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Muslim Amin

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Internet banking service quality and its implication on e-customer satisfaction and e-customer loyalty

Muslim Amin

*Department of Management, College of Business Administration,
King Saud University, Riyadh, Kingdom of Saudi Arabia*

Abstract

Purpose – The purpose of this paper is to examine the internet banking service quality and its implication on e-customer satisfaction and e-customer loyalty.

Design/methodology/approach – A total of 1,000 questionnaires were distributed for internet banking customers and 520 were returned (resulting 52 percentage of response rate).

Findings – The results confirmed that the all four dimensions (personal need, site organization, user friendliness, and efficiency of website) are distinct constructs. The results also indicated that internet banking service quality consisting of four dimensions has appropriate reliability and each dimensions has a positive significant relationship with internet banking service quality. The efficiency of banking website is the important aspect of internet banking service quality. The finding found that the relationship between internet banking service quality, e-customer satisfaction and e-customer loyalty are significant.

Practical implications – The results show that the higher level of internet banking service quality significantly impacts to e-customer satisfaction and consequently leads to e-customer loyalty and a lower intention to leave the relationship with bank.

Originality/value – This study proposes a model to understand the effect of internet banking service quality on e-customer satisfaction and e-customer loyalty in developing country. The constructs truly reflect the dynamism of customers' banking relationship and a better understanding the attitude on internet banking will help the bankers in implementing more effective marketing strategies.

Keywords Malaysia, Internet banking, e-Customer loyalty, e-Customer satisfaction, e-Service quality

Paper type Research paper

1. Introduction

Internet banking has customers who interact through network technology, whereas traditional banking interacts with customers on non-website-based settings. However, internet banking services have unique characteristics that traditional banking services do not possess. For example, internet banking provides the customers to carry out a range of banking activities electronically at any time and place with low handling cost (Angelakopoulos and Mihiotis, 2011; Narayanasamy *et al.*, 2011; Nor and Pearson, 2008; Weir *et al.*, 2006; Yoon and Steege, 2013). In this way, internet banking plays an important role in reducing operating and fixed costs (Chen *et al.*, 2012; Fonseca, 2014; Zhao *et al.*, 2010) and helps the bank in building better relationship with their customers (DeYoung *et al.*, 2007; Ribbink *et al.*, 2004; Rod and Ashill, 2010; Rod *et al.*, 2009). In Malaysia, the development of internet banking has a great potential and has grown significantly along with the use of smart phones and tablets; and the penetration rate of internet is half of the country's population. As per March 2014, the number of internet banking subscribers is 52.9 percent over the 15.9 million (Bank Negara



Malaysia Report, 2014). Despite the increasing number of internet banking users, the customer adoption of internet banking has not yet reached the expected levels. One of the common concerns that have been emphasized about the adoption of internet banking is poor service quality and customer dissatisfaction (Calisir and Gumussoy, 2008; Li-hua, 2012; Zhao *et al.*, 2010). In fact, the main barrier for customer intention to use internet banking services is relate to the user habits. Additionally, customers are struggling to change their habits, behaviors, the way they interact with its internet banking services offer (Alsajjan and Dennis, 2010; Chemingui, 2013; Chen and Teng, 2013; Hanafizadeh *et al.*, 2014; Khalil *et al.*, 2010; Nor and Pearson, 2008). The potential customers' readiness to adopt the technology is also a significant factor (Al-Ajam and Md Nor, 2015; Al-alak, 2014; Chiou and Shen, 2012; Giordani *et al.*, 2014; Harrison *et al.*, 2014; Rezaei *et al.*, 2014). Interestingly, Karjaluo *et al.* (2002) found lack of consumer skills and experience with computers and technologies, which influence the consumer attitude toward internet banking. In addition, interpersonal, social network, security concerns (Hasim and Salman, 2010), habit and personality traits (McNeish, 2015) are the main criteria which influence customers to use internet banking. In fact, the lack of awareness and understanding of the benefits of internet banking services is also a notable issue (Guriting and Ndubisi, 2006; Harrison *et al.*, 2014; Laforet and Li, 2005; Liu *et al.*, 2005; Suzanne Harrison *et al.*, 2014; Thakur, 2014; Wu *et al.*, 2012; Zhao *et al.*, 2008).

The way customer perceives the service quality of a website-based settings is different from that of traditional services. Thus, investigating the service quality in the internet banking industry is important (Choudhury, 2013; George and Kumar, 2014; Ho and Lin, 2010; Kaura *et al.*, 2015; Ranaweera and Sigala, 2015; Singh and Kaur, 2013). It is important not only to understand how customers evaluate the integrated internet banking service processes, but also to identify the main dimensions which measures integrated service quality in internet banking. Previous research on service quality mostly have been validated in Europe and North America using SERVQUAL or SERVPERF measurement scales; it is likely that the cultural difference of customers will influence its applicability in Malaysia context. For example, Karatepe *et al.* (2005) suggested that service quality scales developed in one culture may capture service quality sentiments in another culture. In addition, the different interpersonal designs of different industry may also differ from one country to another (Black *et al.*, 2014; Brady and Robertson, 2001; Chen *et al.*, 2012). To accomplish this gap, relevant items from internet banking service quality scales (Herington and Weaven, 2009; Ho and Lin, 2010) are adapted and incorporated. This approach is more appropriate and emphasizes on technical aspects of website rather than traditional service quality dimensions. Moreover, bank customers are becoming more open to competitive advancements, thus internet service quality alone may not be sufficient to ensure long-term relationship between the customers and the banks (Brun *et al.*, 2014). Consequently, customer satisfaction and loyalty have been identified as an important factor in building and maintaining the relationship with their customer in order to reduce the perceived risk of using internet banking (Aldas-Manzano *et al.*, 2011; Chen, 2013; Chen *et al.*, 2012; Dahlstrom *et al.*, 2014). Additionally, Black *et al.* (2014) explain that service quality has a stronger relationship with customer outcomes when services are inseparable or relational. This situation has directed many banks to undertake high levels of marketing effort and upgrading of internet banking technology in order to increase the relationship with their customers. Although previous research has attempted to investigate the relationship between customer satisfaction and customer loyalty across

