

Electronic Service Quality Evaluation Methods for Online-Banking System

Dr. Shapoor Zarei

Manager, Inventors Arab Educational Consultancy, United Arab, Emirates

E-mail : info@shzarei.com

Abstract

E-commerce has increased its significance during the last decades and its importance is still continuing to increase. Branches, which have had traditional means of conducting business and interaction between parties have also been influenced by the Internet and gone through many changes. One of these traditional branches is the banking industry, which during the middle of the 1990's started offering banking services over the Internet. The changes lead to that the physical interaction in the bank office environment between the banks and their customers has diminished and been replaced by customers conducting their errands from their homes and businesses. The loss of interaction between the banks and their customers makes the methods of service quality evaluation of Internet-based system different than traditional service quality evaluation methods. This paper reviews the recently developed methods for electronic service quality evaluation: E-SERVQUAL and WEBQUAL; and compares their potential for quality evaluation in online banking systems.

Keywords

Service Quality, Electronic Service Quality, E-banking

I. Introduction

A lot of research has been conducted about key service quality dimensions and customer requirements in the traditional banking environment, where personal interaction between the customers and the bank employees takes place (Cowling & Newman, 1995, Bahia & Nantel, 2000). However, the service quality attributes and customer requirements involved in Internet banking, where the interaction between the customers and the bank is impersonal, have not been studied enough, which can be implied by the fact that there has not been available a precise measurement instrument for online services quality. Thus, it is really important for Internet banking providers to learn more about their customers' perceptions of the online banking services quality and the attributes, the customers find essential for a quality financial service delivery on the Internet. Customers have some expectations and criteria when they judge whether the provided E-banking service is satisfactory or not. This is what banks, which provide E-banking services should try to find out, so that they can improve their online services and gain competitive advantage in the banking industry. In this paper, at first we review the major methods that have been proposed for service quality evaluation in online systems, and later we concentrate more on the potential of these methods for online banking system.

II. Electronic Service Quality (E-SQ) of Websites

A corporate website is a useful tool for addressing customers on the Internet and for shaping customers' online shopping experience (Rice, 1997; Leong et al., 1998; Pitt et al., 1999b; Yang et al., 2003; Parasuraman and Zinkhan, 2002). Constantinides (2004) examines how firms can influence the

outcome of virtual interaction and buying process by focusing their marketing efforts on shaping customers' Web experience. Superior customer Web experience has the potential to influence customers' perceptions, and attitudes and drive additional traffic to sales outlets. Constantinides (2004) suggests the key to delivering a superior Web experience lies in determining the relevant set of Web experience components and understanding their role as inputs in the online customer's decision-making process. This is the first step towards developing and delivering an attractive online presence, which is likely to have the maximum impact on Web users (Ibid.). The quality of the website plays a major role in shaping the consumer's Web experience (Zeithaml et al., 2002; Zeithaml, 2002). Moreover, it can determine a website visitor's decision to re-visit the website and eventually buy from the company (Loiacono et al., 2002; Khalifa et al., 2002; Khalifa and Liu, 2002, 2003; Piccoli et al., 2004). Website quality, thus, is a prerequisite for effective Internet marketing. In other words, marketing performance of the website relies on its ability to deliver quality customer service.

A. The Notion of Website E-Services and Website E-SQ

The literature presents many different understandings of commonly used terms, such as website service quality or online service quality. This is often a problem due to the lack of formal definitions (Zeithaml et al., 2002). Zeithaml, Parasuraman and Malhorta (Zeithaml et al., 2002) introduced the concept electronic service quality (e-SQ) and examined the service quality of websites and their role in service quality delivery to customers. They also provided the first formal definition of e-SQ in their working paper "E-Service Quality: Definition, Dimensions and Conceptual Model". They define website quality or e-SQ as "the extent to which a website facilitates efficient and effective shopping, purchasing and delivery of products and services" (Zeithaml et al. 2002, p. 363; Zeithaml, 2002, p. 135). This definition involves a complete customer's shopping experience and incorporates pre-website, on-website and post-website service aspects (Ibid.).

B. Factors Impacting on Website E-SQ

Website e-SQ is a novel area of research and the first conceptual study was published in 2002 (see Zeithaml et al., 2002; Parasuraman, 2004). There is, consequently, no agreement in the present research about what factors impact on e-SQ or what e-services strengthen company websites. There are, however, some factors regarded as vital for website e-SQ. Essentially, these can be defined as the website's ability to address consumer needs in the online environment and its ability to add value to customer operations.

1. Conformance to Consumer Needs

For the perception of quality, "conformance of requirements" is necessary, as defined by Crosby (1979, ref. in Parasuraman et

al., 1985). There are consumer needs that should be addressed online to create a positive overall customer Web experience and contribute to customer satisfaction (Loiacono et al., 2002; Piccoli et al., 2004). The Web can be used for addressing consumers' individual needs and wants, thereby creating relationship bonds between a company and its customers (Zineldin, 2000). The commercial success of a firm's website, therefore, depends on a knowledge of the needs of target customers.

