THE INTERPLAY BETWEEN VALUE AND SERVICE QUALITY EXPERIENCE: E-LOYALTY DEVELOPMENT PROCESS THROUGH THE ETAILQ SCALE AND VALUE PERCEPTION

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Abstract

This research aims to investigate the process and factors relevant for developing customer e-loyalty from an e-service quality experience perspective. Based on previously published loyalty studies and e-commerce literature, an integrated model of e-loyalty development process is proposed by including and validating value perception and the e-service quality scale eTailQ scale. The eTailQ scale consists of website design, security/privacy, value perception, reliability and customer support and is mediated by the trust and satisfaction. Data was collected from 140 e-commerce users and analyzed with LISREL 8.8. The empirical results demonstrate that value perception and eTailQ scale are effective in developing customer loyalty and both e-satisfaction and e-trust have played important roles in shaping the e-loyalty development process. Contradictory to the traditional loyalty literature, this study unveils that customer support does not play a significant role in the e-loyalty development process. Theoretical and pragmatic implications are provided to help guide future research in the e-commerce domain.

Keywords: ETailQ, E-service quality, E-satisfaction, E-loyalty, E-trust, Website design, Privacy, Value perception

1 INTRODUCTION

Loyalty has been found to have significant benefits in terms of increasing the revenue of a company in many ways [1, 2]. A previous study has found that increasing the percentage of loyal customers by as little as 5% can increase profitability by as much as 85% [3]. The rationale is that loyal customers contribute to profitability much more than temporary customers not only by purchasing the same goods or services repetitively but also recruiting new customers by the word of mouth. Many studies have indicated that loyal customers are typically willing to pay a higher price and are more understanding when things go wrong [2-5] and loyal customers are easier to satisfy because retailers know better about their expectations [1, 3, 5]. When shifting from offline to online, the loyalty evolves into e-loyalty. This is 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"* [6]. As in the offline world, e-loyalty plays an important role in almost every online business [2, 7]. While it is under a general assumption that e-loyalty will be similar to loyalty in the offline paradigm, researchers have found that online customers tend to be more loyal than the brick-and-mortar ones. For instance, Reichheld and Schefter [2] found that web customers tend to consolidate their purchases from one primary supplier, to the extent that purchasing from the supplier's site becomes part of their daily routine. In a same vein, Balabanis et al. [8] indicate that online shoppers are more loyal than brick and mortar shoppers as they tend not to switch suppliers, despite the fact that website comparison functions and search engines can provide them the cheapest deal.

The e-service quality perspective emerged as a new paradigm in explaining the e-loyalty development process [7, 9, 10]. To date, several other perspectives have been investigated to explain factors influencing e-loyalty including brand image and brand awareness [11], store image attributes [12], gender [13], design and cultural perspective [14, 15], and the social influence perspective . The e-service quality perspective assumes that the online shopping website provides a content-enhanced service integrated with values of the product/service delivered and supported by the technological factors [16, 17]. Under this context, the online shopping process is regarded as an electronic service delivery process through which customers interact with the e-commerce website. The e-service quality is therefore essential in influencing customer decision making during the online shopping process [18, 19] and leads to improved e-loyalty intention [20]. E-service quality has been reported to have positive effects on e-loyalty by several researchers [21-23]. These studies mainly measure e-service quality with two types of scales, website-based service quality scales and retailing service scales. The website-based quality scale mainly investigate the system perspective factors and these scales include website design quality [24], SITEQUAL [25], WEBQUAL [26] and PeSQ [21]. The retailing service quality tries to include more features such as customer support and privacy factors and these scales include E-SERVQUAL [27], E-S-QUAL/E-RecS-QUAL [28, 29], and eTailQ [30]. There are two gaps in previous research: firstly, by over emphasizing the importance of e-service quality, an essential factor— value perception has been mainly ignored in these studies; secondly, the eTailQ has only been tested by one study [9] and basically not known by IS research group.

Drawing on marketing and retailing literature on e-service quality [9, 30], this study firstly introduced the eTailQ scale, which aims at discovering the unique service experience features of the online shopping experience and to the domain of e-loyalty; Secondly proposed an integrated model of the e-loyalty development process with service quality and value perception factors, including website

design, security/privacy, value perception, reliability, and customer support which are mediated by trust and satisfaction. In an effort to extend this line of research, this study will use eTailQ as the e-service quality scale to explain how the design of the website from the service experience perspective influences the e-loyalty development process. To gain a better understanding of this new scale in the IS field, this paper endeavors to investigate the process and its associated factors for developing online customers' loyalty from an e-service quality experience perspective. The results of this study will enable both practitioners and researchers to gain more holistic understanding of e-loyalty through the eTailQ scale and value perception. This study is driven by two general research questions:

1) What are main features of online shopping experience from the e-service quality perspective in developing e-loyalty?

2) How much do value perception and eTailQ contribute to the e-loyalty development process and which factor, value perception or service plays a more important role in developing e-loyalty?

2 LITERATURE REVIEW

2.1 E-Loyalty

According to Blut et al. [31], loyalty has four stages: cognitive, affective, conative, and active (observable) loyalty. Cognitive loyalty refers to the loyalty shaped by the offerings of the brand such as price, quality etc. Since the customers are open to view any other brand's offerings, this is the weakest type of loyalty. It is mostly influenced by customer's experience, especially perceived performance of the product relative to the price. Affective loyalty refers to the loyalty developed by a favorable 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 distract the customer. Conative loyalty refers to both attitudinal loyalty and intentional action like the desire for repurchasing. Although this type of loyalty is stronger, the customers are still open to considering alternative offerings, especially in the times of frequent service failure. Action loyalty refers to the customers' willingness to consider repurchasing despite the necessary effort to do so, which is the strongest loyalty. Whilst the view of Blut et al. [31] of loyalty is both attitudinal and behavioral, early views of loyalty were thought to be mainly behavioral [32]. For instance, Brown [33] suggested that there were four types of loyalty: undivided, divided, unstable and absent loyalty and Lipstein [34] measured loyalty by the probability of product or service re-purchase. It became necessary to consider both behavioral and attitudinal loyalty because the earlier behavioral view failed to differentiate between true loyalty and opportunistic loyalty that may arise when the consumer has no other choice [32]; therefore, loyalty is best defined as a customer's favorable attitude towards a retailer that results in repeat buying behavior.