several industries, there is lack of research in this area in relation to Malaysian internet banking context. In fact, overall results can be different from one researcher to another depending on measurement scales used in their study. This study attempts to investigate the structural relationship between internet banking service quality, e-customer satisfaction, and e-loyalty based on distinct constructs. In this study, the construct and model of e-satisfaction developed by Herington and Weaven (2009) and Ribbink *et al.* (2004) and e-customer loyalty by Ramseook-Munhurrun and Naidoo (2011) and Zeithaml *et al.* (1996) are applied to the context of internet banking industry. e-customer satisfaction is measured as a multi-items measure to specify customer satisfaction and will be defined to transaction-specific judgments from internet banking perspectives (Bodet, 2008; Bressolles *et al.*, 2014; Cronin and Taylor, 1992; Herington and Weaven, 2009). Thus, customer loyalty is defined as consumer's intention to revisit the website of internet banking in the future (Amin *et al.*, 2013; Ramseook-Munhurrun and Naidoo, 2011; Zeithaml *et al.*, 1996). This research study makes a significant contribution to literature of bank marketing and academicians by explaining how internet banking service quality dimensions are used as a predictor of e-customer satisfaction and consequently increase e-customer loyalty. In this study, four key dimensions of internet banking service quality (personal need, site organization, user friendliness and efficiency of websites), have been found as the main factors influencing e-customer satisfaction and loyalty. Therefore, a better understanding of these relationships will help the internet banking industry in developing the marketing strategies, maintaining long-term the relationship with their customers, and achieving competitive advantages in the global market.

2. Literature review

2.1 Internet banking service quality

In the context of the internet, e-service quality is defined as a consumer's overall evaluation and judgment on the quality of the services that is delivered through the internet (Bauer *et al.*, 2006; Liao *et al.*, 2011; Parasuraman *et al.*, 2005; Santos, 2003; Zeithaml *et al.*, 2002). Based on this, e-service quality has been conceptualized as a base for interactive information service (Ghosh *et al.*, 2004). For this reason, Rolland and Freeman (2010) suggested that the conceptualizations of e-service quality must be expanded to the global level and e-service quality needs consideration on all aspect of the transaction, including service delivery, customer service and support.

Until today, numerous researchers have developed service quality concepts across different industries and countries (Aagja and Garg, 2010; Akram and Sultan, 2014; Angur *et al.*, 1999; Arasli *et al.*, 2005a, b; Collier and Bienstock, 2006; George and Kumar, 2014; Gounaris *et al.*, 2010; Guo *et al.*, 2008; Karatepe *et al.*, 2005; Ladhari *et al.*, 2011; Raza *et al.*, 2015). For example, Carlson and O'Cass (2011) highlight that consumers evaluate different dimensions of e-service delivered in order to form an overall evaluation of e-service quality. The findings conclude that the dimensions of e-service quality, i.e. environment quality, delivery quality and outcome quality are antecedents to global e-service quality measurement. In online banking industry, Herington and Weaven (2009) found four dimensions of e-ServQual: personal needs, site organization, user friendliness, and efficiency; and all factors are rated as an important factor to determine the e-service quality. Similarly, Jayawardhena (2004) proposed five dimensions to measure e-service quality: access, web interface, trust, attention, and credibility, and concluded that customers specified the notion that service quality in e-banking is largely determined by web elements.

Additionally, Rod *et al.* (2009) explored three dimensions of service quality that influence overall internet banking service quality: customer service quality, online information system quality, banking service product quality. In Greece, Santouridis *et al.* (2009) investigated internet service quality and its impact on customer satisfaction in the banking context by adopting an instrument, which is based on SERVQUAL and found that e-service quality are consists of six dimensions: assurance, quality of information, responsiveness, web assistance, empathy and reliability. The findings confirm that familiarization-related dimensions, such as empathy and web assistance, play an important role in customers' willingness to recommend the service to other people. In Taiwan, Ho and Lin (2010) found five dimensions for measuring e-service quality of internet banking, namely: customer service, web design, assurance, preferential treatment, and information provision. In Hong Kong, Siu and Mou (2005) attempted to examine customers' service quality perceptions in internet banking and four analytical dimensions are identified: credibility, efficiency, problem handling and security. In Thailand, Thaichon *et al.* (2014) reveal that service quality is influenced by network quality, customer service, information support, privacy and security. In Malaysia, Poon (2008) explored the determinants of users' adoption of e-banking services and found ten attributes: convenience of usage, accessibility, features availability, bank management and image, security, privacy, design, content, speed, and fees and charges.

However, there are some criteria that have not been elaborately emphasized yet, such as performance and security of banking transactions, as well as the confidentiality of personal account data (Aladwani, 2001; Aldás-Manzano *et al.*, 2009; Hanafizadeh and Khedmatgozar, 2012; Zhao *et al.*, 2010). For example, Zeithaml *et al.* (2002) explained that typically customers evaluate websites and service quality delivery in terms of information availability and content, ease of use or usability, privacy/security, graphic style, and fulfilment of purpose. Interestingly, Zeithaml *et al.* (2000) suggest that personal service is not a critical element in e-SQ, except the situation when problems occur or where the customers adopt complex decisions. In this sense, customers do not necessarily expect to come across much empathy in an online setting, except when they have queries or problems (Barrutia and Gilsanz, 2009). Although, research on e-service quality (Bauer *et al.*, 2006; Bressolles *et al.*, 2014; Clemes *et al.*, 2011; Herington and Weaven, 2009; Jiang *et al.*, 2015; Kuo and Tang, 2013; Parasuraman *et al.*, 2005; Wu and Ko, 2013; Zeithaml *et al.*, 2002) has grown extensively and applied substantively through these instrument in variety of settings, still it been criticized. Generally, critics have questioned the multidimensional nature of the instruments, measurement scales, psychometric properties, and the feasibility of e-SERVQUAL as a framework in measuring e-service quality. Several researchers suggest that service quality should be based on a hierarchical concept (Brady and Cronin, 2001; Clemes *et al.*, 2011; Dabholkar, 1996; Dabholkar and Bagozzi, 2002; Dabholkar *et al.*, 1995, 2000; Fassnacht and Koese, 2006; Martínez and Martínez, 2010; Wu and Cheng, 2013; Wu and Hsu, 2012). More recently, Carlson and O'Cass (2011) adapted Dabholkar *et al.* (2000) model for measuring e-service quality using measurement approach. They concluded that environmental quality, delivery quality, and outcome quality are dimensions to measure e-service quality. Thus, it is argued that the service quality framework introduced by Parasuraman *et al.* (1985, 2005) may not achieve the same level of validity in online case (Sahadev and Purani, 2008). Therefore in this study, perceptions and reasoned actions are used as the basis for measuring e-service quality. The attributes of e-banking service quality are defined as multidimensional construct and adapted from literature based on the perspective of Herington and Weaven (2009); and

Ho and Lin (2010). The dimensions are putting more emphasis on the importance of technical aspects of website delivery, in contrast to the traditional service quality instruments which focus on the human elements.