Recent studies suggest that customer perception of overall website quality is strongly influenced by the website's ability to meet these needs (Ibid.). Piccoli et al. (2004) propose the taxonomy of customer needs amenable to consumers' positive Web experience or, as the authors refer to it, online fulfilment. Loiacono et al. (2002) suggest that certain website features or website dimensions, which help a website visitor complete various tasks on the website before purchase, can positively influence the visitor's perception of the website's overall quality and, ultimately, his/her intention to purchase repeatedly or revisit the website.

The awareness of managers of consumer needs (the needs of on-going website customers) is a prerequisite for creating a good website (Loiacono et al., 2002; Piccoli et al., 2004). Recent studies report on the gap between customer needs and online service offerings on company websites (Nysveen et al., 2003). One possible reason for this gap may be the company's lack of resources, which should be allocated to IT-solutions and website maintenance. Another reason could be the difference of quality perceptions and preferences between managers and consumers, when it comes to website features and functionality (Nysveen and Lexhagen, 2001a, b). Gummesson (1991, 1994) suggests that it is vital for a company to have the right service design, meaning that usually the service is designed based on management's perceptions of what customers want. He stresses the necessity to base the service design on the needs of customers and customers' perceptions of service quality. Similarly, Zeithaml (2002) argues that companies should adopt customers' point of view as a basis for understanding the components of e-services, as well as for the requirements of e-service quality.

2. Adding Value to Consumer Operations

Customer-friendly websites and generic features of websites which contribute to customer value are named by many online consumer behaviour studies as main triggers and promoters of customer satisfaction, customer loyalty and profitable customer relationships (Feinberg et al., 2002; Khalifa and Liu 2002, 2003; Khalifa et al., 2002; Khalifa and Shen 2005).

It is suggested that a website user's satisfaction is very much driven by web site functionality, i.e., the number and quality of functions and value-added services offered on the website (Khalifa et al., 2002; Khalifa and Liu, 2002, 2003; Khalifa and Shen, 2005). Depending on the type and purpose of the website, its level of functionality can vary. The simplest website is an informational website, which just gives information about a company and its products or services and usually offers contact information with alternative contact channels. Today, many companies' commercial websites are on a transactional level, i.e., they offer online reservation and payment functions, which allow customers to choose a product and pay for it directly on the website. Modern consumers also want to find reservation

and payment functions on the website, preferring to complete all of their business with the company on the website from information search to buying. Transactional websites have also been found to be more efficient in attracting potential customers (Nysveen and Lexhagen, 2001a, b).

Reichheld and Scheffer (2000) argue that Web technologies, "when used correctly", can reinforce a customer's tendency toward loyalty. Customer loyalty, which is a central tenet of research in customer buying behaviour (Mattila, 2004), is often regarded as a key prerequisite of the customer's intention to stay with the firm and continue buying, i.e., continue being engaged in long-term relationships with the company (Reichheld and Scheffer, 2000). Consumers can be targeted online with the help of certain website generic features, so called e-services, value-added services or electronic Customer Relationship Management (e-CRM) features. These website features are commonly associated with customer attraction and customer satisfaction throughout different phases of a customer's life cycle (Khalifa and Liu 2002, 2003; Khalifa et al., 2002; Khalifa and Shen 2005), which are the main prerequisites of customer loyalty and retention. Khalifa et. al. (2002) and Khalifa and Liu (2003) suggest website e-CRM features (e-services) can influence consumers' intention to buy the product or service and positively affect online shopping satisfaction.

C. Addressing E-SQ of Websites: Current Trends and Issues

One of the important tasks of a modern marketing manager is to ensure the company's website conforms to the quality criteria of the company's consumers. A way to do that is to measure the e-SQ of a website. One of the major problems in determining a firm's Internet marketing effectiveness is that there are no established criteria for judging the success of commercial websites. The measurement of the e-SQ profile of commercial websites of firms is in its initial stages, and there are few validated instruments measuring website e-SQ (Ziethaml et al. 2002; Parasuraman, 2004; Gounaris and Dimitriadis, 2003; Wolfinbarger and Gilly, 2003). There are a number of methods that allow the measurement of a website's e-SQ profile as perceived by its on-going customers. These are based, for example, on TAM and TRA models (Shneiderman, 1998; Loiacono et al., 2002; Zeithaml, 2002; Zeithaml et al., 2002). The best-known methods are, for example, WEBQUAL, developed by Loiacono et al. (2002), e-SERVQUAL, developed by Zeithaml, Parasuraman and Malhorta (Zeithaml et al., 2002). Other measurement instruments use the commercial performance of a website, measured by the number of clicks, or purchases generated by the website (Jung and Butler, 2000; Wöber et al., 2002).

The most comprehensive research on service quality assessment has been undertaken by a team of researchers sponsored by the Marketing Science Institute (MSI), which, in collaboration with other researchers in related areas, has been working on conceptualisation and assessment of service quality in both physical and computermediated marketplace for more than two decades. The outline of their research is presented in Parasuraman (2004) as in Table 1.

