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# AN EMPIRICAL STUDY OF E-LOYALTY DEVELOPMENT PROCESS FROM THE E- SERVICE QUALITY EXPERIENCE: TESTING THE ETALIQ SCALE

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# AN EMPIRICAL STUDY OF E-LOYALTY DEVELOPMENT PROCESS FROM THE E-SERVICE QUALITY EXPERIENCE: TESTING THE ETAILQ SCALE

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## Abstract

*This research aims to investigate the process and factors for developing customer loyalty through e-service quality experience. Based on previous studies on e-loyalty and loyalty, we developed an integrated model of e-loyalty antecedent factors by testing the eTailQ scale including website quality, security/privacy, value perception, reliability and customer support which are mediated through trust and satisfaction. Data was collected from 140 e-commerce users and analyzed with Lisrel 8.8. The analysis result demonstrated that eTailQ scale is effective in developing customer loyalty and both satisfaction and trust has played important roles in shaping the e-loyalty development process. However, contradictory to the traditional loyalty study, customer support does not play a significant role in e-loyalty development process.*

*Keywords: ETailQ, E-service quality, E-satisfaction, E-loyalty, E-trust, Website quality, Privacy*

# 1 INTRODUCTION

Loyalty has been found to have significant benefits to increase a company's revenues in many ways (1997; Heskett & Schlesinger, 1994; Reichheld & Schefter, 2000). Previous study has found that increasing the percentage of loyal customers by as little as 5% can increase profitability by as much as 30% to 85% (Reichheld & Sasser, 1990). The rationale for this is that loyal customers contribute to profitability much more than temporary customers not only by purchasing the same goods or services repetitively but also acting as the source of word of mouth for new customers. Loyal customers are typically willing to pay a higher price and are more understanding when things goes wrong (Chow & Holden, 1997; Fukuyama, 1995; Reichheld & Schefter, 2000; Reichheld & Sasser, 1990; Zeithaml et al., 1996). Loyal customers are easier to satisfy because the vendor knows better about their expectations (Heskett & Schlesinger, 1994; Reichheld & Sasser, 1990; Zeithaml et al., 1996).

For this reason, when customers shifted from offline to online, e-loyalty, defined as feelings or attitudes that prompt a positive memory and thus make a customer to re-visit a website for information, communication or entertainment purposes, or to re-purchase a particular product or services from an online business (Anderson & Srinivasan, 2003; Gwee & Chang, 2013) has gradually gained attention from both practitioners and scholars. It has been found that loyalty plays an important role in almost every online business (Ariff et al., 2014; Reichheld & Schefter, 2000). It's naturally to assume that e-loyalty shall be similar to loyalty in the offline world. However, several researchers has found that online customer tend to be more loyal than the brick-and-mortar ones. For example, Reichheld and Schefter (2000) found that web customers tend to consolidate their purchases with one primary supplier, to the extent that purchasing from the supplier's site becomes part of their daily routine. Balabanis et al. (2006) has found that online shoppers are more loyal than brick and mortar shoppers as they tend not to switch suppliers, despite the fact that comparison of websites can provide them with the information as to what site offers the best deals. Thus, studies investigating factors influencing e-loyalty started to burgeon and various perspectives including branding (Davila et al., 2013), service quality (Ariff et al., 2014; Kim et al., 2009), gender (Ladhari & Leclerc, 2013), and the social influence perspective (Gwee & Chang, 2013), among which, the e-service quality is a new scale developed by a group of researchers (Kim et al., 2009; Wolfinbarger & Gilly, 2003) aiming at discovering the unique service feature of the online shopping experience. However, the role of eTailQ scale has only been investigated once by Kim et al. (2009) after its psychometric properties validated across different product categories by Caruana and Ewing (2006). There is a need to have more studies to test and validate eTailQ scale in different research context, especially in the loyalty development process.

This research thus aims to investigate the process and factors for developing customer loyalty through e-service quality experience perspective with eTailQ scale. Based on previous studies on e-loyalty and loyalty, we developed an integrated model of e-loyalty development process with eTailQ scale including website quality, security/privacy, value perception, reliability and customer support which are mediated through trust and satisfaction. Data was collected from 140 e-commerce users and analyzed with Lisrel 8.8. The analysis result demonstrated that eTailQ scale is effective in developing customer e-loyalty and both satisfaction and trust has played important roles in shaping the e-loyalty development process. However, contradictory to the traditional loyalty study, customer support does not play a role in e-loyalty development process.

## 2 LITERATURE REVIEW

### 2.1 E-loyalty

According to Blut et al. (2007), loyalty has four stages: cognitive, affective, conative, and active (observable) loyalty. Cognitive loyalty refers to the loyalty determined by the offerings of the brand

such as price, quality etc. Since the customer is open to view any other brand's offerings this is the weakest loyalty type. It is mostly influenced by customer's experience, especially the perceived performance relative to the price. Affective loyalty refers to the loyalty developed by a favourable attitude towards the brand. The fulfilment of customer expectancies leads to satisfaction which in turn leads to affective loyalty. Like cognitive loyalty affective loyalty is also open to deterioration as competitive offerings can attract the customer. Conative loyalty refers to both attitudinal loyalty and intentional action like the desire for repurchasing. Although this type is stronger the customer is still open to considering alternative offerings especially in the times of frequent service failure. Action Loyalty refers to the customer's willingness to consider repurchasing despite the necessary effort to do so, which is the strongest loyalty. Luarn and Lin (2003) discussed four major antecedents of e-loyalty which are trust (e-trust), satisfaction (e-satisfaction), commitment and perceived value. Their view is partly supported by Anderson and Srinivasan (2003) who discovered that alongside e-satisfaction, e-trust and perceived value; e-loyalty is significantly influenced by size, inertia, and convenience motivation. However, whilst Anderson and Srinivasan (2003) see convenience motivation as the most significant antecedent of e-loyalty; Luam and Lin (2003) argue that it is commitment which may either be affective commitment as with emotional attachment to the online firm or continuance commitment as with switching costs or scarcity of alternatives (Fullerton, 2003).

## **2.2 E-satisfaction**

According to Oliver (1997) (Cited in R. Anderson & S. Srinivasan E-satisfaction and E-loyalty, 2003), "Satisfaction is the summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with a consumer's prior feelings about the consumer experience." It refers to the level of gratification felt by a customer after a post-purchase comparison of pre-purchase expectations and purchase process experience (Constantin, 2013). This goes to say that satisfaction transcends beyond customer's perception of the quality of the purchased goods and services or value perception (Van La, 2005). The expectations developed as a result of advertisements and opinions of friends and family are vital to customer's satisfaction during and post purchase (Balabanis et al., 2006). As it concerns online platforms, several antecedents of satisfaction or e-satisfaction have been suggested by scholars and contributors; these include: value perception (Van La, 2005) customer service (Chiou & Droge, 2006; Cho & Park, 2001); online buying frequency and experience (Constantin, 2013; Shankar et al., 2003); web quality (Chang et al., 2008) and service reliability (Cristobal et al., 2007). However, Schaupp and Belanger (2005) argue that the three groups of factors that constitute the most important e-satisfaction antecedents: technological factors, shopping factors and product factors. Technological factors include attributes like web design and ease of use; security, privacy; shopping factors include customer service, ease of purchase and delivery while product factors include product quality, value perception, product variety and product information.