E-loyalty, as an extension of the earlier definition of loyalty is "a customer's favorable attitude toward the e-retailer that results in repeat buying behavior" [32]. Many studies have endeavored to investigate the antecedents of e-loyalty and most of them have identified e-satisfaction as the most important antecedents [6, 8, 10, 17, 29] alongside several other variables including switching barriers [8, 35], commitment [36], and trust [9, 36-39]. E-Trust can be identified as another salient factor influencing the e-loyalty development process from previous literature. For example, Luarn and Lin [17] discussed four major antecedents of e-loyalty which are trust (e-trust), satisfaction (e-satisfaction), commitment and perceived value. This view is partly supported by Anderson and Srinivasan [6] who discovered

that e-loyalty is significant influence by e-satisfaction, e-trust and perceived value. The argument for these two antecedents is consistent with the conceptualization of e-loyalty, i.e., the behavioral and attitudinal perspective. From the behavioral perspective, loyalty will result in repeat purchase under a reliable environment which is supported by trust toward the product or service; and from the attitudinal perspective, the loyalty is caused by the affective attachment toward the product or the service, represented by e-satisfaction.

Recently, a group of studies have focused on the e-loyalty formation process from a service quality experience perspective [8, 10, 17, 29, 37, 38], arguing that e-service quality is crucial in deciding the successfulness of e-commerce website and fostering customer loyalty. Along this line of research, several service quality scales such as eSERVQUAL [27, 28] WebQual 4.0 scale [40], the WebQualTM scale [26], the PeSQ [21], and the eTailQ scale [30], developed and verified for the e-loyalty formation process [8, 10, 17, 29, 37]. Among all these studies, e-satisfaction and e-trust serve as the mediators for e-loyalty and e-loyalty scale. The overall explanatory power of e-service quality scale is around 50% (e.g. Cristobal et al. [21]). However, several studies did not report variance explained or report them correctly. For instance, Kim et al.'s [9] study of eTailQ was analyzed by AMOS and did not provide the overall variance explained. While focusing on service quality process, the value perception of the service/product has basically been ignored during this line of research. In summary, e-loyalty development process is mediated by both e-satisfaction and e-trust from various perspectives and e-service quality emerges as an important trend but hasn't been examined sufficiently.

2.2 E-Satisfaction

According to Oliver [41] (Cited in R. Anderson & S. Srinivasan in 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 [42], implying that satisfaction transcends beyond the customer's perception of the quality of the purchased goods and services or value perception [43]. Satisfaction is thus more related with the attitudinal dimensions of e-loyalty. As discussed in the e-loyalty section, e-satisfaction has been identified as the single most important factor in fostering loyalty in both online and offline environment. The expectations developed as a result of advertisements and opinions of friends and family are vital to customer's satisfaction during and post purchase [8]. As it concerns online platforms, several antecedents of satisfaction or e-satisfaction have been suggested by scholars and contributors; these include value perception [43], customer service [37, 44], online buying frequency and experience [42, 45]; web quality [46] and service reliability [21]. However, Schaupp and Belanger [47] argued that the three groups of factors that constitute the most important e-satisfaction antecedents are: 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

Trust is defined as the perception of confidence an individual has in his/her exchange partner's reliability and integrity and is concerned with the individual's belief about the "integrity, benevolence, ability and predictability of other people" (McKnight et al. 2002). E-trust can be defined as a

customer's confidence and belief that his/her expectations of an online business would be met, which is used to explain the e-loyalty development process through expectation confirmation theory [38]. Trust has been established as an essential concept for online shopping because it could help to build the long term relationship between customers and companies [48-51]. Trust as an important concept have also been studied under various contexts such as online banking [52], cross-cultural examination of perceived service quality [53], e-commerce websites [54], and bookselling websites [38].

In the e-loyalty literature, several studies have incorporated e-trust as a mediating factor influencing the e-loyalty development process [37, 53, 55] but only a few e-service quality study have combined e-trust and e-satisfaction together as the antecedents toward the e-loyalty development process [9]. E-trust has many antecedents such as transactional security and privacy [56]. 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 [49].

2.4 E-Service Quality

Service quality refers to the overall judgment 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 judgments regarding the excellence and quality of e-service delivery in the virtual market place" [19, p162]. E-service quality scales have been used to investigate factors determining a website's success [24], measure e-customer satisfaction [21, 57], and evaluate the effectiveness and efficiency of websites [27]. The generic scale for service quality is SERVQUAL (developed by Parasuraman et al. in 1998) [58] [59]. This scale was adapted and termed e-SERVQUAL to measure online service quality [27, 28]. Several other e-service quality scales have also been developed, for example the WebQual 4.0 scale [40], the WebQualTM scale [26], the PeSQ [21], and the eTailQ scale [30]. All these different e-service quality scales have different focus with different types of measurement items. Although there is no consensus on the exact form or number of e-quality factors customers consider when they evaluate e-services [55], Cristobal et al. [21] classified these scales into two main categories: website design quality scales and online retailing services scales. Website design quality scales focus on the perceived quality of an online shop based on aesthetics and performance, dominant amongst these scales are the SITEQUAL [25], WebQualTM [59] and WebQual 4.0 [26, 40, 59]. On the other hand, the online retailing service scales regard online shopping as a process facilitating effective and efficient purchasing through service quality fulfilment and the representative of which are e-SERVQUAL [28] and the eTailQ [30].

