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Measuring E-Service Quality from the Customers' Perspective: An Empirical Study on Banking Services

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Abstract
The purpose of this study is to evaluate e- service quality from the customers, perspective, and to examine the effect of e- service quality dimensions on customer's perception of banking e- service quality. Data was collected via self-administered questionnaire from random samples drawn from the population of customers using e-banking service in Amman. The constructs in this study were developed by using measurement scales adopted from prior studies. The instrument was evaluated for reliability and validity. Data were analyzed using SPSS. The results in this study indicate that Reliability; Responsiveness; Ease of use; Personalization; Security; and Website design have influence on customer's perception of e- service quality. This study and their results have several limitations and also indicate directions for further research.
Keywords: E-service, Quality, banks, Iran.

1. Introduction

In recent years, With the rapid development of information, communication technology, and the globalization of the market, Internet and World Wide Web (WWW) have become important tools in business, Distance and time barriers are vanishing and the world is becoming an integrated community of buyers and sellers that interact via the Internet. Internet has significantly revolutionized banking industry in the last decade. Products and services are radically shifted to digital form and delivered through the Internet. Additionally, the Internet offers an interactive function with its customers (Santos 2003) and enables electronic service (e-service) move to the forefront of technology priorities (Voss 2003). Most banks in the developed world and some in the developing world are now offering internet banking services with various levels of sophistication (Bawumia, 2007). For example, while some banks have adopted internet banking for communicating to customer on regarding bank statements, other banks use internet banking services to allow customers to access their bank accounts and perform other banking transactions (Bawumia, 2007). An empirical study finds that the factors of the website design are strong predictors of customer quality judgments, satisfactions, and loyalties for the Internet retailers (Wolfinbarger & Gilly, 2003). Large growth potential is forecast for the provision of products and services via electronic channels (mainly, the internet) (Evanschitzky et al., 2004). Companies accepted and adopted the new information and communication technology in the performance of their activities, not only to support traditional activities, but also to support those arising from new opportunities, mainly from the Internet(Hongxiu & Reima, 2008). Electronic service quality (E-SQ) is a new developing area of research, which has strategic importance for businesses striving to address customers in the electronic marketplace. Parasuraman and Zinkhan (2002) maintain that electronic services contribute two key advantages: information efficiency and transaction efficiency. Electronic service quality is a basic requirement for the good performance of electronic channels (José & Ainhize, 2009).

Yang (2001) and Zeithaml (2002) believe that e-service experience greatly affects the establishment of trust and relation with customers, and enterprises must pay attention in this regard. Oliveira et al. (2002) believe that e-service quality can increase the competition of the company's requirement fulfillment. A higher level of e-SQ contributes to achieving the main business goals (Zeithaml et al., 2000, 2002a). Oliveria et al. (2002) state also that electronic service (e-service) might be the key to long-term advantages in the digital times, and eservice quality is becoming even more critical for companies to retain and attract customers in the digital age and can increase the competition of the company's requirement fulfillment (Oliveria et al. 2002). service quality delivery through websites is an essential strategy to success, possibly more important than low price and Web presence(Zeithaml, Parasuraman, & Malhotra, 2002). Santos (2003) believes that the e-service features mutual exchange of information, which can bring customers extraordinary experiences. Importantly, effective management of e-service encounters (Cho and Menor, 2010) to deliver and maintain high quality is crucial for web sites in order to increase customer satisfaction and customer loyalty (Kim et al., 2009).

Extensive research on traditional SQ has been conducted during the past 20 years (see Parasuraman and Zeithaml 2002 for a review). In contrast, only a limited number of scholarly articles deal directly with how customers assess e-SQ (Parasuraman et.al. 2005), and what are appropriate dimensions of the quality of e-service delivery (Jamie & Aron, 2011). Supported by the above rationale. This paper addresses the e-service quality issue in the electronic marketplace. The purpose of the paper is to investigate e-service quality dimensions from customer's perspectives. The paper explores e-service quality dimensions based on a review of the development of e-service quality dimension. It proposes a six-dimension scale for measuring e-service quality: Reliability; Responsiveness; Ease of use; Personalization; Security; and Website design from the customer's perspective. The remaining sections of this paper are arranged in the following manner. The literature review of e-service quality including the concept of e-service quality, models used in measuring e-service quality, and related studies in section 2. The research model is presented in section 3. The research methodology is discussed in section 4, including detailed information on the Measures, Sample, and analysis performed in this study; this is followed by a data analysis and results discussed in section 5. Conclusion is discussed in section 6, followed by managerial implications (section 7) Limitations, Recommendations and future research (section 8).