2.2 *e-Customer satisfaction*

Oliver (1980) explained that customer satisfaction refers to meeting the customer's expectation on the products and services. If the perceived performance matches or even exceeds the customers' expectations of services, they are satisfied. If it does not, the customers are dissatisfied (Fullerton and Taylor, 2015; Oliver, 1993; Rust and Zahorik, 1993; Sharifi and Esfidani, 2014). Under this theory, consumers obviously will prefer positive disconfirmation than negative disconfirmation. This conclusion is relative because the assessment is a comparative process between the subjective experience and an initial reference or standard of comparison (Bressolles *et al.*, 2014). In particular, there is no consensus in marketing literature in defining customer satisfaction, whether it is transactional or cumulative (Boulding *et al.*, 1993; Cronin and Taylor, 1994; Liébana-Cabanillas *et al.*, 2013; Mittal *et al.*, 1999). In this definition, the cumulative satisfaction is determined by satisfying and dissatisfying the customer with a product or service over time (Brun *et al.*, 2014; Parasuraman *et al.*, 1994a, b; Sharma *et al.*, 1999; Zeithaml *et al.*, 1993), and the transactional is defined with a product or service in a single transaction (Boshoff, 1999, 2005; Cronin and Taylor, 1994; Homburg *et al.*, 2006; Høst and Knie-Andersen, 2004; Oliver, 1993). In the online context, Szymanski and Henard (2001) conceptualized e-satisfaction as the consumers' judgment on their internet experience as compared to their experiences with traditional way of dealing with customers. Similarly, Anderson and Srinivasan (2003) explained e-satisfaction as the contentment of the customer with respect to his or her prior purchasing experience with a given e-commerce firm. In this study, satisfaction will be viewed as a separate construct from service quality and will be restricted to transaction-specific judgments definition (Amin *et al.*, 2013; Cronin and Taylor, 1992; Herington and Weaven, 2009; Ribbink *et al.*, 2004).

Previous research has identified various factors that determine e-customer satisfaction in the online banking sector. Some authors suggests that e-customer satisfaction is driven by website characteristics (Anderson and Swaminathan, 2011; Bansal *et al.*, 2004; Liébana-Cabanillas *et al.*, 2013), and quality attributes (Collier and Bienstock, 2006; Cristobal *et al.*, 2007; Moon *et al.*, 2011; Wolfinbarger and Gilly, 2003). In this perspective, Jeong and Lee (2010) explained that product diversity, tangibles, responsiveness, interaction, and stability have significant impact on internet customer satisfaction. This means, the way in which the service is delivered through a website plays a critical role in driving e-consumer satisfaction. In this context, Liébana-Cabanillas *et al.* (2013) emphasized that internet banking customers are mostly satisfied with the internet accessibility, ease of use, usefulness, and trust. Consequently, positive (or negative) consumer perceptions of the quality on the various e-service attributes will result in satisfaction (or dissatisfaction) with the e-service provided through the website (Carlson and O'Cass, 2011). For this reason, meeting or exceeding customer satisfaction expectations is important for internet banking as customers are more demanding to determine their expectations.

2.3 *e-Customer loyalty*

In literature, there are two dimensions to measure customer loyalty, namely, behavioral and attitudinal loyalty (Ball *et al.*, 2004; Jacoby and Kyner, 1973; Kandampully *et al.*, 2015;

Piha and Avlonitis, 2015). Behavioral loyalty refers to a customer's behavior to repurchase, due to their liking of a particular brand or service (Cyr, 2008; Jacoby and Chestnut, 1978; Jiang *et al.*, 2015; Zeithaml *et al.*, 1996). Although, this definition offers a relatively objective measurement of customer loyalty, however, this approach does not provide any proper explanation of the existence of loyalty (Høst and Knie-Andersen, 2004). Attitudinal loyalty reflects the emotional and psychological state of the customer to repurchase and to recommend to other people (Baumann *et al.*, 2012; Bowen and Shoemaker, 1998; Hennig-Thurau *et al.*, 2001, 2002; Wong and Zhou, 2006). According to this approach, merely describing the actual behavior of the consumer does not suffice, but a proper analysis and description is clearly required to understand the structure of the customer preferences (Høst and Knie-Andersen, 2004). In this sense, a key challenge is to identify and understand how to manage and control the antecedent variables that will affect customer loyalty.

In internet banking industry, Anderson and Srinivasan (2003) defined e-customer loyalty as the tendency of customers to continue using specific website, frequently visit it, and show high site adhesion with high detention time. For this reason, Gera (2011) highlighted that the interaction experience with the website is most critical in influencing customer's decision to return to the site and make positive recommendations to others. Similarly, Caruana (2002) and Baumann *et al.* (2012) suggested that customers often develop an attitude toward purchasing behavior based on past experience. Therefore, focussing on e-customer loyalty is important for internet banking in order to maintain the relationship with their customers. In this context, the customers with high loyalty will frequently visit and recommend to others (Amin *et al.*, 2013; Jeong and Lee, 2010), and this leads to high commitment to repurchase of a services or products consistently in the future (Anderson and Swaminathan, 2011; Fraering and Minor, 2013; Kandampully *et al.*, 2015; Ladhari *et al.*, 2011; Melnyk and Bijmolt, 2015), and prevent them to create negative word-of-mouth (WOM) and convey their negative impression to other customers (Amin *et al.*, 2011; Caruana, 2002; Kaur *et al.*, 2012). Consequently, Haron *et al.* (1994) and Ndubisi and Ling (2006) pointed out that in Malaysian culture; friends, neighbors and family members have a great influence on prospective customers when it comes to making decisions to patronize a financial institution. Therefore, in this study, e-customer loyalty refers to a consumer's intention to revisit the website for internet banking and to consider repurchase of a preferred product and service consistently in the future (Amin *et al.*, 2013; Ramseook-Munhurrun and Naidoo, 2011; Zeithaml *et al.*, 1996).