## **2.3 E-Trust**

E-trust can be defined as a customer's confidence and belief that his/her expectations of an online business would be met. Trust is essential if any firm is to gain its customers' loyalty; this is even more so as it concerns online businesses (Gommans et al., 2001; Reichheld & Scheffer, 2000). E-trust is known to affect e-loyalty as it concerns transactional security and privacy (Hoffman et al., 1999) – this can be attributed to the surge in online credit fraud and privacy concerns with firms who put customers' details into other uses without their knowledge or consent (Gommans et al., 2001). Besides these two major antecedents of e-trust, scholars have also mentioned website-quality (Chiou & Droge, 2006; Harris & Goode, 2004; Kim et al., 2009; Ribbink et al., 2004), reliability (Coulter & Coulter, 2002), and customer support (Hwang & Kim, 2007) as also having an influence on e-trust.

## **2.4 E-service quality**

Service quality refers to the overall judgement a customer has about the quality of a firm's service delivery. E-service quality is therefore defined as a customer's overall "evaluations and judgements regarding the excellence and quality of e-service delivery in the virtual market place" (Lee & Lin, 2005, p. 162, p162). E-service quality scales have been used to ascertain factors that determine a website's success (Liu & Arnett, 2000); measure e-customer satisfaction (Cristobal et al., 2007; Yang & Fang, 2004) and to measure the effectiveness and efficiency of websites (Zeithaml et al., 2002). The generic scale for service quality is the SERVQUAL as developed in 1988 by Parasuraman et al., (Lee & Lin, 2005; Yang & Fang, 2004). This scale was however adapted and termed e-SERVQUAL in order to measure online service quality (Zeithaml et al., 2002). Other e-service quality scales were soon theorised for example the WebQual 4.0 scale (Barnes & Vidgen, 2002), WebQual<sup>TM</sup> scale (Loiacono et al., 2002), PeSQ (Cristobal et al., 2007) and eTailQ scale (Wolfenbarger & Gilly, 2003). These different e-service quality scales have different nature and number of factors that they consider and there is no consensus as it concerns the exact form or number of e-quality factors that customers consider when they evaluate e-services (Ribbink et al., 2004). However, this study shall adopt as its theoretical framework, the eTailQ scale which has four factors: website design, reliability, privacy and security and customer service.

Studies have commonly shown e-loyalty to be strongly influenced by e-Satisfaction (Anderson & Srinivasan, 2003; Floh & Treiblmaier, 2006); e-trust (Gwee & Chang, 2013) and perceived value (Constantin, 2013; Harris & Goode, 2004; Van Riel et al., 2001). Our review of literature shows that whilst the concept of service quality/e-service quality scales was initially developed to measure quality of service delivery as it concerns customer satisfaction (Cristobal et al., 2007; Lee & Lin, 2005; Liu & Arnett, 2000; Yang & Fang, 2004; Zeithaml et al., 2002); it has been used to measure perceived value (Harris & Goode, 2004) and also attributed to having direct influence on e-loyalty (Ariff et al., 2014; Cronin Jr et al., 2000). However, there is little study on the relationship between e-service quality and e-trust; and the existing studies have commonly e-SERVQUAL or adapted forms of it (Cristobal et al., 2007; Ribbink et al., 2004; Yang & Fang, 2004) and eTailQ scale have been tested. The researchers are therefore motivated to carry out an empirical study in order to investigate the impact of the eTailQ scale on e-loyalty using e-trust and e-satisfaction as mediating variables. This study would extend the body of existing knowledge, generally, as it concerns e-service quality and e-loyalty and particularly as it concerns the investigation of the eTailQ scale in relationship with e-trust, e-satisfaction and e-loyalty.

## **3 RESEARCH MODEL AND HYPOTHESES**

This study proposed a comprehensive research model to investigate customers' e-loyalty development process from e-service quality experience through adopting eTailQ scale (Wolfenbarger & Gilly, 2003). We proposed that e-loyalty is influenced by both satisfaction and trust, which are further influenced by e-service experience variables including website quality, reliability, security/privacy, and customer support, which are important to online environment. Specifically, e-satisfaction is influenced by website quality, reliability, and customer support and trust are influenced by website quality, security/privacy, reliability and customer support. E-satisfaction has also been influenced by value perception. Based on the research model, we proposed 10 research hypotheses in three categories: e-satisfaction and e-trust as antecedents of e-loyalty; antecedents of e-satisfaction and antecedents of e-trust.

### **3.1 E-Satisfaction and e-trust-Trust as antecedents of e-loyalty**

The relationship between e-satisfaction and e-loyalty has been extended from the traditional loyalty studies that a more satisfied customer will be more loyal, varying from industry to industry and moderated by competitive structure of the industry (Jones & Sasser, 1995). Meanwhile, Oliver (2010)

discovered that satisfaction leads to loyalty but pointed out that an embedded social network has to exist to imply true loyalty. Baldinger and Robinson (1996) found that highly loyal customers tend to stay loyal if they have a positive attitude towards the brand, and the chances to convert a switching buyer into a loyal customer is much higher if the customer has favourable attitude toward the brand. When this satisfaction-loyalty relationship is extended in the online environment, the relationship becomes e-satisfaction and e-loyalty relationship and generally holds true as consistently tested by a series of studies. For example, in their study on e-satisfaction and e-loyalty, Anderson and Srinivasan (2003) found that e-loyalty is significantly influenced by several variables including e-satisfaction, e-trust, perceived value, purchase size, inertia, and convenience motivation, which accounts for 58% variance of e-loyalty. In another study on online game e-loyalty, Yang and Tsai(2007) have surveyed about 273 customers and found that e-loyalty is highly influenced by e-satisfaction by 78.2%. Posselt and Gerstner (2005) divided the satisfaction into two groups as pre-sale and post-sale and they assessed the effects of satisfaction on e-loyalty from two groups and showed that post-sale satisfaction has more effect than pre-sale satisfaction but both types of satisfactions regression analysis showed that satisfaction led customers to loyalty. Based on previous studies results, we thus proposed the following Hypothesis 1:

*H1: E-loyalty is positively influenced by online customer satisfaction.*

According to Garbarino and Johnson (1999) trust in business can be defined as the perception of confidence in the exchange of partner's reliability and integrity. Trust is an important issue in business because it is one of the most important factors for building successful, continuous relationships. Trust in the electronic medium is called "e-trust" and it is believed to increase online customer loyalty (Anderson & Srinivasan, 2003; Harris & Goode, 2004; Jin et al., 2008; Kim et al., 2009; Ribbink et al., 2004). E-trust and e-loyalty relationship has been consistently argued in many previous literature because it is important for customer relationship building (Papadopoulou et al., 2001). Harris and Goode (2002) investigated the influence of trust on loyalty and their study showed that there is a positive and direct association between trust and loyalty. A study by Luarn and Lin (2003) also identified trust as one of the constructs that determine loyalty alongside customer satisfaction, commitment and perceived value. Based on these, we propose the following hypothesis:

*H2: E-loyalty is positively influenced by e-trust.*

### **3.2 Antecedents of E-Satisfaction**

As a relative new factor, e-satisfaction has not been researched as extensively as offline satisfaction. Very critical to the discourse of customer satisfaction is service quality which various researchers have noted as a positive effect on customer satisfaction (Cristobal, Flavian and Guonaliu, 2007; Harris and Goode, 2004; Anderson, Fornell and Lehmann, 1994; Lurch and Ariely, 2000). Wolfinbarger and Gilly (Wolfinbarger & Gilly, 2003) theorised a framework called eTailQ which categorises, measures and predicts internet service quality. ETailQ has four factors that include website design, reliability, customer service and privacy/security. *Website design* refers to the presentation and capability of a business' online platform and considers its usability, user friendliness, aesthetic design, interactivity, layout, navigation, checkout, search capabilities and quality of information (Yang and Fang, 2004; Zeithaml, Parasuraman and Malhotra, 2002; Cristobal, Flavian and Guonaliu, 2007; Wolfinbarger and Gilly; 2002). *Reliability* refers to a firm's capacity to deliver the right products in the promised condition and the promised time (Cristobal et al., 2007). The description of products has to be exactly the same with the delivered goods and services. Since the customer is unable to see the real item before buying, at this stage the company has to be careful about their products and descriptions that they have written. Delivery time is also another important factor in the eyes of the customer because if there are frequent delays on delivery times this may lead the customer to think that the company is unreliable. *Customer support services* refer to a firm's ability to deal with customer requests and complaints and show the customers the willingness of company to communicate with them. A survey amongst 350 "Information Systems" (IS) executives showed that the priorities of IS management and

60% of the respondents said that the most important focus for their system development plans was developing their customer support applications (Negash et al., 2003) Another research which used BizRate.com's data has showed that customer support and on time delivery is more related with consumer's likelihood to buy again from an online retailer than price (Van La, 2005). *Online Security/Privacy* is an increasingly important issue that affects the un-authorized access, distribution and clandestine or fraudulent use of personal information/financial data as made possible by new technology (Cristobal, Flavian and Guonaliu, 2007; Jones, Wilikens and Masera, 2000).

Three components of the eTailQ scale -Website design, reliability and customer support services- are strong predictors of customers' perceived satisfaction according to the developers -Wolfenbarger and Gilly. This claim was also supported by other scholars (Chang and Chen 2008; Cristobal, Flavian and Guonaliu, 2007; Chiou and Droge, 2006). It is based on the eTailQ framework that we propose the following:

*H3-2: Customer Satisfaction is positively influenced by Website quality.*

*H3-3: Customer satisfaction is positively influenced by reliability of the company.*

*H3-4: Customer satisfaction is positively influenced by customer support service quality*

Furthermore is the issue of perceived value which refers to the benefits which customers get in relation to the price they pay. Currently online retail market is becoming more and more competitive and that's why most of the online retailing companies strive to increase their products quality and lower the prices so that they could increase the perceived value and as a result gain competitive advantage (Yang & Tsai, 2007; Yang et al., 2009; Yang & Peterson, 2004). Wandermerwe (2000) explains the success of electronic retailers such as Amazon mostly depends on their ability to find and use a value gap for retail shoppers. Another point is reducing the prices since online shops do not need real shops and sales consultants they already have an edge over traditional stores to reduce the costs which make it much easier for online shops to compete in the market. So we can say that value perception is one of the important factors for customers while choosing their supplier. K. Van La (2005) states that value perception has a strong effect on customer satisfaction and loyalty. Empirical evidence also show that value perception positively influences customer satisfaction (Walter, Thilo and Helfert, 2002 cited in Yang and Peterson, 2004; Anderson and Mittal, 2000).

Studies have also shown that service quality does not only improve customer satisfaction (Cristobal, Flavian and Guonaliu, 2007; Harris and Goode, 2004; Anderson, Fornell and Lehmann, 1994; Lurch and Ariely, 2000) but also improves the customers' perceived value of the goods or services offered (Bolton and Lemon, 1999; Mathwick, Malhotra and Rigdon, 2002 cited in Harris and Goode, 2002). Since eTailQ does not have perceived value as a component factor; the researchers therefore adapted the framework in other to further study perceived value's impact on e-satisfaction. As a result of this intent and arguments from previous studies, the researchers propose that:

*H3-1: e-customer satisfaction is positively influenced by e-Value perception.*

### **3.3 Antecedents of E-Trust**

As an important factor influencing e-loyalty, e-trust has been very well studied in previous e-loyalty literature. Similar to e-satisfaction, e-trust has been found to be influenced by website-quality (Chiou & Droge, 2006; Harris & Goode, 2004; Kim et al., 2009; Ribbink et al., 2004), reliability (Coulter & Coulter, 2002), and customer support (Hwang & Kim, 2007). We thus proposed the following H4-1, H4-2, and H4-3:

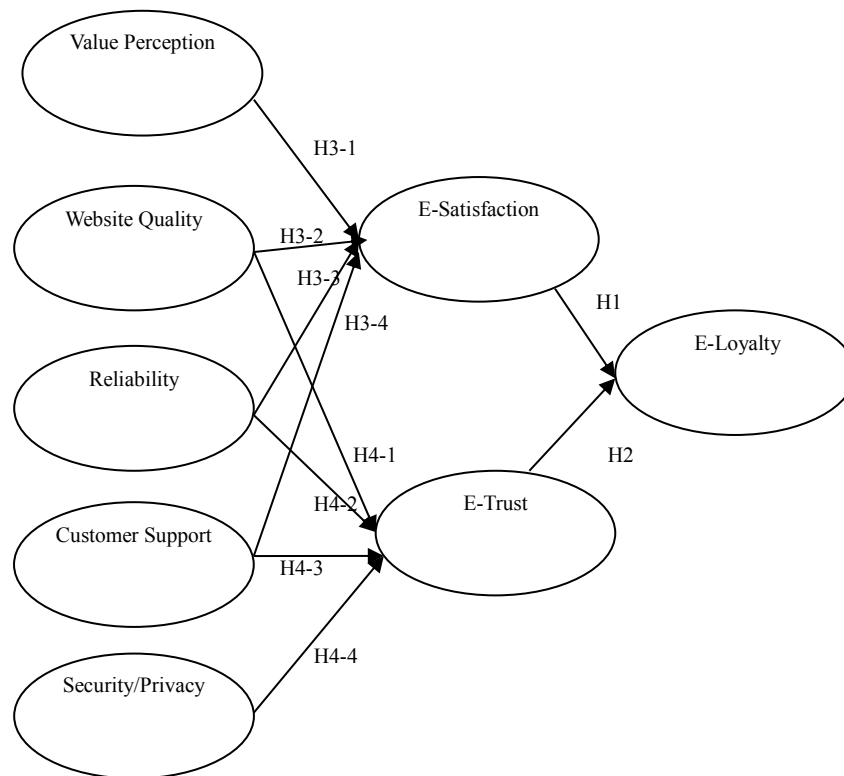
*H4-1: Customer trust is positively influenced by Website quality.*