2. Literature review

2.1 E-Service Quality

Over the past decade, there has been a growing body of work focusing on conceptualizing, measuring, and managing service quality and its effects in electronic

Environments (Jamie & Aron, 2011). The conception of "e-service" emerged upon the growth of the internet(Mary and O'Loughlin, 2008). "E-service" has recently become a popular research topic, with the growth of the e-commerce, and a number of published studies have offered a variety of conceptual definitions (Sylvie& Ina, 2010). Electronic service or e-service as it has become more commonly known is now recognised as one of the key determinants for successful e-business(Jamie & Aron, 2010). With the increase of e-service adoption in business field, the importance of measuring and monitoring e-service quality in the virtual world has been recognized**.** Over the past two decades, there has been significant advancement in service quality theory (see Brady and Cronin, 2001; Dabholkar et al., 1996; Dabholkar et al., 2000; Dagger et al., 2007; Rust and Oliver, 1994).

Rowley (2006) points out that the existing literature on e-service quality mainly study the dimension and measuring method of e-service quality, and that there is no completely recognized definition of e-service. "E-service" has recently become a popular research topic, with the growth of the e-commerce (Sylvie & Ina,2010). E-service quality can be described as overall customer evaluations and judgments regarding the excellence and the quality of e-service delivery in the virtual marketplace (Santos, 2003). According to Parasuraman et.al. (2005) e-SQ is defined broadly to encompass all phases of a customer's interactions with aWeb site: The extent to which a Web site facilitates efficient and effective shopping, purchasing, and delivery. Ruyter et al. (2001, p. 2) describe e-service as "content-centred and internet-based customer service, driven by the customer . . . with the goal of strengthening customer-service provider relationships". Collier and Bienstock (2006) defined e-SQ as "customer's perceptions of the outcome of the service along with recovery perceptions if a problem should occur". Rowley (2006) gives a definition in conclusion of many scholars' opinions, "e-service, based on information technology, includes the information provision and system support, the logistic transportation of service and the trace and exchange of information".

Zeithaml et al. (2002, p. 363) were first, with "the extent to which a website facilitates efficient and effective shopping, purchasing, and delivering of products and services". According to Boyer et al. (2002, p. 175), e-services can be defined as: "all interactive services that are delivered on the internet using advanced telecommunications, information, and multimedia technologies. "Boyer et al. (2002, p. 175) defined "e-service as delivery of all interactive services on the internet, using advanced telecommunications, information, and multimedia technologies". Parasuraman et al. (2005) believe that e-service quality, to some extent, refers to the effectiveness and efficiency of online browse, online purchase, and delivery of goods and services. One of the first definitions of quality in such e-services was suggested by Zeithaml et al. (2000, p. 11) who defined e-SQ as: "the extent to which a web site facilitates efficient and effective shopping, purchasing and delivery".

2.2 Measuring e-service quality

Previous studies identified several dimensions as criteria of e-service quality. The conceptualisation and development of e-SQ measurements is needed because it will help to control and improve the performance of online companies (Yang et al., 2003). Most studies of the concept and measurement of electronic service (e-SQ) have identified the dimensions of the construct from either the customer's perspective or the provider's perspective (Heim and Field, 2007). A review of existing literature on eservice quality shows more different dimensions in eservice quality that are useful for different research contexts (Madu and Madu 2002, Li and Suomi, 2009; Santos 2003; Field et al. 2004; Ho and Lin, 2010: Kim and Stoel 2004; Yang and Fang 2004; Long and McMellon 2004; Gounaris et al. 2005; Lee and Lin 2005; Kim et al. 2006;

Cristobal et al. 2007). In line with the different conceptualizations of e-services, previous efforts to measure e-service quality also display different approaches (Bauer et al., 2006; Loiacono et al., 2000; Wolfinbarger and Gilly, 2003; Yoo and Donthu, 2001; Zeithaml et al., 2002). Rowley (2006) points out that the existing literature on e-service quality mainly study the dimension and measuring method of e-service quality, customers' online experience.