Table 1 : Outline of the Main Research on SQ and E-SQ

Years	Research area	Authors
1983-1985	Conceptual model of SQ-GAPS model	Parasuraman, A., Zeithaml, V. A., and Berry, L. L.
1985-1988	SERVQUAL instrument	-/-
1988-1990	Extended GAPS model	-/-
1990-1993	Nature and determinants of service expectations	-/-
1993-1994	Refined SERVQUAL instrument	Parasuraman, A., Zeithaml, V. A., and Berry, L. L.
1995-1996	Multiple-method listening: a service quality (SQ) information system	-/-
1996-2003	Role of technology in service delivery	Parasuraman, A., and Colby, C.
2000-2003	Understanding and measuring e-service quality (e-SQ)	Zeithaml, V. A., Parasuraman, A., and Malhorta, A.
2001-2003	Network-based customer service systems	Parasuraman, A., Watson, R., Brohman, K., and Piccoli, G.

The main outcomes of this research are frameworks for understanding and assessing service quality and e-SQ and the measurement instruments for evaluating both service quality and e-SQ.

The measurement of website e-SQ is in its early stages. Few studies address the issue of e-SQ measurement from a conceptual point of view (Zeithaml et al., 2002; Wolfinbarger and Gilly, 2003; Parasuraman, 2004). Still, the majority of scales were developed in business and consulting companies. Very little work has been done on the assessment of the quality of services delivered through the Web. Not all the existing E-SQ scales have been thoroughly validated and tested. They also differ in their dimensions and attributes, thus leading to poor managerial decisions. There is a lack of comprehensive e-SQ scales in the academia, and the majority of existing scales focuses on a limited set of variables.

Furthermore, not all scales are developed taking the customer's point of view as a basis for understanding the components of e-services, which is an important requirement for the development of a quality scale (Zeithaml, 2002; Gounaris and Dimitriadis, 2003).

Other authors that worked in the area of assessing e-SQ and website quality include, Loiacono et al. (2002), Rice (1997), Liu and Arnett (2000), Yang et al. (2001), Szymanski and Hise (2000), Yang et al. (2005). All of them have offered different scales for measuring website e-SQ in different industrial contexts. There is also a range of e-SQ scales developed by businesses (e.g., BizRate.com, Gomez.com, CIO.com) (Zeithaml et al., 2002).

Main trends in the area of assessing and measuring e-SQ suggested for future research include studies of different customer trade-offs, such as a trade-off between e-SQ and

price, studies of the relationship between traditional SQ and e-SQ in a company, and how customer perceptions of service quality delivered through electronic channels and websites affect customer perceptions of service quality delivered through traditional distribution channels. The trends also include the development of a comprehensive measurement scale that captures complete service quality in a firm, both in traditional and online environments (the authors, however, point that this task may be extremely difficult taking the difference between the dimensionality and main components of services and eservices).

Another interesting branch is represented by studies of different demographic, behavioral and experiential aspects relating to e-SQ. Here, the authors suggest that the relation between age, sex or income and customer perceptions of e-SQ can be studied, as well as how different experiences or behaviour can be related to website use or how these can influence perceptions of e-SQ quality (Zeithaml, 2002).

D. Main Website E-SQ Assessment Techniques

To date, academia and business have tried to develop scales for measuring website e-SQ (Zeithaml, 2002; Wolfinbarger and Gilly, 2003; Parasuraman, 2004; Gounaris and Dimitriadis, 2003). The majority of the validated and scientifically developed scales are based on the Technology Acceptance Model and feature website usability, informativity, design, technical characteristics, functionality and safety of use, etc. (Zeithaml, 2002; Loiacono et al., 2002; Rice, 1997; Liu and Arnett, 2000; Szymanski and Hise, 2000; Yang et al., 2001; Wolfinbarger and Gilly, 2003; Yang et al., 2005). There are, however, different approaches towards assessing website e-SQ. For example, Chen and Wells (1999) developed a scale for measuring website quality based on three website quality criteria: entertainment, informativeness and organisation (website structure). Huang (2004) developed a Web performance scale based on website quality perceptions of consumers, which refers to hedonic aspects of website quality (fun, playfulness and pleasure associated with the website's use).

The majority of scales measuring website e-SQ have been developed in the specific industrial service contexts. Many of the existing scales have been developed in the etailing context (Zeithaml, 2002; Zeithaml et al., 2002; Loiacono et al., 2002; Wolfinbarger and Gilly, 2003).. It is seen that there is a need for developing different e-SQ measurement scales for different types of websites and services offered. In the following sections, we review three main scales developed for measuring website e-SQ, namely e-SERVQUAL, WEBQUAL, which appear to be the most comprehensive ones amongst those reported in the literature to date.

1. E-SERVQUAL

Zeithaml (2002, p. 136) suggests that the criteria customers use when evaluating website e-SQ exist "at various levels of specificity ranging from concrete cues (e.g., one-click ordering) to perceptual attributes (e.g., perceived checkout speed) to broader dimensions (e.g., efficiency) to higher-order abstractions (e.g., convenience and control)". E-SERVQUAL20 has been developed based on this assumption.

E-SERVQUAL measures website e-SQ as perceived by customers. It is a method for measuring website e-SQ that is based on the same principle as the original SERVQUAL method and includes some dimensions similar to those of SERVQUAL. The E-SERVQUAL scale contains a core and recovery scale,

represented by four and three dimensions respectively. Core scale is used to measure the customers' perceptions of service quality delivered by online retailers. Recovery scale refers to specific situations, when a customer has a question or runs into a problem, in which the three dimensions of the recovery scale become silent (Zeithaml et al., 2002). In simpler terms, it can be said that core scale refers to the quality of the website itself, while the recovery scale is more concerned with the actual performance of the company, rather than with website performance.