Although categorized as an online retailing services scale, eTailQ actually combined the salient items from both website design scales and online retailing services scales. Building on several previous service quality scales including SERVQUAL [58], e-SERVQUAL [28], WebQualTM [59], SITEQUAL [25], Wolfinbarger and Gilly [30] developed the eTailQ by identifying salient factors from both website interface measurements and customer service experience. In the proposed eTailQ four factors including of website design, fulfillment/reliability, privacy/security, and customer service are considered as the most salient factors for service quality scales. According to Wolfinbarger and Gilly [30], website design refers to every element of the interactions of customers with the website including navigation, information search, order processing, appropriate personalization and product selection but excluding customer service. Reliability/fulfillment refers to the ability to accurately display and describe products so that customers receive what they expect they ordered and the ability to stock products and deliver products to customers on time. Privacy/Security refers to the assurance

that customers' shopping behavior data are not shared with other firms and that their debit/credit card information is secure. Customer service refers to the responsive, helpful and willing service that responds to customer inquiries quickly. The eTailQ is selected as the service quality scale because it have considered both website interface measurement and perceived e-service quality dimensions such as security, reliability, and customer service.

Studies have commonly shown e-loyalty to be strongly influenced by e-Satisfaction [6, 39]; e-trust [9] and the perceived value [42, 51, 60]. 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 [19, 21, 24, 27, 57], it has been used to measure perceived value and also attributed to having direct influence on e-loyalty [7, 61]. A few studies have discussed the relationship between e-service quality and e-trust. Most existing studies have commonly adopted e-SERVQUAL or its adapted forms [21, 55, 57]. Researchers are therefore motivated to carry out additional empirical studies 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 propose an integrated research model to investigate the e-loyalty development process of customers in terms of both the service quality experience and value perception [30] as presented in Figure 1. Value perception refers to the net benefits customers receive through product or service purchasing and is the root for almost every marketing activity [62, 63]. It has been reported to be mediated by e-satisfaction toward the e-loyalty development process [63, 64], i.e. perceived value of service or products leads to e-satisfaction, which will enhance e-loyalty. Value perception has also been reported to moderate e-satisfaction and e-loyalty relationship [6, 35]. It has been argued that value perception is foremost in the online shopping environment [65]. However, it has seldom been tested with e-service quality scales in previous studies. We would argue that e-service quality itself won't attract customers without perceived values created by either service or product. To provide a more complete e-loyalty development model from the service experience perspective, we combined both the value perception and e-service quality scale together. It is proposed that the e-loyalty development process involves both value creation and service delivery. eTailQ is chosen in our study because it considered both the system perspective and retailing perspective of e-service quality. We propose that e-loyalty is influenced by both satisfaction and trust, which are further influenced by value perception and e-service quality experience variables from eTailQ, including website design, reliability, security/privacy, and customer support. Specifically, e-satisfaction is influenced by website design, reliability, and customer support and trust are influenced by website design, security/privacy, reliability and customer support. Based on the research model, we propose 10 research hypotheses broken into three categories shown in Figure 1: e-satisfaction and e-trust as antecedents of e-loyalty; antecedents of e-satisfaction with value perception and eTailQ service quality scale and antecedents of e-trust with the eTailQ service quality scale.