On the basis of a comprehensive review and synthesis of the extant literature on e-SQ, Zeithaml, Parasuraman, and Malhotra (2002) detailed five broad sets of criteria as relevant to e- SQ perceptions: (a) information availability and content, (b) ease of use or usability, (c) privacy/security, (d) graphic style, and (e) reliability/fulfillment. Santos (2003) in this regard discussed e-service quality dimensions as consisting of, ease of use, web-appearance, linkage, structure and layout, content as the incubative dimensions; reliability, efficiency, support, communication, security, and incentive as active dimensions. Fassnacht and Koese (2006) argue that e-service quality's first-order sub-dimensions of attractiveness of selection, information quality, ease-of-use, and technical quality are actually reflections of delivery quality (i.e. a second-order dimension). Madu and Madu (2002) proposed the following 15 dimensions of online service quality based on literature review: performance, features, structure, aesthetics, reliability, storage capacity, serviceability, security and system integrity, trust, responsiveness, product/service differentiation and customization, Web store policies, reputation, assurance, and empathy.

Cox and Dale (2001) set up 6 dimensions of online retailing service quality with the comparison of the traditional dimensions of service quality, and the six dimensions are website appearance, communication, accessibility, credibility, understanding and availability (Cox and Dale 2001).Yoo and Donthu's (2001) SITEQUAL believes the e-service quality includes four dimensions such as the accessibility, handling speed of the memorizer, the artistic design and the response rate of interaction. Lociacono et al. (2002) develop an eservice quality scale called WEBQUAL, which is composed of 12 dimensions (Lociacono et al. 2002). Consequently, Kaynama and Black (2000) build on the traditional SERVQUAL dimensions to develop an e-service quality measure comprised of seven dimensions: content, access, navigation, design, response, background, and personalization. Parasuraman, Zeithaml, & Malhotra (2005) mention five broad sets of criteria as relevant to E-SQ: (a) information availability and content; (b) ease of use or usability; (c) privacy/security; (d) graphic style; and (e) reliability/fulfillment. Yang and Jun (2008) measured e-service quality using two groups: Internet purchasers and Internet non-purchasers. They found that reliability was the most important dimension for Internet purchasers even when compared to access, ease of use, personalization, security, and credibility.

Van Riel et al. (2003) described their own e-service quality dimensions. They use design of user interface, reliability, security, customization, and responsiveness as major factors that drive e-service quality. These dimensions reflect the different nature of dealing with a website as opposed to interacting with service employees. Collier and Bienstock (2006) contend that the construct of e-service quality does not cause ease-of-use or information accuracy, suggesting that it is just the opposite; the dimensions of design and ease-of-use form the overall evaluation in the customer's judgment of quality. Zeithaml (2002) develops a framework consisting of eleven dimensions to be used in evaluating the delivery of e-service quality which include access, ease of navigation, efficiency, flexibility, reliability, personalization, security/privacy, responsiveness, assurance/trust, site aesthetics, and price knowledge. Loiacono et al. (2002) develop the WEBQUAL to scale the service quality. They point out that e-service quality includes 12 dimensions including the information adaptability, trust, design, visual requirement, flow, business process, interaction, response time, intuition, creativity, overall communication, and replaceability.

Wolfinbarger and Gilly (2002) develop an eservice quality scale which was initially titled COMQ and later was progressed to eTailQ with the following four dimensions: website design, reliability, security and customer service (Wolfinbarger and Gilly 2002, 2003). Kim et al (2006) identified 9 e-service quality items, being: efficiency, fulfillment, system availability, privacy, responsiveness, compensation, contact, information and graphic style in online retailing. Dabholkar (1996) conducts a research work on the dimensions of eservice quality focusing on website design, and he argues that 7 dimensions of e-service quality can be illustrated as the basic parameters in the judgement of eservice quality, including website design, reliability, delivery, ease of use, enjoyment and control (Dabholkar 1996). Li and Suomi (2009) proposed eight dimensions of e-service quality, which are: website design, reliability, responsiveness, security, fulfillment, personalization, information and empathy.