Four dimensions of core e-SERVQUAL scale are efficiency, fulfilment, reliability and privacy. Efficiency defines customers' ability to effectively access the website, find their desired product and related information, and check it out with minimal effort. Fulfilment refers to a company's actual performance in contrast with what is promised through the website, and incorporates accuracy of service promises, such as having products in stock and timely delivery. Reliability is a technical function of the website such as the extent to which it is available and functioning properly. Finally, privacy refers to the company's will and ability to maintain the integrity of customer data (Zeithaml et al., 2002; Zeithaml, 2002).

Three recovery dimensions of e-SERVQUAL are responsiveness, compensation and contact points, which are mainly concerned with the situations which arise when a problem needs to be solved and "personal service" is required. Responsiveness defines the company's ability to provide appropriate problem-solving mechanisms (online complaint handling, handling returns mechanisms, online guarantees, etc.). Compensation involves money-back guarantees, return of shipping and handling costs. Contact points refers to customers' need to speak to a "live" customer service agent online or on the phone, and defines the company's ability to offer such support in real-time via online or other means of communication (Ibid.).

Table 2. E-SERVQUAL Core dimensions and their description

Description	Dimension
The ease and speed of accessing and using the website	Efficiency
The extent to which the site's promises about order delivery and item availability are fulfilled	Fulfilment
The correct technical functioning of the site	System Availability
The degree to which the site is safe and protects customer information	Privacy

2. WEBQUAL

Loiacono et al. (2002) propose a novel method of evaluating website quality using the instrument WEBQUAL™. WEBQUAL focuses on the website interface and is suggested to be one the most empirically grounded e-SQ scales (Wolfenbarger and Gilly, 2003).

WEBQUAL is developed based on the conceptual background of the Theory of Reasoned Action (TRA) and the Technology Acceptance Model (TAM). The main idea behind the use of WEBQUAL is that it is possible to predict the re-visit/re-use behaviour of web users based on their perceptions of overall website quality. The instrument consists of four constructs, namely usefulness, ease of use, entertainment, and complimentary relationship, which include a range of website dimensions, each of which is evaluated by a website visitor

according to his/her perceptions of website quality (Loiacono et al., 2002).

Usefulness includes informational fit-to-task, interactivity, trust and response time dimensions. Informational fit-to-task refers to the quality of the information offered on the website, its appropriateness and the method of presentation. Interactivity is the website's ability to allow different flows of communication between the site's users and the company's personnel, interactive search for information, and transactions through the website. The trust dimension refers to maintaining the privacy of customer information provided through the website. Response time is the website's technical characteristics in relation to loading time in a user's browser and the time required to complete transactions with the website. Ease of use includes ease of understanding and intuitive operations dimensions. Ease of understanding refers to the quality of website structure and user interface, such as Web layout, site hierarchy of pages, etc. Intuitive operations refers to the ability to learn how to operate the website quickly and without great effort. Furthermore, the entertainment construct consists of the visual appeal (presentation graphics and text), innovativeness ("aha"/surprise element associated with creativity and uniqueness), and flow-emotional appeal (the website's ability to deliver enjoyable and engrossing experiences for users) dimensions. Finally, complimentary relationship construct includes consistent image (the website's ability to accurately reflect the company's image promoted through other communication channels), on-line completeness (the website's overall ability to suit customers in their operations), and better than alternative channels (the website's ability to act on the same level or better than alternative marketing channels) dimensions (Ibid.). Original WEBQUAL items are presented in Table 3.

Table 4. Original WEBQUAL Items

USEFULNESS:	
Informational Fit-to-Task	The information on the Web site is pretty much what I need to carry out my tasks. The Web site adequately meets my information needs. The information on the Web site is effective.
Interactivity	The Web site allows me to interact with it to receive tailored information. The Web site has interactive features, which help me accomplish my task. I can interact with the Web site in order to get information tailored to my specific needs.
Trust	I feel safe in my transactions with the Web site. I trust the Web site to keep my personal information safe. I trust the Web site administrators will not misuse my personal information.
Response Time	When I use the Web site there is very little waiting time between my actions and the Web site's response. The Web site loads quickly. The Web site takes long to load.

EASE OF USE:	
Ease of Understanding	The display pages within the Web site are easy to read. The text on the Web site is easy to read. The Web site labels are easy to understand.
Intuitive Operations	Learning to operate the Web site is easy for me. It would be easy for me to become skilful at using the Web site. I find the Web site easy to use.
ENTERTAINMENT:	
Visual Appeal	The Web site is visually pleasing. The Web site displays visually pleasing design. The Web site is visually appealing.
Innovativeness	The Web site is innovative. The Web site design is innovative. The Web site is creative.
Flow-Emotional Appeal	I feel happy when I use the Web site. I feel cheerful when I use the Web site. I feel sociable when I use the Web site.
COMPLIMENTARY RELATIONSHIP:	
Consistent Image	The Web site projects an image consistent with the company's image. The Web site fits with my image of the company. The Web site's image matches that of the company.
Online Completeness	The Web site allows transactions online. All my business with the company can be completed via the Web site. Most all business processes can be completed via the Web site.
Better than Alternative Channels	It is easier to use the Web site to complete my business with the company than it is to telephone, fax, or mail a representative. The Web site is easier to use than calling an organizational representative agent on the phone. The Web site is an alternative to calling customer service or sales.