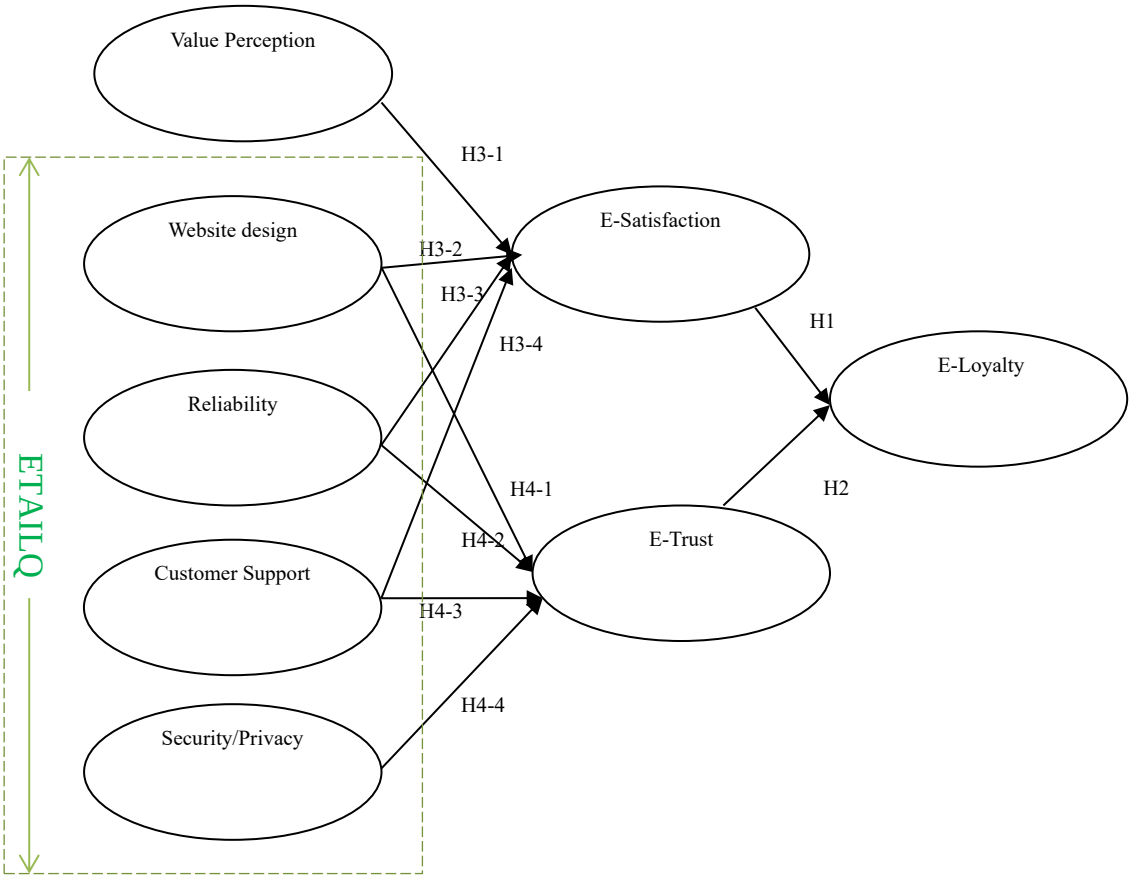

Figure 1 Research Model and Hypotheses

3.1 E-Satisfaction and E-Trust as Antecedents of E-Loyalty

The relationship between e-satisfaction and e-loyalty has been extended from the traditional loyalty perspective where a more satisfied customer will be more loyal, varying from industry to industry and moderated by competitive structure of the industry [66]. Meanwhile, Oliver [67] discovered that satisfaction leads to loyalty but pointed out that an embedded social network has to exist to imply true loyalty. Baldinger and Robinson [68] 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 a favorable attitude toward the brand. When this satisfaction-loyalty relationship is extended in the online environment, the relationship becomes e-satisfaction and e-loyalty relationship 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 [6] found that e-loyalty is significantly influenced by several variables including e-satisfaction, e-trust, perceived value, purchase size, inertia, and convenience motivation, which account for 58% variance of e-loyalty. In another study on online game e-loyalty, Yang and Tsai [29] surveyed 273 customers and found that e-loyalty is highly influenced by e-satisfaction with 78.2% variance explained by e-satisfaction. Posselt and Gerstner [69] assessed the effects of satisfaction on e-loyalty from two groups, pre-sale and post-sale groups, and the result showed that post-sale satisfaction is more effective than pre-sale satisfaction in developing loyalty although both types of satisfaction regression analysis showed that

satisfaction leads to loyalty. Based on the prior studies' results, we thus proposed the following Hypothesis 1:

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

Trust is an important concept in the shopping context because it is one of the most important factors in building successful and continuous relationships with customers [36]. Trust could be converted into loyalty which will eventually influence the customer purchasing decision making process [70]. Trust in the electronic medium is termed "e-*trust*" and it is believed to be converted into e-loyalty during the online shopping process [9, 15, 51, 55]. The e-trust/e-loyalty relationship thus has been established in many previous studies because it is important for building customer relationships [50, 51]. For instance, Harris and Goode [51] investigated the influence of e-trust on e-loyalty, and their study showed that there is a positive and direct association between e-trust and e-loyalty. A study by Luarn and Lin [17] also identified trust as one of the constructs that determine loyalty alongside customer satisfaction, commitment and perceived value. Based on previous studies, it is proposed that:

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

3.2 Antecedents of E-Satisfaction

As an essential factor in fostering e-loyalty, e-satisfaction has been well studied with sets of variables including convenience and website design [71] and e-service quality scales including eTailQ [9, 30, 72]. Value perception has been brought out as another important factor for e-satisfaction [63, 64, 72]. We first develop the hypothesis for value perception and then for eTailQ. Value perception used to be the main competitive advantage for an online business to attract customers and it has been reported to increase customer satisfaction [29, 63, 73]. Wandermerwe [74] explained that the early success of electronic retailers, such as Amazon and eBay, mostly depended on their ability to create a value gap for online shoppers. This value gap created by e-commerce website initially provided outcomes that met customers' expectations, which in turn increased satisfaction toward the product or service. Van La [43] reported that value perception has a strong effect on customer satisfaction and loyalty. Following the previous study on the positive relationship between value perception and e-satisfaction, we proposed the following hypothesis:

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

As discussed in the previous study, many previous service quality scales have only captured the website design aspects of e-service quality but eTailQ considered not only the website design aspects but also how consumer needs are fulfilled through online support such as order fulfillment and delivery. As an effective e-service quality scale providing a holistic view about e-loyalty development process, eTailQ has been reported to be effective in a study conducted by Kim et al. [9]. The eTailQ scale consists of four factors including website design, reliability/fulfilment, customer service and privacy/security. Three components of the eTailQ scale, website design, reliability/fulfilment, and customer support services, are strong predictors of customers' perceived satisfaction according to Wolfinbarger and Gilly [30]. Each of these hypotheses is developed as following:

Website design in eTailQ refers to the all elements of the consumer's experience excluding customer service [30]. In the website aspect of e-service quality scales, it is described as 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 [21, 27, 30, 57]. Website design plays an important role in influencing e-satisfaction in the other e-service quality scales used in previous studies [19, 29, 71]. It has been reported that website design is a cognitive factor that will influence the affective construct e-satisfaction subjectively in a hidden way [75]. We would argue that website design aspects such as layout, interactivity, usability, and navigation serve as the environmental factors to influence their attitude toward the company. While good design brings customers the sense of control for the environment and the website. It arouses the positive feelings in general toward the website. Combining previous research results together with our proposition, we state the following hypothesis:

H 3-2: E-satisfaction is positively influenced by Website design.