Yoo and Donthu (2001) develop a 4dimension scale called SITEQUAL to measure online service quality of website, and the four dimensions are ease of use, aesthetic design, processing speed, and interactive responsiveness (Yoo and Donthu 2001). These researchers emphasized both system and service attributes in measurement of e-SQ. For example, Zeithaml et al. (2005) developed the "E-S-Qual" by extending and refining SEVQUAL to measure e-SQ. It consisted of two parts, i.e. routine service encounter and service errors (E-ResS-QUAL). Yoo and Donthu (2001) develop a 4dimension scale called SITEQUAL. Lee and Lin (2005) adopted a modified SERVQUAL scale to measure e-SQ in terms of web site design, reliability, responsiveness, trust, and personalization. Wolfinbarger and Gilly (2003) developed a 14-item scale "eTailQ," based on philosophy of total

quality management to measure e-SQ and predict customer e-SAT, loyalty, and attitude

2.3 Previous studies and Research Hypotheses

How to appraise e-service quality has become the study object of various scholars.. Against this background, several contributions have sought to delineate the domain of e-service quality and identify its dimensions (see, e.g. Bauer et al. 2006; Collier and Bienstock, 2006; Fassnacht and Koese, 2006; Francis, 2009a; Kim et al. 2009; Parasuraman et al. 2005; Wolfinbarger and Gilly, 2003). Collier and Bienstock (2006) adopt Mentzer et al.'s (2001) service quality model as a basis to conceptualize e-service quality. They argued that in a similar fashion to logistics customers, online customers require information quality and ease of order during the process, order condition and accuracy in the outcome of online transactions. Chang and *et al*. (2009) aimed to construct a model to represent linkages between e-service quality, customer satisfaction, and customer loyalty. Also, they assumed a moderate role for customer perceived value between customer satisfaction and loyalty. Data were collected by means of a questionnaire survey from customers of an online website. The results of statistical analysis indicate e-service quality positively affects customer satisfaction which leads to loyalty. Also, the results revealed customers with higher perceived value have higher degree of loyalty.

Trabold et al. (2006), analysing the impact of online retailers' e-service quality dimensions in several sectors, found it to be generally similar across the piece, though ease of return and experience of security in particular exhibited sector-by-sector differences in performance. Wolfinbarger and Gilly (2003) developed a 14-item scale which contains four factors: website design (involving some attributes associated with design, personalization, and product selection), reliability/fulfillment (related to accurate product representation, ontime delivery, and accurate orders), security/privacy (safety and trust), and customer service (willingness to solve problems, willingness to help, and prompt answers to inquiries). According to their scale the dimensions of security/privacy and reliability/fulfillment indicated strong validity. In contrast, dimensions of website design and customer service appear less internally consistent and distinct. Chen and Hitt (2002) found that system quality, product line breadth, and product line quality factors of e-SQ reduce customer switching and attrition.

Wenying and Sun (2010) aimed to examine relationships among e-service quality, e-customer satisfaction, perceived value and loyalty empirically. Data were collected from online customers and structural equation. According to Zeithaml, Parasuraman, & Malhotra (2002) there are several quality dimensions related to the commercial websites: ease of navigation, flexibility, efficiency, site aesthetics and security. modeling was applied to test the relationships. The results revealed that e-service quality positively influences customer satisfaction, perceived value and e-loyalty. Also, findings showed both e-customer satisfaction and perceived value directly affect e-loyalty. Yen and Lu (2008) found that the e-SQ dimensions of efficiency, privacy protection, contact, fulfillment, and responsiveness have statistically significant influences on buyer's disconfirmation of online auctions which are subsequently, positively associated with their satisfaction, which is then is positively associated with loyalty intentions to repurchase a product or reuse a service. Yaobin and Tao (2005) believe that the serviceability and accessibility of theweb site, goodwill, network security, and customers' trust liability will all affect the establishment of customers' initial trust in the web site, which will directly exert effects on their online purchase motivation.

Szymanski and Hise (2000) studied the role that customer perceptions of online convenience, merchandising (product offerings and product information), site design, and financial security play in satisfaction assessments. This study did not include aspects of customer service or fulfillment; rather, it dealt only with aspects of the Web site. Furthermore, it measured satisfaction rather than service quality. Sun and *et al*. (2009) identified Privacy, Fulfillment, System availability and Efficiency as the variables of e-service quality. They aimed to examine causal linkages among dimensions of e-service quality, customer satisfaction, perceived value and loyalty. The results showed that dimensions of e-service quality affect customer satisfaction and perceived value. Also, results indicated that e-customer satisfaction and perceived value influence loyalty. Al-Hawari and Ward (2006), taking the bank as an example, verifies the positive effects exerted by e-service quality on customers' satisfaction while these effects increase the bank's benefits. Zeithaml et al. (2000, 2002) and Parasuraman et al. (2005) carry out a study on Internet service quality based on their earlier research on service quality in the traditional distribution channels, and develop an ESQUAL scale based on the 7 dimensions proposed by Zeithaml (Zeithaml 2000, 2002; Parasuraman et al. 2005).