3. Hypotheses development

3.1 *Internet banking service quality and e-customer satisfaction*

In the service literature, the causal relationship between banking service quality and customer satisfaction is the subject of great academic debate and no consensus on this issue has been reached (Babakus and Boller, 1992; Bahia and Nantel, 2000). Some researchers and academicians describe customer satisfaction as an antecedent of service quality (Bitner *et al.*, 1990; Carman, 1990; Parasuraman *et al.*, 1985), and others have argued that the service quality is an antecedent of customer satisfaction (Amin and Isa, 2008; Anderson and Sullivan, 1993; Cronin *et al.*, 2000; Cronin and Taylor, 1992; Kashif *et al.*, 2015; Sheng and Liu, 2010; Yap *et al.*, 2012). In banking sector, Joseph and Stone (2003) have highlighted that the availability of internet banking services delivery and user friendliness appears to be correlated with high customer satisfaction and retention. Similarly, Rod *et al.* (2009) found that when overall internet banking service

quality is perceived to be high, customers are more likely to be satisfied with their online service and consequently will be more satisfied with their banks. For this reason, Anderson and Srinivasan (2003) suggests that e-customer satisfaction is likely to be driven by website characteristics (e.g. ease of use), since the website is the principle interface between the customer and the firm. Consequently, positive customer perceptions of the quality of the various e-service attributes will result in satisfaction with the e-service provided through the website (Carlson and O'Cass, 2011; Cristobal *et al.*, 2007; Kaura *et al.*, 2015; Raza *et al.*, 2015; Singh and Kaur, 2013). In addition, Bressolles *et al.* (2014) suggest that although e-customer satisfaction is influenced by website attributes, different consumers will be affected differently. Additionally, Black *et al.* (2014) explain that relationship between service quality and customer satisfaction is stronger for those that are less technically complex of services. In this situation, customers who have information technology skills can easily use the internet banking service, and they will have higher-satisfaction levels than others (Herington and Weaven, 2009; Ho and Lin, 2010; Lang and Colgate, 2003; Li-hua, 2012). Consequently, internet service quality will also influence customers to revisiting the internet website and deliver positive WOM to other customers (Carlson and O'Cass, 2010). Hence, the following research hypotheses are proposed:

- H1. Internet banking service quality has a positive relationship with e-customer satisfaction.
- H2. Internet banking service quality has a positive relationship with e-customer loyalty.

3.2 e-Customer satisfaction and e-customer loyalty

Many studies have provided empirical evidence to support the statement that customer satisfaction has positive relationship on repurchase intention and customer loyalty (Aksoy, 2014; Amin *et al.*, 2013; Baumann *et al.*, 2011, 2012; Bloemer *et al.*, 1998; Cronin *et al.*, 2000; Kashif *et al.*, 2015; Kassim and Abdullah, 2010; Nguyen and Leblanc, 2002; Sharifi and Esfidani, 2014; Thaichon *et al.*, 2014; Zeithaml *et al.*, 1996). For example, Ramseook-Munhurrun and Naidoo (2011) found that there is a significant relationship between e-customer satisfaction and e-customer loyalty in internet banking. Accessibility is the foremost important aspect in determining e-customer satisfaction, while security is also important determinant of behavioral intentions. Similarly, Gera (2011) found that e-customer satisfaction is a direct antecedent of positive recommendation intentions, and leads to positive WOM (Baumann *et al.*, 2011; Kaura *et al.*, 2015; Levy, 2014; Sotiriadis and van Zyl, 2013), and behavioral intention (Baumann *et al.*, 2012; Cronin *et al.*, 2000; Szymanski and Henard, 2001; Zeithaml *et al.*, 1996). It seems that consumers who are satisfied with internet banking are more likely to engage in a consistent relationship with internet banking in future and demonstrate a more loyal behavior (Al-alak, 2014; Gounaris *et al.*, 2010; Levy, 2014; Martín-Consuegra *et al.*, 2007; Wong and Zhou, 2006). However, when dissatisfaction is felt, customers are likely to complain about the service and engage in negative WOM (Caruana, 2002; Kandampully *et al.*, 2015; Ryngelblum *et al.*, 2013), and they will react negatively and switch to other service providers (Amin *et al.*, 2011; Athanassopoulos *et al.*, 2001; Laksamana *et al.*, 2013; Wirtz *et al.*, 2007). In this sense, if the internet banking fails to provide channels which the customers need, they will find more difficulty in developing a relationship with their customers (Amin *et al.*, 2013; Bloemer *et al.*, 1998; Levy, 2014). As a result, customer who satisfied with internet banking will

exhibit high loyalty toward their bank. For this reason, e-customer satisfaction is considered as important determinant of e-customer loyalty. Thus, the following research hypothesis:

H3. e-Customer satisfaction has a positive relationship with e-customer loyalty.

4. Methodology

4.1 Data collection process

Data were collected through a developed structured questionnaire as measurement tool. Since no sampling frame was available, samples could not be obtained through probability sampling method. A convenience sampling approach was used in this study. The interviewers visited and distributed the questionnaires by hand to the customers outside the bank counters. Respondents were selected among those customers who visited the sampled banks during day time and at various days for a week or a month. Respondents were customers visiting the counters of banks and had experienced with internet banking services prior to completing the survey. However, in answering the questions, various controls and filter questions were put in place to ensure the quality of the survey. The purpose of the filter questions was to make sure that the respondents fit the two basic restrictions, being 18 years old or over, and have experienced with internet banking transaction. The last filter question was to ensure that the respondents agreed to participate in this survey and respondents were assured of confidentiality. They were politely approached and the purpose of the study was explained. This study was conducted in four different cities in Malaysia by four trained interviewers during December 2012-April 2013 period. In Malaysia, 31 local and international banks are offering internet banking services. In this study, ten commercial banks and forty branches were selected in four different cities in Peninsula Malaysia. In total, 25 respondents from each branch and city were involved. The ten commercial banks consisting of AmBank, Alliance Bank, Bank Muamalat, Bank Islam Malaysia Berhad, CIMB Bank, CIMB Islamic Bank, Hong Leong Bank, Maybank, Public Bank, and RHB Bank. Ten commercial banks were selected based on accessibility and have more branches across the country. Two cities represent levels of economic development in the southern area (Johor Bahru, and Melaka), one city represent the north area with developing economic growth (Pulau Pinang), one city represent the east coast area (Kuantan), and two cities represent the central areas where most commercial banks in Malaysia locate their head offices (Kuala Lumpur and Shah Alam). The selection of bank branches across a spread of different cities has the purpose of enhancing the generalizability of the findings and representation of internet banking customers. The banking sectors were chosen because they represent one of the typical service sectors involved in developing economic growth in Malaysia. In this study, online administration of the survey was not adopted due to low response rate (Herington and Weaven, 2009).