Reliability refers to the capacity of a firm to deliver the right products in the promised condition and the promised time [21]. The eTailQ scale discusses reliability in two ways. Firstly, the description of products has to be exactly the same as the delivered goods and services. Since the customers are unable to see the real item before buying, at this stage the company has to be careful about its products and written descriptions. Secondly, delivery time is also another important factor from the customer's perspective because if there are frequent delays on delivery times this may lead the customers to think that the company is unreliable. Reliability has also been tested in the previous eTailQ study [9] and other e-service quality scales to positively influence e-satisfaction [29, 43]. We argue that reliability of service will give customers confirmation of their expectations toward the buying process and lead to the positive feelings and eventually attitude toward the e-commerce website. We therefore propose the following hypothesis:

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

Customer support refers to a firm's ability to deal with customer requests and complaints and show the customers the willingness of the company to communicate with them. Here in the eTailQ e-service scale, it refers to the specific online information section/functions to response to customer enquiries, requests, and complaints. Although this is an important factor (as proposed by Wolfinbarger and Gilly [30]), it is not significant in the study of Kim et al. [9]. However, a study by Van La [43] showed that customer support and on time delivery are more related to the likelihood of the customer to buy again from an online retailer than price. Referred as responsiveness, it's also reported that customer support shall lead to a positive attitude change [29]. It is generally reasonable to infer that customer support will lead to a positive attitude toward the e-commerce website as the customers are cared for. We therefore propose that:

H3-4: E-satisfaction is positively influenced by customer support service quality.

3.3 Antecedents of E-Trust

As an important factor influencing e-loyalty, e-trust has been very well studied in previous e-loyalty studies. According to Swan and Rosenbaum [76], there are features of a website interface that affects people's social construction of trust while they use the site. The quality of an e-store design has also been reported to affect customers' purchase decisions [77]. In a study conducted by Hwang and Kim [78], it was found that perceived website design has a direct effect on all three dimensions of e-trust which are integrity, benevolence and ability. In line with several other studies which have found the

quality of a website or e-store design to affect e-trust [9, 37, 51, 55], we argue that the website design of an e-store has a positive effect on e-trust. We therefore propose that:

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

As discussed earlier, reliability/fulfillment refers to the ability to accurately display and describe products so that customers receive what they thought they ordered [30]. It also refers to the ability to stock products, keep promises and deliver products to customers on time [27]. A critical dimension of trust is integrity which is the perception that the trusted party will keep promises, be honest and adhere to accepted rules of conduct [54, 79, 80]. Generating e-trust is therefore dependent on the trusted party's ability to deliver promises made and on meeting the expectation of customers [9, 81, 82]. We therefore argue that reliability has an effect on e-trust and propose that:

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

According to Wolfinbarger and Gilly [30], customer service refers to the responsive, helpful and willing service that responds to customer inquiries quickly. Customer service and delivering on promises are seen as necessary in building customers' trust which cannot be earned just by good ethics and low prices [83]. According to William and Ferrell, a survey conducted by Better Business Bureau which focused on customers' trust of businesses found out that customers considered customer service as a core component of trust in companies. Similarly, Chen [84] conducted a research which shows the importance of customer service in building e-trust. According to Chen, e-trust is forged with timely response to the inquiries of customers, monitoring customer satisfaction through communications after purchase, providing personalized attention, providing customers the ability to track purchases via the website, and explicitly communicating to customers how their private information will be handled. Other studies [9, 78, 85] have also indicated the importance of customer service in building e-trust; we therefore argue that the quality of customer service has an effect on e-trust and propose that:

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

Online Security/Privacy is an increasingly important issue that affects the unauthorized access, distribution and clandestine or fraudulent use of personal information/financial data as made possible by new technologies [21, 86]. Trust issues in e-commerce do not just cover financial concerns, but also relate to the privacy of the consumers. In some sectors, customers may also be concerned about their privacy more than anything. The pharmacy sector could be a good example. Consumers who purchase their medicines online will mostly request that their ID's and the medicines they bought to be kept confidential. From this point of view, the companies that care about privacy will have competitive advantage with both acquiring new customers and retaining them. Secure Sockets Layer (SSL) encryption is a mechanism 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 have SSL certificates containing authenticated information about the certificate owner. Therefore, the sites having a SSL encryption certificate are 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 obtain their ID's and they will shop in confidence by entering their bank account and pin numbers. Studies show that online Security/Privacy has a direct effect on e-trust [21, 86] and it is the only eTailQ factor that is theorized to affect trust [30]. Therefore, we propose that:

H4-4: Customer trust is positively influenced by the security/privacy of the website.

4 RESEARCH METHODOLOGY

Considering the large amount existing service quality literature has adopted online survey research methods to collect data, we follow the similar data collection method by designing a survey questionnaire to collect data from e-commerce users. The quantitative survey research method has been adopted in this study to verify the eTailQ scale with a large sample as the survey research method is used more often in the theory-testing context [87]. As eTailQ has been verified by Kim, Jin [9] to be effective, the eTailQ scale is more of a confirmatory measurement model rather than the exploratory measurement model, we used SEM with Lisrel 8.8 for data analysis [88].

The research instruments for this study were mainly adopted from eTailQ [30] and previous validated measurements. 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 [15, 35]. There are four items to measure e-loyalty at the attitudinal and behavioral level, four items to measure e-satisfaction, and four items to measure e-trust as shown in Appendix I. Perceived value was adapted from Yang and Peterson [63] with four items from price offering and perceived benefits dimension. The four eTailQ factors website design, reliability, customer support, and security/privacy were mainly adapted from the eTailQ [30] but we have also adapted them to conform to the SEM data analysis method. Website design was further adapted from Chang and Chen [35], reliability was adapted from Coulter and Coulter [82], customer support was adapted from two studies [78, 89], and privacy was adapted from Kim et al. [9].

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 wording of the vague and unclear questions. The average time to fill the questionnaire was estimated to be 5 minutes. The snowball approach was used because of the convenience for appropriate data collection. After the pilot study, a link of the online questionnaire was then distributed to potential online customers through the snowball approach to the social networks of the researchers' over 2 weeks in the UK. Before the subjects filled in the questionnaire, the research objectives were explained to them and they were asked whether they have online shopping experience. If no online shopping experience was reported, it was suggested they did not participate in the rest of the study. 152 people responded to the questionnaire within two weeks. 12 questionnaires were eliminated because of invalid responses, so finally 140 effective questionnaires were received for further analysis. This is enough for the minimum sample size for SEM data analysis with 10 estimates [90].