Supportively, Sahadev and Purani (2008) identified Privacy, Fulfillment, System availability and Efficiency as the variables of e-service quality. They examined relationships among dimensions of e-service quality, customer satisfaction, trust and loyalty. The results indicated dimensions of e-service quality positively affect both customer satisfaction and trust. Also, results revealed customer satisfaction and trust directly affect loyalty. Zhenhua et al. (2006), on the basis of the data collected from Taiwai, survey the effects of the privacy protection, payment condition, online community and net service quality on the customers' trust under business-to-customer (B2C) purchase environment. Yang and Jun (2008) measured e-service quality using two groups: Internet purchasers and Internet non-purchasers. They found that reliability was the most important dimension for

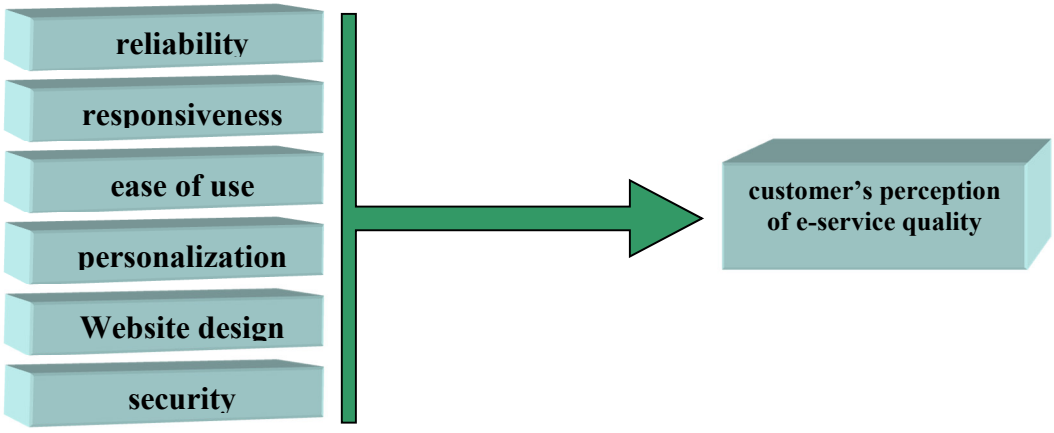
Internet purchasers even when compared to access, ease of use, personalization, security, and credibility. Internet non-purchasers, in contrast, consider security as their most critical concern. Customers actually evaluate a website's reliability based on whether it provided them with reliable information and safe transactions. Yen and Lu (2008) identified some variables such as efficiency, system availability, privacy and fulfillment as the dimensions of e-service quality. Then they examined the linkages among dimensions of e-service quality, customer satisfaction and loyalty. Results revealed the dimensions of e-service quality directly influence customer satisfaction. Subsequently, customer satisfaction positively affected loyalty.

In the empirical work of Ho and Lin (2010) in an emerging economy of Taiwan Internet banking sector, they developed and validated a five-dimension internet banking service quality with 17-item measurement scale for measuring the service quality in internet banking. The five emerged dimensions that were based on e-service quality model of Cristobal (2007) are: web design, customer service, assurance, preferential treatment and information provision. According to Lee & Lin (2005) website design is an important factor in determining the customers-perceived e-service quality and it has significant and positive impacts on the customers' perceived e-service quality. Kassim and Abdullah (2010) examined the relationships among e-service quality dimensions, customer satisfaction and trust. The results indicated direct effect of service quality on customer satisfaction. Further, the results showed customer satisfaction positively influence e-trust. Loiacono et al. (2002) develop the WEBQUAL to scale the service quality. They point out that e-service quality includes 12 dimensions including the information adaptability, trust, design, visual requirement, flow, business process, interaction, response time, intuition, creativity, overall communication, and replace ability. Collier and Bienstock (2009) identified privacy as one of the dimensions of e-service quality. They concluded privacy positively influences customer satisfaction. Building upon these findings, we posit that E-Service quality dimensions directly relates to customer's perception of e-service quality. As a result, our research hypothesis are:

H1: Reliability positively relates to customer's perception of e-service quality.
H2: Website design positively relates to customer's perception of e-service quality.
H3: Security positively relates to customer's perception of e-service quality.
H4: Responsiveness positively relates to customer's perception of e-service quality.
H5: personalization positively relates to customer's perception of e-service quality.
H6: Ease of use positively relates to customer's perception of e-service quality.