4.2 Questionnaires design

Internet banking service quality was measured using the items from Herington and Weaven (2009) and Ho and Lin (2010). e-Customer satisfaction was measured using a five items previously used by Herington and Weaven (2009), Ramseook-Munhurrun and Naidoo (2011) and Ribbink *et al.* (2004) in their internet banking research. Five items to measure e-customer loyalty were adapted and modified from Amin *et al.* (2013),

Ramseook-Munhurrin and Naidoo (2011), Ribbink *et al.*, 2004 and Zeithaml *et al.* (1996). The modifications consisted of substituting questionnaire items particularly suited to a specific service industry (internet banking) and context (Malaysia). The questionnaire was written in both Bahasa Malaysia and English language to ensure clarity, and their content validity (wording and meaning) was checked carefully by two Malaysians experts. A pre-test was then conducted to improve questionnaire structure and content. Fifty questionnaires were distributed to bank customers who have experienced using internet banking in Kuala Lumpur, and minor changes to the scales were made accordingly to ensure that the questions were not repetitive. Pilot test respondents were not used in the further analysis. A five-point Likert scale was used to measure internet banking service quality and e-customer loyalty from “strongly disagree” (1) to “strongly agree” (5). In addition, to measure e-customer satisfaction, a five-point scale was used, ranging from “strongly dissatisfied” (1) to “strongly satisfied” (5).

A total of 1,000 questionnaires were distributed and 520 were returned (resulting 52 percentage of response rate). According to Anderson and Gerbing (1988) and Hair *et al.* (2010, 2012b), this sample size should be sufficient to obtain a converged and proper AMOS solution for models with three or more indicators per factor. Five questionnaires were considered invalid because respondents did not completed the answer. Table I presents the demographics of the sample. Females account for 61.3 and males 38.7 percent of the internet banking customers. Interestingly, most of respondents were under 30 years of age and the majority was in the age group 20-30 years old (60.6 percent of total respondents). In this context, younger generation prefers to use internet banking services compared to older age groups (30 years old above).

Construct	Classification	Number	%
Gender	Male	201	38.7
	Female	319	61.3
Age	18-24 year old	142	27.3
	25-34 year old	173	33.3
	35-44 year old	87	16.7
	45-54 year old	64	12.3
	55 and above	54	10.4
Occupation	Student	66	11.7
	Government employee	105	20.2
	Private employee	262	50.4
	Businessman	40	7.7
Education	Other	47	9.0
	Certificate	61	11.7
	Diploma	186	35.8
	Degree	154	29.6
	Master	80	15.4
	PhD	25	4.8
Frequency used internet	Others	14	2.7
	1 hour below	89	17.0
	1-3 hours	194	37.3
	3-5 hours	99	19.0
	5-7 hours	60	11.5
	7 hours above	78	15.2

Table I.
Sample
characteristics

Note: $n = 520$

In addition, majority respondents claimed that they use internet for one to three hours daily (37.3 percent), followed by two to five hours (19 percent), below one hour (17 percent), seven hours above with 15.2 percent, and five to seven hours (11.5 percent).

5. Measurement model

The purpose of a measurement model is to describe how well the observed indicators serve as a measurement instrument for the latent variables. To assess the measurement model, two step analysis processes were employed in this study. First, a confirmatory factor analysis was employed to specify the pattern by which each measure loads on a specific factor (Anderson and Gerbing, 1988; Byrne, 2013; Hair *et al.*, 2010). Second, the squared multiple correlation was conducted to measure each indicator and how well an item measures a construct (Amin and Isa, 2008; Hair *et al.*, 2010; Holmes-Smith, 2001). A first-order of CFA model for internet banking service quality was conducted to examine the measurement model using AMOS 19. The first-order CFA result showed that the goodness-of-fit was moderately satisfied. The results show that the χ^2 is significant ($\chi^2 = 161.269$, χ^2/df ratio 2.273, $\rho = 0.000$). Meanwhile, the GFI value is 0.957, RMSEA value 0.05, and CFI value 0.982. By checking the squared multiple correlations for each measurement item, no items were deleted as the R^2 values were more than 0.5 (Holmes-Smith, 2001). As a result, the measurement model retained 14 observed indicators from the original that were derived to estimate the model fit. Accordingly, the second-order CFA was run in order to examine the parameter. The measurement model result shows that the goodness-of-fit was moderately satisfied. The χ^2 shows is significant ($\chi^2 = 163.051$, χ^2/df ratio 2.234, $\rho = 0.000$). Meanwhile, the GFI value is 0.956, RMSEA value 0.04, and CFI value 0.982. Table II shows the results of the first-order and second-order CFA for internet banking service quality. Thus, the results show that 14 items of the second-order CFA model of four dimensions fitted the sample data. Similarly, a CFA was employed to examine e-customer satisfaction and e-customer loyalty. The results of CFA show that the goodness-of-fit was moderately satisfied. The χ^2 is significant ($\chi^2 = 276.388$, χ^2/df ratio 6.428, $\rho = 0.000$). Meanwhile, the GFI value is 0.902, RMSEA value 0.10, and CFI value 0.942.

