0.2817408	0.7783
S	-0.1375697	0.0960245	-1.4326523	0.0530
Т	-0.1114413	0.1146726	-0.9718215	0.3319
U	0.3331462	0.1661329	-2.0052991	0.0458
W	-0.2256097	0.1242805	-1.8153257	0.0705
Z	-0.0458659	0.1296379	-0.3538004	0.7237
R-squared	0.0726189	Mean dependent	var	14.48993
Adjusted R-squared	0.0403060	S.D. dependent var		2.154370
S.E. of regression	2.1105069	Akaike info criterion		4.367947
Sum squared resid	1278.3667	Schwarz criterion		4.504417
Log likelihood	-639.82418	F-statistic		2.247365
Durbin-Watson stat	1.9148304	Prob(F-statistic)		0.015435

#### 1.3 Test of hypotheses

Results of hypotheses test showed in table 6.

Table6- Results of hypotheses

Variable	Coefficient	Std.Error	t-statistic	Prob.	<b>Test Confirmation</b>
Site aesthetics	0.0645233	0.1418247	0.4549516	0.6494	Rejected
Security/privacy	0.4831521	0.1571478	3.0745074	0.0023	Acceptance
Access	0.0738114	0.1284944	0.5744334	0.5661	Rejected
Reliability	0.2790402	0.1075809	2.5937690	0.0099	Acceptance
Flexibility	0.0296454	0.1052222	0.2817408	0.7783	Rejected
Responsiveness	-0.1375697	0.0960245	-1.4326523	0.0530	Acceptance
Empathy	-0.1114413	0.1146726	-0.9718215	0.3319	Rejected
Reliability	-0.3331462	0.1661329	-2.0052991	0.0458	Acceptance
Tangibles	-0.2256097	0.1242805	-1.8153257	0.0705	Acceptance
Assurance	-0.0458659	0.1296379	-0.3538004	0.7237	Rejected

**H1**: Hypothesis testing results show that acceptance probability of H1 hypothesis is %64 and t-statistic is 0.4549516. Therefore, the research hypothesis is rejected with certainty level of %99. It can be concluded that Site aesthetics has no significant influence on student's satisfaction in university.

**H2**: Hypothesis testing results show that acceptance probability of H2 hypothesis is %0.2 and t-statistic is 3.0745074. Therefore, the research hypothesis is accepted with certainty level of %90. It can be concluded that Security/privacy has a great influence on student's satisfaction in university.

Regarding to Security/privacy variable coefficient, if it increases by 1 unit, the student's satisfaction will increase by 0.48.

As it can be seen, there is a direct relation between Security/privacy and student's satisfaction. As such, whatsoever, Security/privacy confidence is increased; the student's satisfaction is rising and vice versa.

**H3:** Hypothesis testing results show that acceptance probability of H3 hypothesis is %56 and t-statistic is 0.5744334. Therefore, the research hypothesis is rejected with certainty level of %99. It can be concluded that Access has no significant influence on student's satisfaction in university.

**H4:** Hypothesis testing results show that acceptance probability of H4 hypothesis is %0.9 and t-statistic is 2.5937690. Therefore, the research hypothesis is accepted with certainty level of %90. It can be concluded that Reliability has an influence on student's satisfaction in university.

Regarding to Reliability variable coefficient, if Reliability increases by 1 unit, the student's satisfaction will increase by 0.27.

As it can be seen, there is a direct relation between Reliability and student's satisfaction. As such, whatsoever, Reliability confidence is increased; the student's satisfaction is rising and vice versa.

**H5:** Hypothesis testing results show that acceptance probability of H5 hypothesis is %77 and t-statistic is 0.2817408. Therefore, the research hypothesis is rejected with certainty level of %99. It can be concluded that Flexibility has no significant influence on student's satisfaction in university.

**H6:** Hypothesis testing results show that acceptance probability of H6 hypothesis is %5 and t-statistic is -1.4326523. Therefore, the research hypothesis is accepted with certainty level of %90. It can be concluded that Responsiveness has an influence on student's satisfaction in university.