3. Research Model

The author proposes a model that describes the relationship between reliability, responsiveness, ease of use, personalization, Website design, security, and customer's perception of e-service quality. The study is organized as follows: First, a conceptualization for the study is developed through the exploration and definition of the constructs of conceptual model. The author do this by defining each construct of reliability, responsiveness, Ease of use, personalization, security, and Access. Secondly, the sample and measures employed in the study are described, and then the empirical research results are reported. In conclusion, the results are discussed along with the theoretical and managerial implications of the findings.



4. Research methodology

This section presents the research methodology used in this study. We describe the sample used, discuss how each of the variables included in the study is operationalized and finally present the statistical analysis.

4.1 Sample

The participants in this study consisted of internet banking customers of banks in Iran. Out of these, a sample size

of 50 respondents from each bank would be selected due to cost and time constraints. A purposive sampling method was used to consciously select customers who meet the criteria of having used internet banking services for the past twelve months. Survey data had been collected at the beginning of February 2015. The surveys have not been coded and all participants have been kept anonymous. One hundreds and sixty usable surveys were returned with a response rate of 64.6 %. There were 63 (39.7 per cent) female and 97 (60.3 per cent) male. 50 per cent were 20-less than 30 years old, 33.8 percent were between 30 and 40 years old, another 15.3 per cent were between 40 and 50 years old, and 0.9 percent were above 45 years old. Finally, concerning education, 25.6 per cent did hold a diploma degree, 63.1 per cent were bachelor degree, 8.1 per cent were postgraduate degree, and 3.1 per cent were higher education degree, the summary of the sample characteristics shown in table (1).

Table (1) Sample characteristics

Variable		Frequency	%
Gender	Male	97	60.3
	Female	63	39.7
Age	20- less than 30 years	80	50
	30- less than 40 years	54	33.8
	40- less than 50 years	24	15.3
	50 years and more	2	0.9
Education	high school	5	3.1
	Diploma	41	25.6
	Bachelor	101	63.1
	postgraduate	13	8.1

4.2 Research variables and measurement

The constructs in this study were developed by using measurement scales adopted from prior studies. Modifications were made to the scale to fit the purpose of the study. All constructs were measured using five-point likert scales with anchors strongly disagree (= 1) and strongly agree (= 5). All items were positively worded.

1. *Reliability*: refers to the ability to perform the promised service accurately and consistently, including frequency of updating the web site, prompt reply to customer enquiries, and accuracy of online purchasing and billing.. four items were adopted from (Lee and Lin,2005; Van Riel et al.,2003; Swaid and Wigand,2009; Tih and Ennis, 2004),, which had a reported reliability coefficient of 0.72. The four items were: "This site performs the service right the first time," "Services are provided when they are promised," "This site doesn't always live up to it promise," and "You never know what is happening on this site."
2. *Responsiveness* relates to flexibility, prompt delivery, consistency and accuracy of service delivered. Four items were adopted from (Madu and Madu, 2002; Swaid and Wigand, 2009; Surjadjaja et al., 2003; Tan et al., 2003; Yoo and Donthu, 2001; Yang, 2003), which had a reported reliability coefficient of 0.74. The four items were: "This site handles product returns well," "It tells me what to do if my transaction is not processed," "It takes care of problems promptly," and "Providing answers to your questions."
3. *Ease of use:* Site contains functions that help customers find what they need without difficulty, has good search functionality, and allows the customer to maneuver easily and quickly back and forth through the pages. Five items were adopted from (Zeithaml, et.al, 2000; Yang 2001, Fassnacht and Koese, 2006), which had a reported reliability coefficient of .810. The five items were: "The text on the web site is easy to read," "Web site text/labels/menu items are easy to understand," "Learning to operate the web site is easy for me," "It would be easy for me to become skilful at using the site," and "I find the web site easy to use."
4. *Personalization* dimension could involve individual designs for clients in accordance with their pattern of consumption and preferences which also results in an optimum online service, saves the customer time and increases their perception of service quality Four items were adopted from (Madu & Madu, 2002; Yang et al., 2003; Field et al, 2004; Srinivasan, Anderson, & Ponnavolu, 2002), which had a reported reliability coefficient of 0.77. The four items were: "ability to customize your use of the site," "designed to make future transactions easier," "site adaptation to your future needs," and "degree of customization that is available."
5. *Security: addresses the* technical specifications of a website's security and payment methods, this dimension also incorporates company reputation, confidence and general confidentiality among consumers and those operating from within the company, engaging in the communication process. Four items were adopted from (Shaohan & Minjoon, 2003; Yang and Jun, 2002; Wolfinbarger and Gilly; 2003; Van Riel, et al., 2003), which had a reported reliability coefficient of 0.75. The four items were: "This site keep secret of information of my transactions," "This site will not share my personal information with other sites," "This site will protect my bank cards information," and "Payment was submitted in a

safe mode."