5 DATA ANALYSIS RESULTS

5.1 Respondent Profile

Table 1 presents the distribution of respondents according to gender, age, income, and occupational status. It indicates that gender is slightly unbalanced 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 received at least a bachelor 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 8.80 was used to analyze the research model. A two-step measurement model and structural model analysis approach was employed, based on the recommendation of Anderson and Gerbing [91], and Confirmatory Factory Analysis using LISREL 8.80 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, because the e-loyalty and other variables are established factors with validated measures and 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 [92] recommendation, to minimize 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-normalized 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 [93-95]. The cut-off criteria for the fit indices were based on the study of Hu and Bentler [92]. Table 2 presents the overall fit index of the structural model.

	$\chi 2$	df	NNFI	CFI	IFI	GFI	AGFI	SRMR	RMSEA
Recommended Value			≥0.90	≥0.90	≥0.90	≥0.80	≥0.80	≤0.10	≤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 [92]. The RMSEA is below 0.08 and the RMSR value is below the recommended value of 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 that by random error [96]. 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 [97]. 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 [98], 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 design			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 design (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 the 0.01 level. It is consistent with previous studies that value perception, website design, and reliability all significantly influence e-satisfaction at various levels and reliability and security/privacy influence e-trust at the 0.05 and the 0.001 level respectively. Contrary to our hypothesis, customer support has no significant impact on both e-satisfaction and e-loyalty. Website design also has no impact on e-trust.

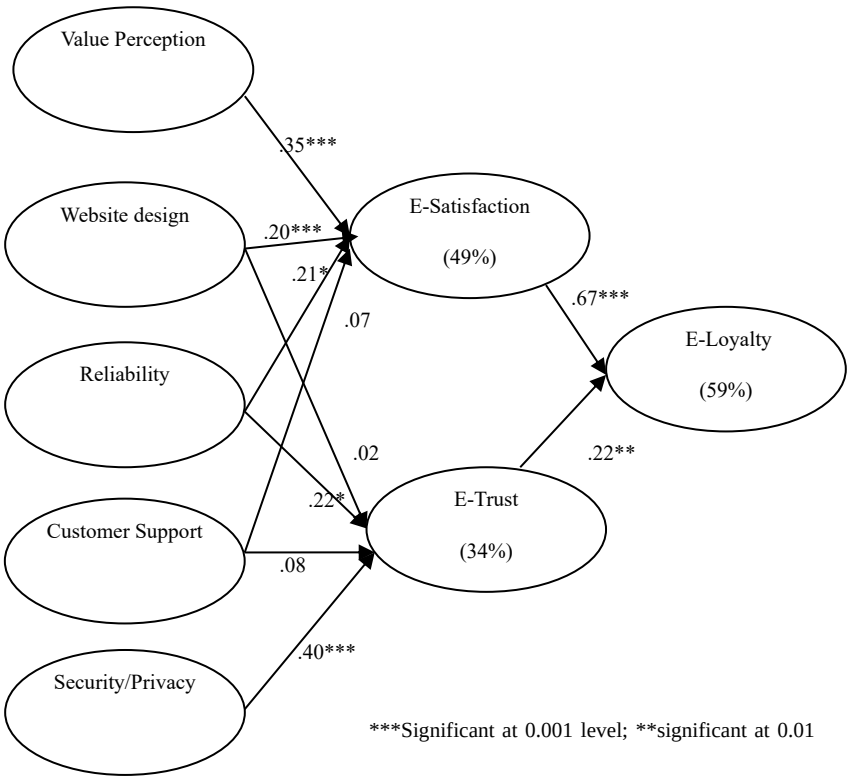

Figure 2 Data Analysis Results

All hypothesis testing results are presented in the following Table 5, where EL=E-loyalty, S=Satisfaction, T=Trust, WQ=Website design, 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	**Structural Path**	**Standardized coefficient**	**level of significance two tailed**	**Result**
H1	S →EL	0.67	0.001	Supported
H2	T → EL	0.21	0.002	Supported
H3-1	VP → S	0.35	0.001	Supported
H3-2	WQ → S	0.20	0.001	Supported
H3-3	R → S	0.21	0.012	Supported
H3-4	CS → S	0.07	0.168	Rejected
H4-1	WQ → T	0.02	0.521	Rejected
H4-2	R → T	0.21	0.020	Supported
H4-3	CS → T	0.08	0.190	Rejected
H4-4	SP → T	0.39	0.001	Supported

Table 5. Summary of Hypothesis Testing

The overall effectiveness of different variables on each dependent variable is summarized in table 6 as followings. As indicated in Table 6, e-loyalty is influenced by both e-satisfaction and e-trust, which

are further influenced by the service quality variables from eTailQ. Based on the effect size of each variable, value perception has the largest effect in the e-loyalty development process, followed by reliability, website design, security/privacy, and customer support in the descending order. The effect size toward e-satisfaction will be 0.34 for value perception, 0.20 for website design, 0.19 for reliability, and 0.07 for customer support. The effect size toward e-trust will be 0.39 for security/privacy, 0.22 for reliability, 0.08 for customer support, and 0.02 for website design. E-satisfaction has the largest effect on e-loyalty; value perception has moderate effect on e-loyalty, and service quality variables including website design and reliability both are significant toward e-loyalty. As for e-satisfaction, value perception, website design, and reliability all have significant effects. Security/privacy and reliability contribute to e-trust.