Table III shows the factor loadings, Cronbach's α , average variance extracted (AVE) for internet banking service quality, e-customer satisfaction, and e-customer loyalty. To test the reliability of internet banking service quality, e-customer satisfaction, and e-customer loyalty in instruments, the Cronbach's α coefficient was computed. The coefficient α exceeded the minimum standard of 0.70 (Nunnally, 1979), which indicates that it provides a good estimate of internal consistency. The coefficient α obtained greatly exceeded the minimum acceptable values 0.881, 0.916, 0.904, 0.851 for the internet banking service quality dimensions (personal need, site organization, user friendliness, and efficiency of website). Meanwhile, for e-customer satisfaction and e-customer loyalty, the coefficient α obtained values that exceed the maximum value suggested (0.915 and 0.906, respectively). The values

Variable	GFI	CFI	χ^2/df	RMSEA	Sig.
First-order CFA	0.957	0.982	2.273	0.05	0.000
Second-order CFA	0.956	0.982	2.234	0.04	0.000

Notes: First-order CFA = 14 items; Second-order CFA = 14 items

Table II.
Goodness-of-fit
statistics for
measurement model
of internet banking
service quality

Constructs	Items	Standardized Factor Loading	AVE	CR
Personal Need $\alpha = 0.881$	I feel completely safe when making transactions on the website of online banks	0.896	0.718	0.884
	I feel that my personal needs have been met when using the website of online banks	0.859		
	The website of online banks provides me with information and products according to my preferences	0.783		
Site organization $\alpha = 0.916$	The website of online banks is simple to use	0.821	0.735	0.917
	The website of online banks is well organized	0.811		
	I can get on to the website of online banks quickly	0.876		
	Website of online banks design is user friendly	0.917		
User friendliness $\alpha = 0.904$	The website of online banks is user friendly	0.801	0.704	0.905
	Navigation on the website of online banks is easy	0.865		
	The website of online banks launches and runs right away	0.856		
Efficiency of websites $\alpha = 0.851$	Pages at the website of online banks do not freeze	0.832	0.657	0.852
	It is easy to find what I need on the website of online banks	0.770		
	It is easy to get anywhere on the website of online banks	0.829		
Customer Satisfaction $\alpha = 0.915$	I can complete a transaction quickly on the website of online banks	0.831	0.669	0.910
	I am generally pleased with this bank's online services	0.761		
	I am very satisfied with these bank's online services	0.797		
	I am happy with this online bank	0.810		
	The website of online banks is simple to use	0.823		
Customer Loyalty $\alpha = 0.906$	I am satisfied with overall online bank's products and services	0.892	0.623	0.891
	I will recommend the online banking to other people	0.699		
	I prefer the online banking above others	0.745		
	I would like to say positive things about online banking to other people	0.831		
	I would recommend online banking to someone who seeks advice	0.875		
	I intend to continue using the online banking	0.784		

Table III.
Standardized factor loadings, average variance extracted (AVE) and composite reliability (CR)

indicate good reliability of the data set. To assess the convergent validity for each construct, the standardized factor loadings were used to determine the validity of the constructs (Anderson and Gerbing, 1988; Hair *et al.*, 2010). Convergent validity can be ascertained if the loadings are greater than 0.5 (Bagozzi and Yi, 1988b, 1991; Fornell and Larcker, 1981), composite reliability greater than 0.7 (Hair *et al.*, 2010) and the AVE is greater than 0.5 (Fornell and Larcker, 1981). The findings indicate that each factor loading of the reflective indicators ranged from 0.699 to 0.957 and exceeded the recommended level of 0.50. As each factor loading on each construct was more than 0.50, the convergent validity for each construct (internet banking service quality, e-customer satisfaction, and e-customer loyalty) were established, thereby providing evidence of construct validity for all the constructs in this study (Anderson and Gerbing, 1988; Hair *et al.*, 2010). In addition, AVE was calculated for assessing discriminant validity for the constructs (Black *et al.*, 1998; Hair *et al.*, 2010), and the AVE ranged from 0.623 to 0.735. Table IV shows the discriminant validity of the constructs, since the square root of the AVE between

	Customer satisfaction	Efficiency of websites	User friendliness	Site organization	Personal need	Customer loyalty
Customer Satisfaction	0.818					
Efficiency	0.650	0.811				
User friendliness	0.537	0.572	0.839			
Site organization	0.607	0.649	0.587	0.857		
Personal need	0.479	0.376	0.282	0.338	0.847	
Customer loyalty	0.640	0.640	0.403	0.521	0.413	0.789

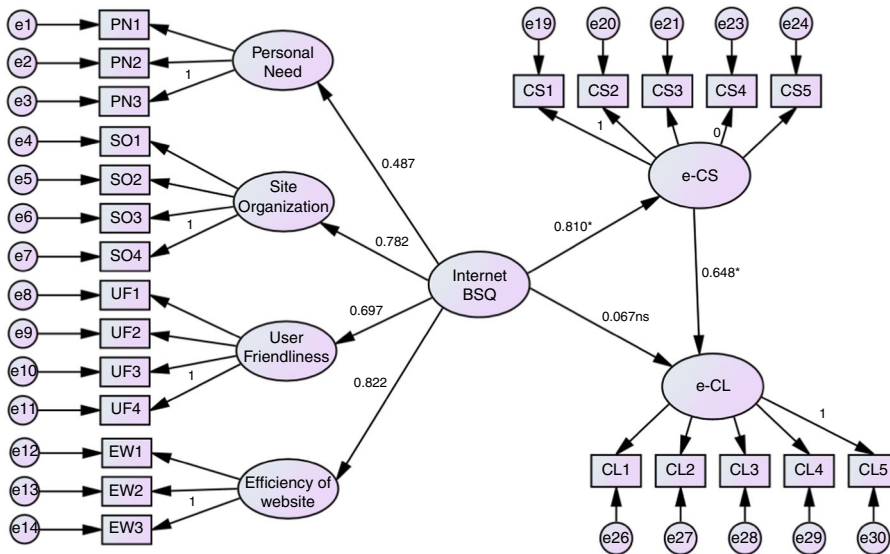
Table IV. Discriminant validity

Notes: Below the diagonal: correlation estimated between the factors; Diagonal: square root of AVE

each pair of factors was higher than the correlation estimated between factors, thus ratifying its discriminant validity (Bagozzi and Yi, 1988a; Black *et al.*, 1998; Hair *et al.*, 2012b).