6. *Website design:* A multidisciplinary pursuit pertaining to the planning and production of Web sites, including, but not limited to, technical development, information structure, visual design, and networked delivery. Four items were adopted from(Cox and Dale, 2001; Swaid and Wigand, 2009; Wolfinbarger and Gilly, 2003; Yoo and Donthu, 2001), which had a reported reliability coefficient of .70. The four items were: "Easy completion of online transactions.," "Easy logging on bank's online portal.," "Easy understanding which button to be clicked for the next step.," and "Ability of this internet portal in helping customer to complete a transaction quickly..". The results of the reliability are summarizes in Table (2).

Regarding customer's perception of e-service quality, two items used to measure it, which had a reported reliability coefficient of .83. the two items were "Based on my previous online experience, I feel the online banking service quality is good.," and "The online service quality is better than I expected."

4.3. Factor analysis

A principal component factor analysis was conducted to validate the underlying structure of e-service quality dimensions (Table 2). Results of the factor analysis indicated the existence of seven significant dimensions with eigenvalues greater than one.

Table (2) factor analysis of the study variables

Construct and item	Mean	Factor Loading	Eigenvalue	% of Variance	Reliability
Reliability (R)			1.974	33.124	0.72
R1	3.62	0.599			
R2	3.48	0.567			
R3	3.49	0.706			
R4	3.67	0.735			
Responsiveness (RE)			2.510	32.148	0.74
RE1	3.64	0.69			
RE2	3.77	0.59			
RE3	3.97	0.57			
RE4	3.62	0.66			
Ease of use (EU)			2.123	40.112	0.81
EU1	3.54	0.71			
EU2	3.91	0.69			
EU3	3.57	0.68			
EU4	3.64	0.64			
EU5	3.74	0.71			
Personalization (P)			2.012	32.148	0.77
P1	4.01	0.55			
P2	3.94	0.60			
P3	3.67	0.71			
P4	3.75	0.58			
Security (S)			1.846	44.187	0.75
S1	3.68	0.64			
S2	3.59	0.69			
S3	3.64	0.72			
S4	3.71	0.80			
Website design (WD)			1.887	51.258	0.70
WD1	4.08	0.74			
WD2	4.15	0.67			
WD3	4.07	0.68			
WD4	4.12	0.70			
Customer's perception of e-service quality (ESQ)			1.924	42.574	0.83
ESQ1	3.87	0.58			
ESQ2	3.76	0.61			

The KMO measure of sampling adequacy value for the items listed below (table (3)) indicating sufficient intercorrelations with the Bartlett's Test of Spehericity was also found to be significant. These dimensions were six dimensions listed under e-service quality namely Reliability (4 items), Responsiveness (4 items), Ease of use

(5 items), Personalization (4 items), Security (4 items), and Website design (5 items), respectively. And e-service quality perception (2 items).

Table (3) Kaiser-Meyer-Olkin and the Bartlett's Test of Sphericity

Variables	Kaiser-Meyer-Olkin Values	Bartlett's Test of Sphericity	
		Approx.Chi-Square	Sig.
Reliability	0.687	305.145	0.000
Responsiveness	0.712	360.124	0.000
Ease of use	0.774	240.127	0.000
Personalization	0.684	210.547	0.000
Security	0.614	198.857	0.000
Website design	0.740	217.235	0.000
e-service quality perception	0.709	220.478	0.000

4.5. Correlation analysis: relationships between the variables

A correlation matrix was constructed using the variables in the questionnaire to show the strength of relationship among the variables considered in the questionnaire. According to Kline (1998), correlation matrix is defined as ``a set of correlation coefficients between a number of variables". SPSS version 7.0 was used**.**

Table (4) Summary of Means, standard deviations, and correlations .