Effects on E-Loyalty		**Effects on E-Satisfaction**		**Effects on E-Trust**	
Direct effect	**Effect Size**	**Direct effect**	**Effect Size**	**Direct effect**	**Effect Size**
E-Satisfaction	0.67				
E-Trust	0.22				
Indirect effect		**Direct effect**		**Direct effect**	
Value Perception	0.23	Value Perception	0.34		
Website Design	0.14	Website design	0.20	Website Design	0.02
Reliability	0.19	Reliability	0.19	Reliability	0.22
Customer Support	0.06	Customer Support	0.07	Customer Support	0.08
Security/Privacy	0.08			Security/Privacy	0.39

Table 6. Strengths of Individual Factors

6 DISCUSSIONS, IMPLICATIONS, AND LIMITATIONS

The purpose of this paper is to explore the e-loyalty development process from the value perception and the e-service quality experience perspective by testing the eTailQ scale and the value perception. Two research questions are explored, i.e., 1) What are main features of online shopping experience from the e-service quality perspective in developing e-loyalty? 2) How much do value perception and eTailQ contribute to the e-loyalty development process and which factor, value perception or service plays a more important role in developing e-loyalty? Ten hypotheses were proposed to describe the e-loyalty formation process with e-satisfaction and e-trust as mediation variables. Four dimensions from the eTailQ scale were adopted, including website design, reliability, customer support, and security/privacy in order to explain the e-loyalty development process. Extended from Kim et al.'s [9] study on eTail quality, it is proposed that e-loyalty shall not only be influenced by the e-service quality but also value perception of product/service, by adding value perception as another important factor in the e-loyalty development model. According to our analysis, the value perception and eTailQ are effective in explaining the e-loyalty development process with 59% variance of e-loyalty explained.This supported the argument of eTailQ scale that customer experience from the service perspective is more favorable in the online shopping environment [30].

Based on this result, we can infer that developing loyalty in an on-line environment mainly depends on customer satisfaction under a trustworthy environment and our two research questions are answered. While features from e-service quality perspective including website design and reliability and value perception forms the online shopping experience development process, value perception plays a more important role than service experience. To satisfy customers, the foremost important aspect that companies shall take into consideration is the core value that the customers perceive toward a product/service. It is obvious from the results in Table 6 that value perception has the strongest influence over satisfaction and hence e-loyalty (0.23). The value perception was not tested in prior studies but might be linked to the value chain model by Porter [99]. The other two important factors are dimensions from the eTailQ scale, namely website design and reliability, which have less strong but still significant influence over satisfaction. This finding is consistent with previous studies [21, 35, 37]. On the other hand, the fourth factor (i.e., customer support) has an insignificant influence over customer satisfaction, which is consistent with Kim et al.'s study [9] yet quite contradictory to the original proposition of e-service Tail Quality scale. Similarly, customer support is not significant toward e-trust as well. E-trust has served as another important factor for e-loyalty development and was significantly influenced by security/privacy policy of the website and reliability of the website. Contradictory to the original eTailQ proposition, website design does not significantly contribute to e-Trust as in Kim et al.'s study [9].

6.1 Discussions

Our results support the emerging trend of the e-loyalty development process from e-service perspective investigated by several other researchers [9, 21, 38]. As confirmed by our study, both e-satisfaction and e-trust serve as the antecedents for e-loyalty, which is consistent with Kim et al. [9] with relatively similar strength, i.e. e-satisfaction contributed more than e-trust toward the e-loyalty formation process. This confirms many previous studies on the strong effects of e-satisfaction plays in fostering e-loyalty [6, 8, 10, 17, 29, 37, 38, 100]. Meanwhile, e-trust identified by several other researchers [6, 17, 21] as a salient antecedent of e-loyalty has also been verified as significant in this study. The interpretation for this result can be explained using Maslow's hierarchy of needs [101], where the emotional needs arise after the physical and security needs are satisfied. This approach has been used to understand organizational trust [102].

We have identified the factors affecting e-satisfaction and measure those factors using the eTialQ scale and value perception. As discussed in the above sections, value perception plays the most important role in leading to e-satisfaction, and eventually to e-loyalty. The primary functions of an e-commerce website or company are to deliver the value and create value for its customers. Deviation from this baseline will lead to less satisfaction, let alone loyalty. Thus, value provided by a product or service is the main reason for customers to pay and it's logical to become the factor taking the largest effect in explaining e-satisfaction and eventually the e-loyalty development. Although Kim et al. [9] did not include value perception in their study, value perception couldn't be ignored when testing customer loyalty. Value perception and e-service quality shall complement each other in developing e-loyalty. The other two variables coming from the eTailQ scales, namely website design and reliability, are also significant in predicting e-satisfaction. Customer support, defined as responsiveness to customers' complains, queries, etc., is not a significant factor for e-loyalty development process, which might be explained by the peripheral role of online customer support play in the online selling process. Customer support in Kim et al.'s [9] study was also insignificant toward both e-satisfaction and e-trust. It might also be explained that the existing online customer support hasn't been designed or specified

clearly and customers are not aware of the role it plays. Customers' perception toward customer support might still be on the offline support rather than online support.

While it's reasonable to accept that privacy/security is highly related with e-trust and reliability shall give customers a sense of confidence toward the e-commerce website, the insignificance of website design is contradictory to several previous studies [9, 37, 51, 55]. A possible explanation for the non-significance of website design on e-trust needs further investigation. It might be interesting to deduct that a well-designed website might not necessarily imply trust. For example, the fancy virtual world such as SecondLife once popular in the business field might not necessarily provide trust for customers.

6.2 Implications

The main implications for both researchers and practitioners lie in the eTailQ scale application from the e-service perspective introduced and incorporated in this study. There is an emerging trend of discussion on customer loyalty development process from a perspective of service quality experience. Although the concept of e-service has been discussed for a while, there is no agreed pool of e-service variables until eTailQ was developed [30] and tested by Kim et al. [9]. To add to the growing body of e-loyalty research highlighting the roles of e-satisfaction and e-trust, this study examined and validated the eTailQ scale and confirmed the explanatory power of the eTailQ for IS research. Future studies could further verify the eTailQ scale in different contexts such as e-banking and clothing shopping etc.