Overall, based on a review of the WEBQUAL items, it can be said that with WEBQUAL a website is judged for its ability to satisfy customer needs. One important limitation of the WEBQUAL-instrument is that its development was based on the responses of undergraduate students, who evaluated several selected e-retailing websites. Another important limitation is that respondents also were not on-going customers of the websites they were evaluating. Therefore, further confirmatory research is needed with broad samples of "real" customers of websites (Ibid.).

III. Criticism and Comparison of the Reviewed E-SQ Scales

WEBQUAL, e-SERVQUAL appear to be the most comprehensive validated scales for measuring website e-SQ that are described to date in academic literature. It is difficult to say, though, which technique is better without a complicated test. There

are, however, several reported limitations of the WEBQUAL instrument in comparison to e-SERVQUAL.

WEBQUAL measures the perceptions of website visitors who use various website quality attributes (such as functionality, appearance of user interface, technical characteristics, etc.). Parasuraman (2004) suggests this approach can be misleading since the results of such ratings can be high on service attributes, but do not reveal important service shortcomings, because they do not consider the complex nature of customer service expectations. It is suggested a customer does not have a single "ideal" level of expectations, but his expectations are rather outlined by an interval, "zone of tolerance", out-bounded on the top level by the "desired service" situation, which "customers believe can and should be delivered", and on the bottom level by "adequate service", which is a minimal acceptable level of customer service. Furthermore, several important initial instrument dimensions - "Customer Service" and "Functional fit-to-task" - were eliminated in WEBQUAL after instrument validation procedures. It is arguable whether such elimination was appropriate, considering the importance of these website quality criteria reported in the literature.

Parasuraman and Zinkhan (2002) and Zeithaml et al. (2002) express a similar view of WEBQUAL, highlighting that this instrument focuses mostly on the technical quality of the website itself, rather than with the provision of service quality through the website. They also point out that in a buying situation, when the user is typically goal-oriented and motivated by an intention to purchase a product or service, the entertainment-related criteria of the website, such as Flow or Innovativity dimensions of WEBQUAL, are not relevant. Zeithaml et al. (2002) suggest that WEBQUAL is the scale that is mostly usable for web designers, who need to determine ways of improving a website to positively affect the interaction perceptions of users.

E-SERVQUAL measures e-SQ throughout the complete customer shopping experience, taking into account both the pre-website and post-website stages of this process. Therefore, a website is rather considered simply as a platform for company-customer contact, and its quality is measured by e-SERVQUAL, based on how well the website works as a channel for delivering service quality to customers. In other words, a website is seen as one of the company's instruments for delivering quality service to customers.

WEBQUAL is concerned with a website more as an independent instrument of a company in delivering service quality to customers. The authors of WEBQUAL differentiate between consumers' offline and online experiences. As was correctly mentioned by Zeithaml et al. (2002), WEBQUAL is, therefore, concerned with the technical service quality of a website, not how a website works as a platform for delivering e-SQ to customers. In other words, it can be said that WEBQUAL considers a website itself as a particular e-service of a company, delivered to customers by means of the Internet. Summarising, it appears that the two instruments were developed for slightly different purposes and have different limitations.

In summary, it can be said that the reviewed instruments display similarities, particularly in relation to what dimensions of website e-SQ they measure, and the assumptions behind the scale design. Also, the methods the authors use appear to be similar (focus groups, expert evaluations, etc.). All three scales were developed for measuring website e-SQ in an e-retailing

context. Taking the e-SQ scale development process more broadly, it can be said that the results expressed by different researchers vary substantially. Wolfinbarger and Gilly (2003) suggest this is probably due to the fact that the researchers had a different focus, methodological approach and assumptions about the needs of online consumers.

IV. Understanding Bank Consumer Online Needs and Requirements for the E-SQ

Understanding how bank consumers behave is critically important to banking system; without this understanding it is impossible to design an appropriate marketing response to consumers' needs. Examples of e-banking services that customers can get online are:

- Attaining information about accounts and loans,
- Conducting transfers amongst different accounts, even between external banks,
- Paying bills,
- Buying and selling stocks and bonds by depot,
- Buying and selling fund shares

These services that are offered by e-banking are changing and being improved because of the intense competition between the banks online. Banking industry must adapt to the electronics age, which in its turn is changing all the time.

A. Service quality in E-banking

Unfortunately, few studies have been done on service quality within e-banking.. Bahia and Nantel proposed a measure in how service is perceived in the banking industry. Their results were inspired by those done by Parasuraman et al (1988) and contained six dimensions: effectiveness and assurance, access, price, tangibles, service portfolio and reliability. Effectiveness and assurance means that customers should feel safe in using the bank. Access is when customers expect the bank to have the latest technology so that they can perform their banking errands efficiently and safely. Price is an important measuring instrument and Bahia and Nantel suggest that the price should be reasonable because it is attracting the customer. Tangibles refer to the atmosphere of the bank where the effective service environment exists. Service portfolio focuses on those services that are offered while reliability deals with trustworthiness of the banks from the customer's point of view.