Regarding to Responsiveness variable coefficient, if Responsiveness increases by 1 unit, the student's satisfaction will decrease by 0.13.

As it can be seen, there is a reverse relation between Responsiveness and student's satisfaction. As such, whatsoever, Responsiveness is increased; the student's satisfaction is falling and if the Responsiveness are decreased, the student's satisfaction is increased.

**H7:** Hypothesis testing results show that acceptance probability of H7 hypothesis is %33 and t-statistic is - 0.9718215. Therefore, the research hypothesis is rejected with certainty level of %99. It can be concluded that Empathy has no significant influence on student's satisfaction in university.

**H8:** Hypothesis testing results show that acceptance probability of H8 hypothesis is %4 and t-statistic is -2.0052991. Therefore, the research hypothesis is accepted with certainty level of %90. It can be concluded that Reliability has an influence on student's satisfaction in university.

Regarding to Reliability variable coefficient, if Reliability increases by 1 unit, the student's satisfaction will decrease by 0.33.

As it can be seen, there is a reverse relation between Reliability and student's satisfaction. As such, whatsoever, Reliability confidence is increased; the student's satisfaction is falling and vice versa.

**H9**: Hypothesis testing results show that acceptance probability of H9 hypothesis is %7 and t-statistic is -1.8153257. Therefore, the research hypothesis is accepted with certainty level of %90. It can be concluded that Tangibles have an influence on student's satisfaction in university.

Regarding to Tangibles variable coefficient, if Tangibles increases by 1 unit, the student's satisfaction will decrease by 0.22.

As it can be seen, there is a reverse relation between Tangibles and student's satisfaction. As such, whatsoever, Tangibles confidence is increased; the student's satisfaction is falling and vice versa.

**H10:** Hypothesis testing results show that acceptance probability of H10 hypothesis is %72 and t-statistic is -0.3538004. Therefore, the research hypothesis is rejected with certainty level of %99. It can be concluded that Assurance has no significant influence on student's satisfaction in university.

According to the confident obtained, our final model is:

 $\begin{aligned} \text{Satisfaction} &= 14.275 + 0.483 \text{ Security/privacy} + 0.279 \text{ Reliability} - 0.333 \text{Reliability} - 0.225 \text{ Tangibles} - 0.137 \\ \text{Responsiveness} \end{aligned}$ 

Adjusted R-squared and R-squared numbers are very close and have a slight difference. This indicates the reliability of estimated model.

#### 4. DISCUSSIONS

It was stated that there are diverse models which consider various aspects of service quality and also electronic service quality. In this research, two famous models were applied for SQ and E-SQ to assess the impact of each element on students' satisfaction. SERVQUAL model for traditional service quality and another model presented by Parasuraman et al. 10 hypotheses were tested in this study that five hypotheses were confirmed and five hypotheses were rejected.

The result demonstrates that the traditional service quality has a significant role and higher priority on student satisfaction. There are three dimensions of SQ in our model. (Reliability, Tangibles, Responsiveness). Interestingly, all of those have a reverse relation with students' satisfaction.

Two E-SQ dimensions confirmed and used in model of satisfaction. (Security/privacy, Reliability) and both of them have direct relation with satisfaction.

Security/privacy dimension with rate of 0.483 has the greatest impact on students' satisfaction. It demonstrates that security issues have considered as a significant fact for customers.

Due to the complex nature of service quality, it is probable that the result of present study be different in other organizations and firms.

One of the limitation of last research is that views of respondents have been measured based several websites and portals. A significant point of the present study is that participants considered only one portal (www.pnum.ac.ir) to answer the questionnaire.

The major limitation of study is that student answered questions with predetermined judgments. It means students' satisfaction may be decrease by some faults in portal or deplorable and unpleasant behavior of staffs.

So it suggested for future research, data gather in a longer period of time and also using fuzzy logic to consider judgment of participants. Another suggestion is that researchers consider all elements in E-SQ or use other model for assessment of SQ and E-SQ.

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