*H4-2: Customer trust is positively influenced by the reliability of the company.*

*H4-3: Customer trust is positively influenced by customer support service quality.*

Trust issues in e-commerce do not just cover financial concerns, it also relates to privacy of the consumer. In some sectors customers may also be concerned about their privacy more than anything. Pharmacy sector could be a good example. Consumers who are purchasing their medicines online will mostly request that their ID's and the medicines they bought to be kept confidential. On this point of view the companies who are concerned about privacy will have competitive advantage with both acquiring new customers and retaining them. Secure Sockets Layer (SSL) encryption is a system used for e-commerce sites to provide secure communications on the internet. This kind of security layer protects customer from ID frauds and enables a secure online transaction medium. The websites which are protected by SSL encryption has SSL certificates containing authenticated information about the certificate owner. The site having a SSL encryption certificate is much more trustable when compared to uncertified ones. Nowadays growing customer awareness forces each commercial site to have an SSL certificate. By this way at least customers will be sure that no one will get their ID and they will shop in confidence by entering their bank account and the pin numbers. Studies show that online Security/Privacy have a direct effect on e-trust (Cristobal, Flavian and Guonaliu, 2007; Jones, Wilikens and Masera, 2000) and it is the only eTailQ factor that is theorised to affect trust (Wolfenbarger and Gilly, 2002). There, we propose that:

*H4-4: Customer trust is positively influenced by Security/privacy protocols of the company.*



*Figure 1 Research Model and Hypothesis*

## 4 RESEARCH METHODOLOGY

An online survey is designed to collect online consumer data to verify our research model. The research instruments for this study have adopted previously used measurements. A pilot study has been conducted to carefully design the questionnaire. The data was analysed with SEM with Lisrel 8.8. E-loyalty, E-trust, and E-satisfaction measurements have been adapted from several studies discussing on relationships between e-loyalty, e-satisfaction, and e-trust (Chang & Chen, 2008; Gwee & Chang,



2013; Jin et al., 2008; Kim et al., 2009). Perceived value was adapted from Yang and Peterson (2004), website quality was adapted from Chang and Chen (2008), reliability was adapted from Coulter and Coulter (2002), customer support was adapted from two studies (Hwang & Kim, 2007; Negash et al., 2003), and privacy was adapted from Kim et al. (2009).

A pilot study was conducted with 5 regular e-commerce users who were willing to participate in the study. The feedback from the pilot study helped correct the vague and unclear questions. The average time to fill the questionnaire was estimated to be 5 minutes. After the pilot study, the link of the online questionnaire was then distributed to potential online customers through snowball approach to the researcher's personal social networks over 2 weeks in UK. Before they filled in the questionnaire, they are explained by the research and asked whether they have online shopping experience. If no online shopping experience, they were suggested to not to participate in the study. Snowball approach was used because of the convenience when data collected. 152 people responded the questionnaire within two weeks. 12 questionnaires were eliminated because of incorrect response and we finally received 140 effective questionnaires. The SEM data analysis with Lisrel 8.8 was adopted for all the variables in this study are latent constructs.

## 5 DATA ANALYSIS RESULTS

### 5.1 Respondent Profile

Table 1 presents the distribution of respondents according to gender, age, income, and occupational status. It could be seen that the gender is balanced with 57.9% are male and 42.1% are female. Most people are with age group of 19-40 and 92.7% of the respondents have got at least the bachelor's degree. Most of their income level is below £36000.

Gender	Male	57.9 %
	Female	42.1 %
Age Groups	0-18 yrs	2.1 %
	19-25 yrs	51.4 %
	26-40 yrs	43.6 %
	41 and over	2.9 %
Education Level	High school	7.3 %
	Bachelors	61.2 %
	Masters or higher	31.5 %
Income Level	£ 0-18, 000	74.4 %
	£ 18,000-36, 000	19.5 %
	£ 36, 000 and over	6.1%

Table 1. Respondent Profile

### 5.2 Analysis of measurement model

Lisrel 8.70 was used to analyse the research model. A two-step measurement model and structural model analysis approach was employed, based on the recommendation of Anderson and Gerbing (1988), and CFA using LISREL 8.70 was conducted to test the measurement model.

Scale reliability and validity were assessed via CFA and Cronbach's alpha. The CFA approach was employed in this study, not only because the e-loyalty and other variables are established factors with validated measures, but also because this approach can provide the overall goodness of fit for the proposed measurement. CFA validation was evaluated from the GFI, the reliability analysis and the validity perspective.

As there is no perfect fit index, it is recommended that researchers employ a combination of fit indices to report their research results. Based on Hu and Bentler's (1999) recommendation, to minimise Type I and Type II errors under various conditions, an appropriate combination should contain both relative fit indices and noncentrality-based fit indices. Thus, for this study, we chose the GFI, the adjusted goodness-of-fit index (AGFI) and the root mean square residual (RMSR) from the absolute fit indices; the non-normalised fit index (NNFI) and the incremental fit index (IFI) from the relative fit indices; and the comparative fit index (CFI) and root mean square error of approximation (RMSEA) from the noncentrality fit indices. The NNFI and IFI were chosen because they are relatively unaffected by sample size (Gerbing & Anderson, 1993; Hu & Bentler, 1995; Marsh et al., 1988). The cut-off criteria for the fit indices were based on Hu and Bentler (1999). Table 2 presents the overall fit index of the structural model.

	$\chi^2$	df	NNFI	CFI	IFI	GFI	AGFI	SRMR	RMSEA
Recommended Value			$\geq 0.90$	$\geq 0.90$	$\geq 0.90$	$\geq 0.80$	$\geq 0.80$	$\leq 0.10$	$\leq 0.08$
Measurement Model	837.84	436	0.94	0.97	0.97	0.73	0.67	0.075	0.08
Structural Model	890.23	444	0.96	0.96	0.97	0.71	0.66	0.11	0.085

Table 2: Fit Index

Overall, the measurement model has a good fit. The NNFI and CFI are well above the acceptable level of 0.90 (Hu & Bentler, 1999). The RMSEA is below 0.08 and the RMSR value is below the recommended 0.10. Although the GFI and AGFI index failed to meet the recommended minimum values, we believe that the model fit is reasonably adequate to assess the results of the structural model.

The measurement model was further assessed for construct reliability and construct validity. The former was assessed on three levels—Cronbach's alpha, item reliability and composite reliability. Item reliability evaluates how much of the variance of the observed variable can be explained by the latent variable rather than by random error (Long, 1983). The purpose of composite reliability is similar to that of Cronbach's alpha, but the former takes the factor loadings into account rather than assuming that each item has an equal loading on the construct. As indicated in Table 3, the Cronbach's alpha values of all of our variables are above 0.80, which is significantly above the 0.70 level suggested for exploratory research (Nunnally & Bernstein, 1994). As can be seen from the same table, we also found that all of the item reliabilities surpassed the 0.50 level, which is an acceptable level. The composite reliabilities also demonstrated acceptable values above the 0.70 threshold suggested by Fornell and Larcker (1981), thus supporting the reliability of our measurements for model testing. Lastly we have measured the Average Variance Extracted (AVE) of our measurements, which we have found that all AVE's were over 0.5 which again supports the convergent validity of our scales so overall we can conclude that our findings are supporting our measurement's reliability. We also further tested discriminant validity through comparing the AVE with the shared variance of each variable. Table 4 demonstrated that the AVE of each factor is greater than the shared variance, showing acceptable level of discriminant validity.