6. Structural equation modeling

A structure equation modeling of internet banking service quality, e-customer satisfaction, and e-customer loyalty were conducted to estimate the parameters. Figure 1 shows the effect structural model of internet banking service quality on e-customer satisfaction and e-loyalty ($p < 0.001$). This model starts from the first-order constructs of service quality measurement scale, consisting of four dimensional structures: personal need, site organization, user friendliness, and efficiency of website to measure internet banking service quality. The dimension of personal need are



Notes: *Significant; ns, not-significant

Figure 1. Research model

measured by three indicators, site organization by four indicators, user friendliness by four indicators, and efficiency of website by three indicators. Meanwhile, e-customer satisfaction and e-loyalty are measured by five indicators for each dimension. The findings suggest that the structure model of internet banking service quality dimensions is a good determinant of e-customer satisfaction and e-customer loyalty.

Table V show the results, which indicate the acceptable goodness-of-fit model. The χ^2 are significant ($\chi^2 = 884.001$, χ^2/df ratio 3.286, $p = 0.000$). The model has a RMSEA value of 0.07, which is below range level and considered satisfactory. The CFI value of 0.936 and NFI of 0.925 indicated that the model is satisfactory, since the value is above 0.90 (Anderson and Gerbing, 1988; Hair *et al.*, 2010, 2012a, b). Overall, the values are close to the threshold, and, thus, they are represent an acceptable model fit.

The standardized parameter estimates and significant values for the hypothesis relationships are presented in Table V. The significant path coefficient has shown that the efficiency of website and site organization dimension had the most important impact on internet banking service quality, followed by user friendliness and personal need, respectively. The standardized path was 0.822 for efficiency of website, 0.782 for site organization, 0.697 for user friendliness, and 0.487 for personal need, respectively. The results show that internet banking service quality has a positive relationship with e-customer satisfaction ($\beta = 0.810$; $\rho = 0.001$), thus *H1* is supported. However, there has no positive relationship between internet banking service quality on e-customer loyalty, thus, *H2* is not support. There is a positive relationship between e-customer satisfaction and e-loyalty ($\beta = 0.648$; $\rho = 0.001$), thus, *H3* is supported.

7. Discussions and managerial implications

The purpose of this study is to examine the internet banking service quality and its implication on e-customer satisfaction and e-customer loyalty in the context of Malaysia internet banking. The results confirm that the all four dimensions (personal need, site organization, user friendliness, and efficiency of website) are distinct constructs. The results also indicate that internet banking service quality consisting of four dimensions has appropriate reliability and each dimension has a significant relationship with internet banking service quality. The internet banking service quality dimensions identified in this study are associated to technology based-banking industry. Therefore, in order to maintain a high level of internet banking service quality, the internet banks should pay attention to all four dimensions identified. In this study, the efficiency of website is found to be the key driver of internet banking service quality, followed by site organization, user friendliness, and personal

Description	Estimate	<i>p</i> values
Personal need ← internet banking service quality	0.487	0.000
Site organization ← internet banking service quality	0.782	0.000
User friendliness ← internet banking service quality	0.697	0.000
Efficiency of website ← internet banking service quality	0.822	0.000
e-Customer satisfaction ← internet banking service quality	0.810	0.000
e-Customer loyalty ← e-customer satisfaction	0.648	0.000
e-Customer loyalty ← internet banking service quality	0.067	0.475

Notes: $\chi^2 = 884.001$; χ^2/df ratio 3.286; GFI = 0.894; CFI = 0.936; RMSEA = 0.06; PCFI = 0.905; PCLOSE = 0.000; significance at the 0.01 level

Table V.
Standardized
regression for
research model

need, respectively. It means that customers are looking for banks that provide services that can complete a transaction quickly on website, and easily accessible. In other words, customers are paying more emphasize on the efficiency of website dimensions than other dimensions as key factor in establishing relationship with their banks. Therefore, internet banking is required to focus on strategic choice in increasing consumer awareness and acceptance of new technology (banking system) in order to gain competitive advantage. This finding was in consistent with Herington and Weaven (2009) and Sohail and Shaikh (2008) who stated that efficiency of website is the most influencing factor in user's evaluation of internet banking service quality and the online banking customers are more focussing on download speed and completing a transaction quickly. Findings of the present study support the results of research by Ho and Lin (2010) on online banking, customers expect to complete their transactions correctly, on time, and have their e-mails response quickly. Similarly, Thaichon *et al.* (2014) suggests that by enhancing service quality, firms can influence customers' satisfaction, value, trust and commitment, which are important for firms' long-term sustainability. Therefore, the internet banking has to make sure that these expectations are met accordingly. For example, if a customer has a bad experience in regards to the interactivity of functionality of the internet banking website, then a customer might make overall internet banking service quality judgment before a transaction took place. In order to provide a good quality of internet services, internet banking should provide their customers with effective and efficient website in a suitably presented environment and update the technology development (Chemingui, 2013; Chen and Teng, 2013; Collier and Bienstock, 2006; Herington and Weaven, 2009; Ho *et al.*, 2012; Jayawardhena, 2004). For this reason, Ho *et al.* (2012) emphasizes more the importance of physical (system functions and interface) and psychological attributes (services, information, attitudes) in understanding the dynamics of online customer behavior. Additionally, Ho *et al.* (2012) discover that quality plays an important part on internet searching behavior in two ways: improving the effectiveness and efficiency of websites, and users' acceptance of the website systems. Nowadays, customers are easily to find a large number of alternative banking sites, therefore, the main drivers of internet banking are depend on banking websites functionality and user interface (Vatanasombut *et al.*, 2008).

H1 indicating that internet banking service quality has a positive relationship with e-customer satisfaction. As a result supports that the higher levels of internet banking service quality will significant effect to have a high level of e-customer satisfaction. From four constructs of internet banking service quality, efficiency of website is the most important predictor of e-customer satisfaction. In addition to relationships between internet banking service quality and e-customer satisfaction, prior research suggested that internet banking service quality has a positive relationship with e-customer satisfaction (Carlson and O'Cass, 2011; Herington and Weaven, 2009; Ho *et al.*, 2012; Kaura *et al.*, 2015). For example, Herington and Weaven (2009) highlights that internet banking service quality dimensions, such as efficiency of website is plays significant role in enhancing e-customer satisfaction. Additionally, Bressolles *et al.* (2014) suggests that managers should pay attention in upgrading usability aspects of their navigation interface and focus on security or privacy aspects in order to maintain the relationship with their customers.