In 2001 one research was conducted on e-banking and service quality by Jun and Cai. They identified seventeen dimensions which all could be divided into three categories: customer service quality, online systems quality and banking service product quality. Even their studies have been inspired by the SERVQUAL instrument but because of the e-banking special characteristics this instrument has been extended. Customer service quality contains dimensions like reliability and credibility, but also communication and understanding the customer. Online systems quality is about the security online and a demand of an easy to use e-banking program. Banking service product quality is where customers want a variety of products and services that are offered through e-banking. All studies that have recently been made in the service quality field irrespective the industry have all been influenced by SERVQUAL. What researches have been done is that the model has been a basis for their study but they have extended the model according to the result from their studies.

B. The prepared questionnaire form

In order to develop an instrument for measuring the quality of

online banking services, the authors of this paper would like to use as a basis the E-SERVQUAL instrument. However, the authors of this paper find E-SERVQUAL scales not completely covering all the issues for measuring quality of online banking services. The authors find the issue of assurance and trust (credibility) of high importance as far as financial services are concerned. That is why the assurance/trust dimension is included in the underlying study. Furthermore, many researchers have found assurance (credibility) to be considered as a quality dimension for the evaluation of e-services quality (Madu & Madu, 2002; Jun, Yang & Kim, 2004; Cox & Dale, 2001; Jayawardhena, 2004; Jun & Cai, 2001).

In addition, the studies on online systems quality and those on online service quality show that site aesthetics (appearance) is considered important for evaluating the quality of a website and the service delivered through that website (1988; Santos, 2003). For that reason, the authors of this paper will include the site aesthetics dimension into their study. Both, the assurance/trust and site aesthetics dimensions have been added to the E-SERVQUAL scale's dimensions.

Finally, as measurement on the compensation dimension of online services quality requires the customers' experiences of problems with the given service and complaining about that. As this implies difficulty in evaluating this dimension because of the lack of enough people encountering problems (Parasuraman et Al., 2005), the compensation dimension of the E-SERVQUAL scale has been dropped from this study.

Table 4. Description of the questions pertaining to each quality dimension

Quality Dimension	Question
Efficiency	I am able to get on the site quickly
	It is easy to find what I need on the website
	It is quick to complete a transaction through the bank's website
	Using the bank's website does not require a lot of effort
	The organization and structure of online content is easy to follow
Fulfillment	When the bank promises to do something by a certain time, it does so
	My online transactions with the bank are always accurate
	The service delivered through the bank's website is quick
	The bank's site makes accurate promises about the services being delivered
System availability	The site is always available System for business
	This site launches and runs right away
Privacy	The bank does not misuse my personal information
	I feel safe in my transactions with the bank

Assurance/ Trust	I have confidence in the bank's service
	The bank's name is well-known and has good reputation
Site Aesthetics	The website design is aesthetically attractive
Responsiveness	The bank gives prompt responses to my requests by e-mail or other means
	The bank quickly resolves problems I encounter with my online transactions
Contact	The bank is easily accessible by telephone
	The site has customer service representatives available online