Construct	Mean	SD.	Cronbach's Alpha	Factor loading	Item Reliability	Composite Reliability	AVE
E-loyalty			0.889			0.91	0.81
EL1	5.79	1.31		0.86	0.74		
EL2	5.46	1.34		0.75	0.56		
EL3	5.44	1.39		0.97	0.94		
EL4	5.58	1.14		0.99	0.98		
Satisfaction			0.928			0.93	0.70
S1	4.51	1.30		0.81	0.66		
S2	5.31	1.17		0.76	0.58		
S3	5.22	1.15		0.92	0.85		
S4	5.34	1.04		0.86	0.74		
Trust			0.948			0.94	0.79

T1	5.39	1.21		0.82	0.67		
T2	5.34	1.22		0.91	0.83		
T3	5.29	1.17		0.90	0.81		
T4	5.32	1.19		0.94	0.88		
Website Quality			0.888			0.88	0.65
WQ1	5.79	1.31		0.72	0.52		
WQ2	5.46	1.34		0.76	0.58		
WQ3	5.44	1.39		0.78	0.61		
WQ4	5.58	1.14		0.96	0.92		
Security/Privacy			0.904			0.92	0.73
SP1	4.89	1.32		0.75	0.56		
SP2	5.01	1.35		0.82	0.67		
SP3	5.11	1.39		0.84	0.71		
SP4	5.11	1.14		0.99	0.98		
Value Perception			0.937			0.94	0.80
VP1	5.10	1.33		0.86	0.74		
VP2	5.23	1.21		0.92	0.85		
VP3	5.10	1.05		0.89	0.79		
VP4	5.27	1.06		0.90	0.81		
Reliability			0.870			0.88	0.66
R1	5.29	1.29		0.74	0.55		
R2	5.25	1.33		0.74	0.55		
R3	5.86	1.06		0.80	0.64		
R4	5.56	1.09		0.95	0.90		
Customer Support			0.903			0.92	0.73
CS1	5.30	1.23		0.75	0.56		
CS2	5.01	1.29		0.87	0.76		
CS3	4.75	1.28		0.82	0.67		
CS4	4.96	1.02		0.97	0.94		

Table 3. Measurements of the Model

	EL	S	T	WQ	SP	VP	R	CS
E-Loyalty (EL)	0.81							
E-Satisfaction (S)	0.55	0.70						
E-Trust (T)	0.19	0.11	0.79					
Website Quality (WQ)	0.20	0.31	0.12	0.65				
Security/Privacy (SP)	0.14	0.16	0.28	0.16	0.73			
Value Perception (VP)	0.26	0.40	0.17	0.31	0.30	0.80		
Reliability (R)	0.24	0.36	0.20	0.38	0.19	0.41	0.66	
Customer Support (CS)	0.16	0.22	0.17	0.21	0.26	0.28	0.32	0.73

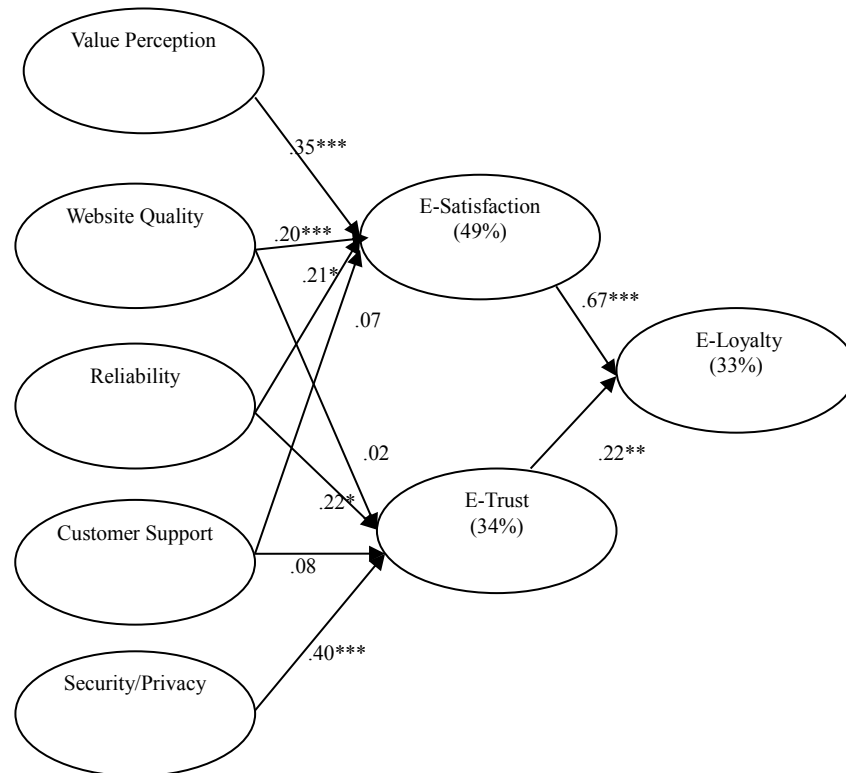
Table 4. Average Variance Extracted

Note: Values on the diagonal represent the average variance extracted. Values off the diagonal represent the shared variances

### 5.3 Analysis of Structural Model

The overall explanatory power of the research model was examined using the R-square and the individual path coefficients. The results, which are shown in Figure 2, suggest that our model explains

58% of the variance of e-loyalty. E-satisfaction has a coefficient of 0.67 and e-trust significantly influences e-loyalty at 0.01 level. It is interesting to find out that value perception, website quality, and reliability all significantly influence e-satisfaction at various levels and reliability and security/privacy influence e-trust at 0.05 and 0.001 level respectively. Contrary to our hypothesis, customer support has no significant impact on both e-satisfaction and e-loyalty. Website quality also has no impact on e-trust.



\*\*\*Significant at 0.001 level; \*\*significant at 0.01 level; \*significant at 0.05 level

Figure 2 Data Analysis Results

All hypothesis testing results are presented in the following Table 5, where EL=E-loyalty, S=Satisfaction, T=Trust, WQ=Website Quality, SP=Security/Privacy, VP=Value Perception, R=Reliability and CS=Customer Support. The analysis supported all of our hypotheses except H3-4, H4-1 and H4-3.