Variables	R	RE	EU	P	S	WD	ESQ
Reliability	1	.326(**)	.463(**)	.458(**)	.478(**)	.254(**)	.374(**)
Responsiveness		1	.421(**)	.514(**)	.331(**)	.267(**)	.395(**)
Ease of use			1	.367(**)	.289(**)	.394(**)	.276(**)
Personalization				1	.443(**)	.337(**)	.381(**)
Security					1	.419(**)	.512(**)
Website design						1	.467(**)
e-service quality perception							1

**** Correlation is significant at the 0.01 level (2-tailed).**

As shown in table (4), the correlation matrix indicates that the highest coefficient of correlation in this research between Responsiveness and Personalization, is 0.514, which is below the cut-off of 0.90 for the collinearity problem. Thus, multicollinearity problem does not occur in this research (Hair et al., 1998). These correlations are also further evidence of validity and reliability of measurement scales used in this research (Barclay et al., 1995; Hair et al., 1998). There was a significant positive relationship between Responsiveness and Personalization ($r = 0.514$, $n = 160$, $p \leq 0.01$). The weakest correlation was for Reliability and Website design ($r = 0.254$, $n = 160$, $p \leq 0.01$).

5. Data Analysis

The statistical computer program used for the questionnaires data analysis was SPSS for Windows Version 11.0. Correlation studies were used. The multiple regression analysis was used to further explain the significance of the independent and dependent variables. The statistical significance difference targeted was .05 alpha levels which is typical in most research (Cooper & Schindler, 2006; Sekaran, 2000).

5.1 Multiple regression analysis.

The hypotheses in this study test the six dimensions of e-service quality: Reliability; Responsiveness; Ease of use; Personalization; Security; and Website design as the independent variables relate to customer's perception of e-service quality. Multiple regression analysis was employed to test the hypotheses.

Table (5) Regression Summary. (N= 160)

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. error	ß			Tolerance	VIF
1	(Constant)	0.977	0.176		5.558	0.000		
	Reliability	0.186	0.047	0.184	3.935	0.000	0.795	1.258
	Responsiveness	0.175	0.053	0.156	3.302	0.001.	0.774	1.293
	Ease of use	0.114	0.043	0.123	2.635	0.009	0.794	1.259
	Personalization	0.061	0.046	0.060	1.337	0.008	0.868	1.152
	Security	0.214	0.033	0.305	6.503	0.000	0.791	1.264
	Website design	0.134	0.054	0.118	3.116	0.002	0.794	1.259
Notes: R^2 = 0.332 ; Adj· R^2 =0.323 ; Sig. F = 0.000 ; F-value = 38.249 ; dependent variable, p < 0.01								

The results of the multiple regression analysis are reported in Table 5. The variance explained in the dependent variable by the e-service quality dimensions is 33.2 per cent, which is significant (F = 38.249, p= 0:00). Reliability, Responsiveness, Ease of use, Personalization, Security, and Website design are supported to be positively related to customer's perception of e-service quality, Security is the most important factor in e-service quality evaluation (ß =0.305, p=0.001). Reliability is the second important variable (ß =0.184, p<0.001). In addition, Responsiveness, Ease of use, Personalization and Website design significantly affect customer's perception of e-service quality.

6. Conclusion

E-service can play a critical role in improving the services quality delivered to its customers as it can achieve survival, increase satisfaction and trust and then generate the competitive success for organizations (Feindt et al. 2002). Customer perceived e-service quality is one of the critical determinants of the success of online business (Yang et al. 2004). Accordingly, there is a rise of research on the construct of e-service quality. The aim of this article was to explore the measurement of e-service quality in the banking services setting, finding that a combination of six dimensions relating to Reliability, Responsiveness, Ease of use, Personalization, Security, and Website design., best represents the measurement of e-service quality within the online banking context in Jordan. According to the survey results of the customers' perspective, "security" was rated as the most significant e-SQ dimension. This dimension was followed in ranking by Reliability. A comparison with previous surveys of customers' views reveals that "reliability" was reported by Zeithaml (2002) to be the most important dimension in all services. Similarly, Wolfinbarger and Gilly (2003), who examined consumers' perceptions of online retailers, found that "reliability" was the strongest predictor of e-SQ.

Results of this study indicated that E-service quality was directly associated with customer perceived service quality. Accordingly, six hypotheses established in light of the direct associations among variables were strongly supported as results of correlation analysis. Associations among six E-service quality dimensions with perceived service quality. In summary, findings provided evidence that E- service quality dimensions were influential on customer perceived service quality. Also, the findings have important implications to ensure quality services on a banking sector to retain repeat customers' patronage that may evolve to customer loyalty.

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