References

- [1] Bahia, K., & Nantel, J. (2000). A reliable and valid measurement scale for the perceived service quality of banks. *International Journal of Bank Marketing*, Vol. 18, No.2, pp. 84-91.
- [2] Berry, Leonard, L. (1980). Service Marketing is Different. *Business*, Vol. 30 (May-June), pp. 24-29.
- [3] Berry, Leonard, L., Zeitham, Valarie, and Parasuraman, Arun (1985). Quality Counts in Services, to *Business Horizons*, May-June, pp. 44-52.
- [4] Berry, Leonard, L., Parasuraman, Arun, and Zeitham, Valarie (1988). The Service Quality Puzzle. *Business Horizons*, September-October, pp. 35-43.
- [5] Berry, Leonard, L., and Parasuraman, Arun (1993). Building a New Academic Field – The Case of Services Marketing. *Journal of Retailing*, Vol. 69 (Spring), No. 1, pp. 13-60.
- [6] Bitner, Mary Jo, Faranda, William T., Hubbert, Amy R., and Zeitham, Valarie A. (1997). Customer Contributions and Roles in Service Delivery. *International Journal of Service Industry Management*, Vol. 8, No. 3, pp. 193-205.
- [7] Chen, Q., and Wells, D. W. (1999). Attitude toward the Site. *Journal of Advertising Research*, Vol. 39, No. 5, pp. 27-37.
- [8] Collins, Catherine, Buhalis, Dimitrios, and Peters, Mike (2003). Enhancing SMTEs' Business Performance Through the Internet and E-Learning Platforms. *Education and Training*, Vol. 45, No. 8/9, pp. 483-494.
- [9] Constantinides, Efthymios (2004). Influencing the Online Consumer's Behaviour: The Web Experience. *Internet Research*, Vol. 14, No. 2, pp. 111-126.
- [10] Cowling, A., & Newman, K. (1995). Banking on people: TQM, service quality, and human resources. *Personnel Review*, Vol. 24, No. 7, pp. 25-40.
- [11] Dubas, K. M., and Brennan, I. (2002). Marketing Implications of Web-Casting and Extranets. *Marketing Intelligence & Planning*, Vol. 20, No. 4, pp. 223-228.
- [12] Gounaris, Spiros, and Dimitriadis, Sergios (2003). Assessing Service Quality on the Web: Evidence from Business-to-Consumer Portals. *Journal of Services Marketing*, Vol. 17, No. 5, pp. 529-548.
- [13] Greenfield, Harry, I. (2002). A Note on the Goods/ Services Dichotomy. *The Service Industries Journal*, Vol. 22 (October), No. 4, pp. 19-21.
- [14] Grewal, D., Iyer, G. R., Krishnan, R., and Sharma, A. (2003). The Internet and the Price-Value-Loyalty Chain. *Journal of Business Research*, Vol. 56, pp. 391-398.
- [15] Grove, Stephen, J., Fisk, Raymond, P., and John, Joby (2003). The Future of Services Marketing: Forecasts from Ten Services Experts. *Journal of Services Marketing*, Vol. 17, No. 2, pp. 107-121.
- [16] Grönroos, Christian (1982). An Applied Service Marketing Theory. *European Journal of Marketing*, Vol 16, No. 7, pp 30-41.
- [17] Grönroos, Christian (1984). A Service Quality Model and Its Marketing Implications. *European Journal of Marketing*, Vol. 18, No. 4, pp. 36-44.
- [18] Grönroos, Christian (1994). From Scientific Management to Service Management. A Management Perspective for the Age of Service Competition. *International Journal of Service Industry Management*, Vol. (5), No. 1, pp. 5-20.
- [19] Grönroos, Christian (1997). Value-Driven Relational Marketing: From Products to Resources and Competencies. *Journal of Marketing Management*, Vol. 13, No. 5, pp. 407-419.
- [20] Grönroos, Christian (1998). Marketing Services: the Case of a Missing Product. *Journal of Business & Industrial Marketing*, Vol. 13, No. 4/5, pp. 322-338.
- [21] Grönroos, Christian (2000). Service Management and Marketing: A Customer Relationship Management Approach. Wiley: Chichester.
- [22] Grönroos, Christian (2001a). The Perceived Service Quality Concept – a Mistake? *Managing Service Quality*, Vol. 11, No. 3, pp. 150-152.
- [23] Grönroos, Christian (2001b). Service Management and Marketing: A Customer Relationship Marketing Approach, 2nd ed. Wiley: New York, NY.
- [24] Grönroos, Christian (2004). The Relationship Marketing Process: Communication, Interaction, Dialogue, Value. *Journal of Business and Industrial Marketing*, Vol. 19, No. 2, pp. 99-113.
- [25] Grönroos, Christian, Heinonen, Fredrik, Isoniemi, Kristina, and Lindholm, Michael (2000). The NetOffer Model: A Case Example from the Virtual Marketplace. *Management Decision*, Vol. 38, No. 4, pp.243-252.
- [26] Gummesson, Evert (1991). Truths and Myths in Service Quality. *International Journal of Service Industry Management*, Vol. 2, No. 3, pp. 7-16.
- [27] Gummesson, Evert (1994). Service Management: An Evaluation and the Future. *International Journal of Service Industry Management*, Vol. 5, No.1, pp. 77-96.
- [28] Gupta, Sunil, Lehmann, Donald R., and Stuart, Jennifer Ames (2004). Valuing Customers. *Journal of Marketing Research*, Vol. 41, Issue 1, pp. 7-18.
- [29] Halstead, Diane, Morash, Edward A., and Ozment, John (1996). Comparing Objective Service Failures and Subjective Complaints: An Investigation of Domino and Halo Effects. *Journal of Business Research*, Vol. 36, Issue 2, pp. 107-115.
- [30] Heinen, J. (1996). Internet Marketing Practices. *Information Management & Computer Security*, Vol. 4, No. 5, pp. 7-14.
- [31] Johnson, C., and Matthews, B. P. (1997). The Influence of Experience on Service Expectations. *International Journal of Service Industry Management*, Vol. 8, No. 4, pp. 290-305.
- [32] Jones, Julian, Bowonder, B., and Wood, Douglas (2003). Critical Competencies in Virtual Service Webs. *European Management Journal*, Vol. 21, No. 1, pp. 48-61.
- [33] Judd, Robert, C. (1964). The Case for Redefining Services. *Journal of Marketing*, Vol. 28 (January), pp. 58-59.
- [34] Khalifa, Mohamed, and Liu, Vanessa (2002). Satisfaction with Internet-Based Services: the Role of Expectations and Desires. *International Journal of Electronic Commerce*,