Hypothesis No.	Regression path	Standardized Regression Weight	Critical Ratio	P (level of significance- two tailed)	Result
H1	S -----> EL	0.67	6.245	0.001	Supported
H2	T -----> EL	0.21	3.141	0.002	Supported
H3-1	VP -----> S	0.35	5.019	0.001	Supported
H3-2	WQ ----> S	0.20	3.182	0.001	Supported
H3-3	R -----> S	0.21	2.508	0.012	Supported
H3-4	CS -----> S	0.07	1.380	0.168	Rejected
H4-1	WQ ----> T	0.02	0.642	0.521	Rejected
H4-2	R -----> T	0.21	2.322	0.020	Supported

H4-3	CS ----> T	0.08	1.312	0.190	Rejected
H4-4	SP -----> T	0.40	4.758	0.001	Supported

Table 5. Summary of Hypothesis Testing

## 6 DISCUSSIONS, CONCLUSIONS, AND LIMITATIONS

According to our analysis, the eTailQ is an effective scale to explain the e-loyalty development process, which has further supported the purpose of the eTailQ scale that customer experience from service perspective is more favourable in the online shopping environment (Wolfinbarger & Gilly, 2003). As a result of this we can infer that developing loyalty in an on-line environment mainly depends on customer satisfaction and to satisfy customers the most important aspect that companies have taken care about is the perceived value for the customers. It is obvious from the results that value perception has the strongest influence over satisfaction. The other two factors are website quality and reliability, which have less strong but still significant influence over satisfaction. The effects of influence they have are nearly equal. On the other hand the fourth factor, customer support has an insignificant influence over customer satisfaction. For customer trust, which is also found out to have a significant effect over e-loyalty, we have found out that security/privacy policy of the company has a strong effect over customer trust. Another important factor of customer trust is reliability of the company. The other two factors that we picked up from our prior research, customer support and website quality seem to have an insignificant effect over customer trust.

### 6.1 E-loyalty

Depending on our literature review we have identified two main factors of e-loyalty which are satisfaction and trust. These two factors are also identified to be the mediators of a list of sub-factors which are website quality, security/privacy, value perception, reliability and lastly customer support. As a conclusion of our results, our hypotheses are supported except the relation between website quality and trust. The most significant outcome of our research is that satisfaction has a very high direct effect over e-loyalty. On the other hand trust has also proven to have a direct effect over e-loyalty. This shows that e-loyalty can be firstly determined by satisfaction and to a lesser extent trust, which shows that satisfying customers are more important in developing loyalty.

The highest indirect effect belongs to value perception which also the core of every electronic transaction. If a company is unable to create value for money they will not be successful in the long run. We can also see website quality has a relatively high indirect effect over e-loyalty. On the other hand the least affecting factors are found out to be customer support and security/privacy which is as expected when considered with regression analysis. Security/privacy affects only trust which is a secondary factor next to satisfaction and customer satisfaction regression weights for both trust and satisfaction came out to be insignificant. In summary our first and fourth hypotheses are confirmed by the analysis of the data. The only unexpected outcome was the low effect of customer support on e-loyalty.

### 6.2 Antecedents of E-Satisfaction

We have identified the factors affecting customer satisfaction and measure those factors according to our scale. The findings which come out from the analysis are supporting all the hypotheses about satisfaction and its factors. Website quality, value perception, reliability and customer support, all of them are influencing e-loyalty positively but the biggest regression weight belongs to value perception. As we have mentioned before, customer satisfaction is firstly determined by value perception. This is also a widely accepted concept in store based shopping and the findings proved that it is working the same way in on-line environment.

Here we also see that website quality has a significant effect on satisfaction. Although website quality's contribution is less than value perception there is still an important difference between reliability and website quality. Reliability's direct effect can also be counted as an important influence over satisfaction. On the other hand customer support's effect can be called insignificant when compared to the other factors.

### **6.3 Antecedents of E-Trust**

As Satisfaction, trust is also a mediating factor between security/privacy, reliability, customer support and e-loyalty. The only hypothesis of our model which has been rejected by the collected data is website quality and customer trust relation. In the light of our literature review we said that website quality influences trust positively but the findings came out to be different as having an insignificant direct effect.

As seen in the figure, except website quality, other factors are positively influencing customer trust. The most significant effect is security/privacy factor as this factor is totally covering trust issues. The effect of reliability is also significant with a  $\beta$  of 0.193 and we can see that reliability causes customer trust in e-business. On the other hand like the satisfaction case customer support has a positive effect but the regression weight came out to be very weak.

### **6.4 Implications**

The main implications for both researchers and practitioners lie in the eTailQ scale application from the e-service perspective. Although the concept of e-service has been discussed for a while, there is no agreed pool of e-service variable. This paper has implicated that e-service might be formed from reliability, website quality, customer support, privacy/security but the no significance of customer support and privacy is worth further investigation. The implication for practitioner would be focusing on the service experience of the online shopping experience.

### **6.5 Limitations**

Our research does have several limitations. Firstly, our snowball sampling method might be biased. Since most respondents were contacted through personal relations, the sample might not be entirely representative of all electronic consumer profile. Secondly, our sample size of 140 might not be large enough to represent all electronic consumers.

## **References**

- Anderson, J. C., and Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological bulletin*, 103 (3), 411-423.
- Anderson, R. E., and Srinivasan, S. S. (2003). E-satisfaction and e-loyalty: A contingency framework. *Psychology & marketing*, 20 (2), 123-138.
- Ariff, M. S. M., Yun, L. O., and Zakuan, N. (2014). The impacts of e-service quality and e-customer satisfaction on e-customer loyalty in internet banking. *Advanced Science Letters*, 20 (1), 285-289.
- Balabanis, G., Reynolds, N., and Simintiras, A. (2006). Bases of e-store loyalty: Perceived switching barriers and satisfaction. *Journal of Business Research*, 59 (2), 214-224.
- Baldinger, A. L., and Rubinson, J. (1996). Brand loyalty: The link between attitude and behavior. *Journal of Advertising Research*, 36, 22-36.
- Barnes, S. J., and Vidgen, R. T. (2002). An integrative approach to the assessment of e-commerce quality. *J. Electron. Commerce Res.*, 3 (3), 114-127.