This paper also implies that e-service might be formed from the eTailQ scale including reliability, website design, privacy/security, and customer support. However, our empirical results, along with the previous studies on the eTailQ scale, all imply that customer support is not significant in fostering the e-loyalty development process [9]. Meanwhile, website design is not significant for e-trust as well. Considering the largest effect of value perception on both e-satisfaction and e-loyalty, we would suggest to include value perception as part of the e-loyalty development process in the future study. While the previous study does not include value perception as part of the quality scale because it might not be part of the service process. In the future study, value perception might be included as a control variable if solely testing the effect of the eTailQ scale. As website design does not necessarily leads to trust in the online environment is very interesting and worth further investigation.

The implication for practitioner would be focusing on the service experience of the online shopping experience. Our results demonstrated that service experience is more and more important in the online e-commerce shopping environment. It's very important for practitioners to provide a shopping environment with high quality experience to improve the loyalty of customers toward their products. Based on our study, satisfaction and trust are the two important quality experience factors to enhance loyalty, implying that a safe online shopping environment with interesting and welcome messages to keep customers happy shall be the strategy e-commerce websites shall adopt. Specifically, the website shall emphasize the value of the product / service they could provide to customers, as value perception is the largest factor in leading to customer loyalty. Value perception could be designed to promote the price information, the perceived value-add benefits such as friendship and psychological benefits such as young appearance for cosmetic products. Other than value perception, security/privacy assurance shall be designed and built into the website so that the customers will have the psychological safety to release their emotional attitudes toward the products/services. Applied into the website design context, the content to ensure customers that no personal privacy will be disclosed and the security standards

have been followed. Reliability, referring to the consistency an e-commerce website, demonstrates during the process will also increase both customer satisfaction and trust toward the product/service and eventually increase e-loyalty. The design of reliability could be realized through testimony sharing of past customers and rating for the service provided.

6.3 Limitations

Like other theory-driven studies, our research inevitably does face several limitations. Firstly, our snowball sampling method might be biased. Since most respondents were contacted through personal relationships, 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 despite the fact that it meets the SEM requirements for sample size of this study. Thirdly, the study was conducted in the UK, so national culture (i.e. individualism versus collectivism) is a potential caveat to the representativeness of the global e-commerce customers. Future research is encouraged to shed light on the cross-cultural nature and compare customers from different cultures where people's inherent psychological cues might vary. Furtherly, our study collected data from the general e-commerce customers and haven't differentiated factors such as product type, which might also moderate the research result. Lastly, potential competing factors such as distrust and dissatisfaction are expected to be incorporated into the research framework to further capture the conceptual comprehensiveness and enrich its influence on e-loyalty.

7 CONCLUSION

Loyalty has been gradually become a more important factor in the IS field due to the diffusion of information technology into the society level whereby more and more social psychological, marketing, management and psychological theories emerge to explain the human computer interaction behavior. While the traditional paradigm of developing loyalty focuses more on the customer satisfaction the online loyalty fostering process is reported to be different from the offline one. In the online environment, the e-loyalty is more influenced by the service experience provided by the e-commerce website. There are a group of scholars endeavoring to investigate the service experience factors important to foster e-loyalty [9, 21, 38]. They mainly used e-SERVQUAL or adapted forms of it [21, 55, 57]. Most of previous e-service quality scales focus on the website design perspective and the service perspective haven't really been explored enough. At the same time, the value perception as a core construct hasn't been examined together with the service quality scale. Our study has provided a unique value to the e-loyalty literature by introducing eTailQ as a new service experience scale in the IS study and empirically verified the model to be effective in explaining the e-loyalty development process. Specifically, we have found value perception has played the most important role in the e-loyalty formation process followed by website design, reliability and security/privacy in the eTail Scale. Our results imply that the future website design shall focus more on the value dimension of the product/service of the e-commerce website followed by a security mechanism to attract the customer to shop repetitively. As experience is more and more important in not only e-commerce website development but also on technology design in general, we would expect more and more such studies emerging in each field. The service experience of e-commerce website is just one dimension of burgeoning user experience studies and we would expect more and more user experience studies centering on enterprise system experience, software experience etc.

8 BIOS

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APPENDIX 1 – Questionnaire for This Study (7 Likert Scale)

E-loyalty

I usually visit this website first when I need to shop online for this type of product /service.
I intend to continue buying from this site.
I often recommend this site to other people.
I am a regular customer of this site.

E-satisfaction

Overall, this website consistently meets my expectations.
My overall experience with this site is satisfactory.
Overall this company is a capable and proficient service provider.
The e-service is successful.

E-trust

This company gives me a trustworthy impression.
I believe this company will keep its promises and commitments.
I am confident of this company's integrity.
I feel this company can be counted on to do what is right.

Website design

I find this website easy to use.
This website has effective search functions.
This website loads quickly.
Overall, this website works very well technically.

Security/Privacy

Shopping in this site involves very little risk.
I feel safe in my transactions at this website.
I trust that this company will not misuse my personal information.
I am satisfied with the information about security provided on this website.

Value perception

For the prices that I pay at this website, I would say that shopping at this site is a good deal.
The products/services provided by the e-service is well priced.
This website offers good value for money.
The benefits that I receive from using this website significantly outweigh the costs.

Reliability

When I order, I receive the goods quickly.
This site respects the delivery delays promised.
I obtain exactly the products which I ordered.
My requests and instructions are correctly processed in this site.

Customer support

This company is responsive to my requests.
This company is responsive to my complaints.
When I have a problem the company shows a sincere interest in solving it.
This company is dependable in handling customer service problems.

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