- Vol. 7, No. 2, pp. 31-50.
- [36] Khalifa, Mohamed, and Liu, Vanessa (2003). Determinants of Satisfaction at Different Adoption Stages of Internet-Based Services. *Journal of the Association for Information Systems*, Vol. 4, No. 5, pp. 206-232.
- [37] Khalifa, Mohamed, Abidi, R., and Limayem, Moez (2002). Effects of Electronic Customer Relationship Management on Online Shopping Satisfaction. *Pre-ICIS Meeting on French Speaking World IS Research*.
- [38] Khalifa, M., and Shen, N. (2005). Effects of Electronic Customer Relationship Management on Customer Satisfaction: A Temporal Model. In: *Proceeding of the 38th Annual Hawaii International Conference on System Sciences (HICSS'05) - Track 7*, January 3-6, p. 171a.
- [39] Kotler, Philip (1991a). *Marketing Management. Analysis, Planning, and Control*, 7th ed. Prentice-Hall, Englewood Cliffs, NJ.
- [40] Kotler, Philip, and Armstrong, Gary (1991b). *Principles of Marketing*, 5th ed. Prentice-Hall International Editions: USA.
- [41] Kotler, Philip, and Levy, Sidney, J. (1969). Broadening the Concept of Marketing. *Journal of Marketing*, Vol. 33 (January), pp. 10-15.
- [42] Lee, Jae N., Pi, Shih M., Kwok, Ron C. W., and Huynh, Minh Q. (2003). The Contribution of Commitment Value in Internet Commerce: an Empirical Investigation. *Journal of the Association for Information Systems*, 4, pp. 39-64.
- [43] Information Systems, 4, pp. 39-64.
- [44] Leong, E. K. F., Huang, X., and Stanners, P.-J. (1998). Comparing the Effectiveness of the Web Site with Traditional Media. *Journal of Advertising Research*, Sept.-Oct., pp. 44-51.
- [45] Lewis, Robert C., and Booms, Bernard B. (1983). The Marketing Aspects of Service Quality. In: *Emerging Perspectives on Services Marketing* by Berry, L., Shostack, G., and Upah, G., eds. Chicago: American Marketing, pp. 99-107.
- [46] Liang, Ting-Peng, and Huang, Jin-Shiang (1998). An Empirical Study on Consumer Acceptance of Products in Electronic Markets: a Transaction Cost Model. *Decision Support System*, 24, No. 1, pp. 29-43.
- [47] Liu, Chang, and Arnett, Kirk P. (2000). Exploring the Factors Associated with Web Site Success in the Context of Electronic Commerce. *Information & Management*, Vol. 38, No. 1, pp. 23-34.
- [48] Loiacono, E., Watson, R.T., and Goodhue, D.L (2002). WEBQUAL: a Measure of Website Quality. In *AMA Winter Conference*, Austin, TX.
- [49] Lovelock, Christopher H. (1983). Classifying Services to Gain Strategic Marketing Insights. *Journal of Marketing*, Vol. 47 (Summer), pp. 9-20.
- [50] Lovelock, Christofer, and Gummesson, Evert (2004). Whither Services Marketing? In Search of a New Paradigm and Fresh Perspectives. *Journal of Service Research*, Vol. 7 (August), No. 1, pp. 20-41.
- [51] Lynn, G. S., Lipp, S. M., Akgün, A. E., and Cortez, Jr., A. (2002). Factors Impacting the Adoption and Effectiveness of the World Wide Web in Marketing. *Industrial Marketing Management*, Vol. 31, pp. 35-49.
- [52] Ma, Qingxiong, Pearson, J. Michael, and Tadisina, Suresh (2005). An Exploratory Study into factors of Service Quality for Application Service Providers. *Information and Management*, Vol. 42, pp. 1067- 1080.
- [53] Moore, Gary C., and Benbasat, Izak (1991). Development of

an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. *Information Systems Research*, Vol. 2, No. 3, pp. 192-222.



Professor Dr. Shapoor Zarei received his Ph.D. degree in Management of Information Technology, International Echo Energy Academy, in 2008, and the Post Ph.D. degree in Management of Information Technology, International Echo Energy Academy, in 2010. He dedicated years of research, study and innovation to offer cutting edge technology in form of E-City, E-Government, E-Banking, E-Judgment, data

centers and other enterprise wide Hi-Tech solutions. He is the architect and executive manager of the most comprehensive electronic total banking system in middle east beside 15 awarded, officially acknowledged national and international IT projects. He is the most honored participant in Russia's scientific Olympiad (4 Gold medal) and became the official permanent jury member of Olympiad on 2009. He has been entitled as Top innovator and exemplary scientist in five continents at the 57th scientific Euro Olympiad, Belgium and received the scientific seat of European Union.

He has accomplished many scientific honors as letter of appreciation by Unesco, four gold medals of innovation from Malaysia, four president awards from Malaysian ministry of science and technology and innovation, best innovation award as best innovator from Taiwan for the most gigantic, comprehensive and modernistic E-city project, South Korea's special prize of the best innovator for modernistic E-banking and E-city systems, four gold medal from Russian ministry of science, scientific aptitude badge endowment from united nations organization representative of Geneva Switzerland, letter of citation from Romania, medal and letter of citation from Poland, letter of citation from China, gold medal and grand final scientific badge in United Kingdom's international innovation Olympiad, top national IT manager entitled by Iran's ministry of industries, top national innovator and immanent scientific character entitled by Iran's ministry of science.