- Blut, M., Evanschitzky, H., Vogel, V., and Ahlert, D. (2007). Switching barriers in the four-stage loyalty model. *Advances in Consumer Research*, 34.
- Caruana, A., and Ewing, M. T. (2006). The psychometric properties of etail quality: An international investigation across product categories. *International Marketing Review*, 23 (4), 353-370.
- Chang, H. H., and Chen, S. W. (2008). The impact of customer interface quality, satisfaction and switching costs on e-loyalty: Internet experience as a moderator. *Computers in Human Behavior*, 24 (6), 2927-2944.
- Chang, M.-K., Cheung, W., Cheng, C.-H., and Yeung, J. H. (2008). Understanding erp system adoption from the user's perspective. *International Journal of Production Economics*, 113 (2), 928-942.
- Chiou, J.-S., and Droge, C. (2006). Service quality, trust, specific asset investment, and expertise: Direct and indirect effects in a satisfaction-loyalty framework. *Journal of the Academy of Marketing Science*, 34 (4), 613-627.
- Cho, N., and Park, S. (2001). Development of electronic commerce user-consumer satisfaction index (ecusi) for internet shopping. *Industrial Management & Data Systems*, 101 (8), 400-406.
- Chow, S., and Holden, R. (1997). Toward an understanding of loyalty: The moderating role of trust. *Journal of managerial Issues*, 9, 275-298.
- Constantin, A. M. (2013). The antecedents of e-satisfaction and e-loyalty. *Timisoara Journal of Economics*, 5 (2 (18)), 236-252.
- Coulter, K. S., and Coulter, R. A. (2002). Determinants of trust in a service provider: The moderating role of length of relationship. *Journal of services marketing*, 16 (1), 35-50.
- Cristobal, E., Flavián, C., and Guinaliu, M. (2007). Perceived e-service quality (pesq): Measurement validation and effects on consumer satisfaction and web site loyalty. *Managing Service Quality*, 17 (3), 317-340.
- Cronin Jr, J. J., Brady, M. K., and Hult, G. T. M. (2000). Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of retailing*, 76 (2), 193-218.
- Davila, A. A. B., Nusair, K., Bilgihan, A., and Okumus, F. (2013). Developing a brand structure pyramid model for travel-related online social networks. *Tourism Review*, 68 (4), 4-4.
- Floh, A., and Treiblmaier, H. (2006). What keeps the e-banking customer loyal? A multigroup analysis of the moderating role of consumer characteristics on e-loyalty in the financial service industry. *Journal of Electronic Commerce Research*, 7 (2).
- Fornell, C., and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18 (1), 39-50.
- Fukuyama, F. (1995). Social capital and the global economy. *Foreign affairs*, 89-103.
- Fullerton, G. (2003). When does commitment lead to loyalty? *Journal of service research*, 5 (4), 333-344.
- Garbarino, E., and Johnson, M. S. (1999). The different roles of satisfaction, trust, and commitment in customer relationships. *the Journal of Marketing*, 70-87.
- Gerbing, D. W., and Anderson, J. C. (1993). Monte carlo evaluations of goodness-of-fit indices for structural equation models. *Testing structural equation models*, 40-65.
- Gommans, M., Krishnan, K. S., and Scheffold, K. B. (2001). From brand loyalty to e-loyalty: A conceptual framework. *Journal of Economic & Social Research*, 3 (1).

- Gwee, M. Y., and Chang, K. T. (2013). Developing e-loyalty amongst impulsive buyers via social influence on group buying websites.
- Harris, L. C., and Goode, M. M. H. (2004). The four levels of loyalty and the pivotal role of trust: A study of online service dynamics. *Journal of Retailing*, 80 (2), 139-158.
- Heskett, J. L., and Schlesinger, L. (1994). Putting the service-profit chain to work. *Harvard business review*, 72 (2), 164-174.
- Hoffman, D. L., Novak, T. P., and Peralta, M. A. (1999). Information privacy in the marketplace: Implications for the commercial uses of anonymity on the web. *The Information Society*, 15 (2), 129-139.
- Hu, L., and Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76–99). London: Sage.
- Hu, L. T., and Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6 (1), 1-55.
- Hwang, Y., and Kim, D. J. (2007). Customer self-service systems: The effects of perceived web quality with service contents on enjoyment, anxiety, and e-trust. *Decision Support Systems*, 43 (3), 746-760.
- Jin, B., Park, J. Y., and Kim, J. (2008). Cross-cultural examination of the relationships among firm reputation, e-satisfaction, e-trust, and e-loyalty. *International Marketing Review*, 25 (3), 324-337.
- Jones, T. O., and Sasser, W. E. (1995). Why satisfied customers defect. *Harvard business review*, 73 (6), 88-&.
- Kim, J., Jin, B., and Swinney, J. L. (2009). The role of retail quality, e-satisfaction and e-trust in online loyalty development process. *Journal of Retailing and Consumer Services*, 16 (4), 239-247.
- Ladhari, R., and Leclerc, A. (2013). Building loyalty with online financial services customers: Is there a gender difference? *Journal of Retailing and Consumer Services*, 20 (6), 560-569.
- Lee, G.-G., and Lin, H.-F. (2005). Customer perceptions of e-service quality in online shopping. *International Journal of Retail & Distribution Management*, 33 (2), 161-176.
- Liu, C., and Arnett, K. P. (2000). Exploring the factors associated with web site success in the context of electronic commerce. *Information & management*, 38 (1), 23-33.
- Loiacono, E. T., Watson, R. T., and Goodhue, D. L. (2002). Webqual: A measure of website quality. *Marketing theory and applications*, 13 (3), 432-438.
- Long, J. S. (1983). *Confirmatory factor analysis: A preface to lisrel*. Sage Publications.
- Luarn, P., and Lin, H.-H. (2003). A customer loyalty model for e-service context. *J. Electron. Commerce Res.*, 4 (4), 156-167.
- Marsh, H. W., Balla, J. R., and McDonald, R. P. (1988). Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological bulletin*, 103 (3), 391-410.
- Negash, S., Ryan, T., and Igarria, M. (2003). Quality and effectiveness in web-based customer support systems. *Information & Management*, 40 (8), 757-768.
- Nunnally, J. C., and Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.
- Oliver, J. R. (1997). A machine- learning approach to automated negotiation and prospects for electronic commerce. *Journal of Management Information Systems*, 13 (3), 83-112.
- Oliver, R. L. (2010). *Satisfaction: A behavioral perspective on the consumer*. ME Sharpe.



- Papadopoulou, P., Andreou, A., Kanellis, P., and Martakos, D. (2001). Trust and relationship building in electronic commerce. *Internet Research*, 11 (4), 322-332.
- Posselt, T., and Gerstner, E. (2005). Pre-sale vs. Post-sale e-satisfaction: Impact on repurchase intention and overall satisfaction. *Journal of Interactive Marketing*, 19 (4), 35-47.
- Reichheld, F. F., and Schefter, P. (2000). E-loyalty. *Harvard business review*, 78 (4), 105-113.
- Reichheld, F. P., and Sasser, W. E. (1990). Zero defections: Quality comes to services.
- Ribbink, D., Van Riel, A. C., Liljander, V., and Streukens, S. (2004). Comfort your online customer: Quality, trust and loyalty on the internet. *Managing service quality*, 14 (6), 446-456.
- Schaupp, L. C., and Bélanger, F. (2005). A conjoint analysis of online consumer satisfaction. *Journal of Electronic Commerce Research*, 6 (2), 95-111.
- Shankar, V., Smith, A. K., and Rangaswamy, A. (2003). Customer satisfaction and loyalty in online and offline environments. *International journal of research in marketing*, 20 (2), 153-175.
- Van La, K. (2005). *Customer loyalty in web-based retailing*. RMIT University.
- Van Riel, A. C., Liljander, V., and Jurriens, P. (2001). Exploring consumer evaluations of e-services: A portal site. *International Journal of Service Industry Management*, 12 (4), 359-377.
- Vandermerwe, S. (2000). How increasing value to customers improves business results. *Sloan Management Review*, 42 (1), 27-38.
- Wolfenbarger, M., and Gilly, M. C. (2003). Etailq: Dimensionalizing, measuring and predicting e-tail quality. *Journal of Retailing*, 79 (3), 183-198.
- Yang, H.-e., and Tsai, F. (2007). General es-qual scales applied to websites satisfaction and loyalty model. *Communications of the IIMA*, 7 (2), 115-126.
- Yang, H.-E., Wu, C.-C., and Wang, K.-C. (2009). An empirical analysis of online game service satisfaction and loyalty. *Expert Systems with Applications*, 36 (2), 1816-1825.
- Yang, Z., and Fang, X. (2004). Online service quality dimensions and their relationships with satisfaction: A content analysis of customer reviews of securities brokerage services. *International Journal of Service Industry Management*, 15 (3), 302-326.
- Yang, Z., and Peterson, R. T. (2004). Customer perceived value, satisfaction, and loyalty: The role of switching costs. *Psychology & Marketing*, 21 (10), 799-822.
- Zeithaml, V. A., Berry, L. L., and Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of marketing*, 60 (2).
- Zeithaml, V. A., Parasuraman, A., and Malhotra, A. (2002). Service quality delivery through web sites: A critical review of extant knowledge. *Journal of the academy of marketing science*, 30 (4), 362-375.