H2 and *H3* states that internet banking service quality has a positive relationship with e-customer loyalty, and e-customer satisfaction has positive relationship with e-customer loyalty. Although, the results support *H3*, however, internet banking

service quality has no positive relationship with e-customer loyalty, thus *H2* is not supported. This finding is consistent with the results found in the previous study (Al-Hawari, 2014, 2015; Casaló *et al.*, 2008; Ganguli and Roy, 2011; Kashif *et al.*, 2015; Levy, 2014; Ranjan *et al.*, 2015). This may indicate that bank customers do not feel that having excellent internet bank service quality will not have positive impact on e-customer loyalty. However, the results report that internet service quality has an indirect effect on e-customer loyalty via e-customer satisfaction. This indirect effect of internet banking service quality on e-customer loyalty discloses a new contribution to the existing literature that internet banking service quality has not been measured as a predictor factor of e-customer loyalty. In this context, Casaló *et al.* (2008) suggests that the ability of internet banking in terms of manageability of internet service quality will enhance e-customer satisfaction and e-loyalty. In fact, Carlson and O’Cass (2011) concluded that if e-service is delivered and evaluated as being of sufficient quality, then satisfaction with the service delivered will be a result. Similarly, Casaló *et al.* (2008) shows that satisfaction with previous interactions with the bank’s website have a positive effect on customer loyalty and positive WOM. Additionally, Baumann *et al.* (2007) highlight that when customers are satisfied with a particular bank and they are willing to recommend their bank to others. As a result, the more satisfied customers with their banks, the more loyal and committed to the bank they developed. As a result, when customers are dissatisfied and they are willing to switch their banks to others (Amin *et al.*, 2011; Collier and Bienstock, 2006; Fang *et al.*, 2011; Laksamana *et al.*, 2013; Ranaweera and Prabhu, 2003).

Although this study suggests that the higher level of e-customer satisfaction leads to a lower intention to leave the relationship and has the potential to increase e-customer loyalty, however, the intention of consumers to maintain the relationship with the internet banking largely depends on the satisfaction or dissatisfaction with their present services provider. Therefore, internet banking needs to improve the relationship between bank and customers, and –will raise the customer trust toward internet banking transactions. However, the correlation between e-satisfaction and e-loyalty becomes less important as risk perception increased. For this reason, Järvinen (2014) highlights that bank managers should take actions by reducing the levels of perceived risk in high-complexity banking services and maintaining customer service at high priority. If internet banking successful in transmitting a low perceived risk image, a risk-averse consumer will prefer to stay loyal, and this situation, the relationship between e-customer satisfaction and e-customer loyalty is stronger when perceived risk is significantly reduced (Aldas-Manzano *et al.*, 2011; Dahlstrom *et al.*, 2014). For this reason, the customers should perceive a feeling that the operations of internet banking system are secured and the legitimate of internet banking operation are backed up by the Central Bank of Malaysia. Thus, it will create confidence that Malaysia government rules are sufficiently enough to monitor internet banking. This has significant impact on consumer behavior decisions and influences their perceptions toward internet banks. This are consistent with Laforet and Li (2005) and Zhou (2011) who highlighted that consumers emphasize more on security aspects, and customers will hesitate to deal with their banks if they do not trust the internet banking transactions (Kshetri, 2013). If trust for internet banking is established accordingly, then the customer is more likely to accept it as a complementary in doing their online transactions (Dahlstrom *et al.*, 2014; McNeish, 2015; Yap *et al.*, 2010). In fact, if internet banking consumers sense that their transactions are unsafe, they will evacuate from the website even before completing the transactions. Therefore, it is fundamental for

internet banking to increase consumer trust, as the perceived risk is correlated to possible losses transaction is greater than in offline banking transactions (Aldas-Manzano *et al.*, 2011; Mukherjee and Nath, 2003, 2007). For this reason, Chemingui (2013), Jan and Kalthom (2014), Hurley *et al.* (2014), Yu *et al.* (2015), Zhao *et al.* (2010) and Zhou (2011) suggest that trust is plays important role in enhancing relationship between internet banks and customers. In addition, bank should proactively notify their customers that their personal data and all banking transactions are guarantee safely and kept confidentially. By providing numerous methods for customers to contact the online bank to get assistance is essential in improving the quality of the bank's online service operations. In fact, banks should provide online transaction procedures, information on how to deal with security problems, and instructions on how to use internet banking services securely. In addition, Kassim and Abdullah (2010), Rajaobelina *et al.* (2014) and Yu *et al.* (2015) suggests that to encourage e-customer satisfaction and e-customer loyalty, the banks should develop online systems which are trustworthy, secured, responsive, personalized for their users, perceived security/privacy, and information quality. In this context, banks should provide online transaction procedures, information on how to deal with security problems, and instructions on how to use internet banking services securely.

8. Limitations and future research

There are some limitations in this study. The total number of internet banking, sample size and covered areas of the study should be increased in order to achieve a proper result. For future research, additional internet service quality dimensions should be investigated such as interactivity and website services ability. In addition, as suggested by Dahlstrom *et al.*, 2014; Yu *et al.* (2015) that perceived risk and trust constructs should be incorporated as determinant of e-customer satisfaction and loyalty for future research.

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About the author

Muslim Amin is an Associate Professor in Services Management at the Department of Management, College of Business Administration, King Saud University (KSU), Riyadh, Kingdom of Saudi Arabia. Prior joining to the KSU, he served as a Senior Lecturer at the International Business School, Universiti Teknologi Malaysia (UTM-IBS). He holds a PhD and an MBA from the National University of Malaysia (UKM) and a BBA from the Faculty of Economic and Business, University of Syiah Kuala, Aceh, Indonesia. His current research interests include service quality, customer satisfaction, customer loyalty, electronic commerce and interactive marketing, and entrepreneurship marketing. He is the author of more than 50 international refereed journal papers and international conference papers. His recent publications have appeared in journals such as *The Service Industries Journal*, *International Journal of Bank Marketing*, *Asia Pacific Education Review*, *Journal of Quality Assurance in Hospitality & Tourism*, *Services Marketing Quarterly*, *Clinical Governance: An International Journal*, *The TQM Journal*, *International Journal of Retail & Distribution Management*, *Journal of Hospitality Marketing & Management*, *Nankai Business Review International*, *Journal for Global Business Advancement* and *International Journal of Islamic Middle Eastern Finance and Management*. Muslim Amin can be contacted at: tengkumuslim@yahoo.com

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