## APPENDIX 2 – Covariance Matrix

	EL1	EL2	EL3	EL4	S1	S2	S3	S4	T1	T2	T3	T4	WQ1	WQ2	WQ3	WQ4	SP1	SP2	SP3	SP4	VP1	VP2	VP3	VP4	R1	R2	R3	R4	CS1	CS2	CS3	CS4			
EL1	2.08																																		
EL2	1.48	2.06																																	
EL3	1.06	1.22	2.27																																
EL4	1.26	1.47	1.42	1.52																															
S1	0.77	1.01	1.00	1.08	1.69																														
S2	0.98	1.13	1.08	1.15	1.12	1.38																													
S3	0.52	0.83	0.76	0.83	0.94	1.03	1.31																												
S4	0.68	0.95	0.84	0.92	1.07	1.09	1.02	1.09																											
T1	0.97	1.01	0.79	0.87	0.78	0.89	0.84	0.85	1.48																										
T2	0.80	1.13	0.90	0.93	0.77	0.87	0.81	0.82	1.09	1.49																									
T3	0.71	0.95	0.80	0.76	0.81	0.79	0.86	0.82	1.03	1.18	1.37																								
T4	0.81	1.02	0.88	0.86	0.80	0.81	0.77	0.77	1.15	1.25	1.19	1.43																							
WQ1	0.69	0.59	0.71	0.68	0.66	0.55	0.52	0.50	0.61	0.45	0.51	0.51	1.36																						
WQ2	0.52	0.44	0.42	0.57	0.58	0.47	0.36	0.39	0.39	0.27	0.24	0.32	0.84	1.46																					
WQ3	0.49	0.65	0.57	0.62	0.67	0.60	0.48	0.53	0.34	0.26	0.27	0.27	0.67	0.72	1.20																				
WQ4	0.48	0.52	0.53	0.61	0.61	0.56	0.51	0.48	0.44	0.32	0.29	0.32	0.76	0.85	0.79	0.92																			
SP1	0.54	0.81	0.55	0.64	0.66	0.59	0.57	0.60	0.65	0.74	0.80	0.66	0.37	0.37	0.32	0.46	1.74																		
SP2	0.81	1.02	0.57	0.83	0.80	0.71	0.69	0.71	0.90	0.96	0.86	0.89	0.61	0.53	0.41	0.56	1.27	1.81																	
SP3	0.47	0.68	0.56	0.53	0.66	0.55	0.59	0.58	0.62	0.56	0.81	0.64	0.51	0.47	0.37	0.48	1.08	1.03	1.94																
SP4	0.55	0.73	0.53	0.57	0.65	0.56	0.57	0.57	0.66	0.68	0.76	0.69	0.48	0.43	0.35	0.45	1.16	1.28	1.33	1.30															
VP1	0.56	0.53	0.77	0.74	0.79	0.75	0.67	0.68	0.65	0.59	0.62	0.58	0.85	0.60	0.51	0.58	0.67	0.82	0.66	0.74	1.78														
VP2	0.53	0.55	0.65	0.70	0.78	0.76	0.65	0.68	0.57	0.54	0.55	0.47	0.63	0.60	0.44	0.53	0.68	0.80	0.64	0.69	1.33	1.47													
VP3	0.37	0.43	0.72	0.59	0.66	0.64	0.63	0.58	0.58	0.50	0.56	0.51	0.64	0.54	0.41	0.52	0.60	0.67	0.67	0.64	1.05	1.04	1.11												
VP4	0.43	0.53	0.64	0.60	0.68	0.66	0.67	0.63	0.60	0.57	0.61	0.55	0.61	0.53	0.38	0.48	0.52	0.70	0.67	0.63	1.08	1.06	0.91	1.13											
R1	0.58	0.55	0.59	0.61	0.67	0.67	0.70	0.60	0.62	0.38	0.46	0.39	0.77	0.47	0.51	0.53	0.53	0.66	0.58	0.64	1.03	0.88	0.75	0.81	1.68										
R2	0.54	0.68	0.57	0.64	0.58	0.66	0.63	0.56	0.52	0.47	0.45	0.38	0.61	0.38	0.44	0.53	0.61	0.75	0.67	0.64	0.82	0.82	0.71	0.81	1.15	1.78									
R3	0.71	0.73	0.50	0.72	0.65	0.71	0.66	0.59	0.62	0.55	0.52	0.53	0.63	0.56	0.45	0.58	0.46	0.70	0.48	0.50	0.61	0.58	0.52	0.57	0.74	0.65	1.20								
R4	0.70	0.71	0.52	0.67	0.58	0.67	0.62	0.52	0.56	0.41	0.45	0.45	0.65	0.53	0.54	0.56	0.45	0.62	0.53	0.49	0.66	0.62	0.57	0.61	0.95	1.02	0.91	1.13							
CS1	0.60	0.71	0.72	0.67	0.76	0.69	0.58	0.59	0.52	0.46	0.50	0.53	0.61	0.56	0.58	0.61	0.74	0.74	0.66	0.65	0.71	0.75	0.65	0.61	0.76	0.64	0.74	0.77	1.52						
CS2	0.39	0.64	0.62	0.55	0.62	0.57	0.46	0.51	0.38	0.43	0.54	0.45	0.31	0.35	0.49	0.50	0.85	0.67	0.88	0.75	0.54	0.59	0.49	0.52	0.46	0.64	0.51	0.54	1.02	1.65					
CS3	0.50	0.69	0.69	0.62	0.61	0.53	0.56	0.50	0.55	0.57	0.70	0.58	0.37	0.33	0.35	0.40	0.92	0.92	0.80	0.78	0.75	0.79	0.67	0.72	0.54	0.78	0.50	0.57	0.78	1.20	1.64				
CS4	0.44	0.59	0.63	0.55	0.57	0.51	0.50	0.47	0.43	0.42	0.52	0.46	0.42	0.34	0.45	0.44	0.72	0.66	0.72	0.63	0.60	0.59	0.54	0.55	0.56	0.65	0.52	0.62	1.00	1.20	1.13	1.21			