

# Antecedents of Customer E-loyalty With the Effect of Trustworthiness in Malaysia Context

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The rapid growth of online shopping has led to inspire customer e-loyalty among Malaysians, especially living in this digital environment. Commitment-trust theory is applied as the theoretical base to explain the factors influencing customer e-loyalty. The primary objective of this study is to investigate the direct impact of customer interface quality, service quality (SERVQUAL), website quality, technology acceptance factors, and technology trust on customer e-loyalty. This study also aims to examine the indirect effect of independence variables on customer e-loyalty through the effects of trustworthiness. SmartPLS 2.0 (M3) is applied as analytical tool to study the impact. A survey is conducted with 395 respondents who had online purchase experience. The findings indicated that customer interface quality, SERVQUAL, website quality, technology acceptance factors, and technology trust have positive impact on customer e-loyalty. Additionally, trustworthiness is used as mediator exclusive of SERVQUAL. Several implications of the findings, limitations of the study, and recommendations for future research are highlighted.

*Keywords:* customer interface quality, service quality (SERVQUAL), website quality, technology acceptance factors, technology trust, e-loyalty, trustworthiness

## Introduction

The continuous growth of IT encouraged more Malaysians to do their shopping on the internet, which now pervades all aspects of daily life (Chopra & Wallace, 2003). It is the best form of interaction between buyers and e-vendors (Khatibi, Thyagarajan, & Seetharaman, 2003) and the most efficient medium of service delivery to e-consumers, e-government, and e-retailers (Mahmud, 2008). The internet, furthermore, is considered as the

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source of communication and entertainment platform. It is also functioning as a new direct marketing tool to tailor products and services on websites and to extend this to e-business (Swaminathan, Lepkowska-White, & Rao, 1999). Unfortunately, the percentage of Malaysians using the internet is relatively low (Zawawi, Yusuf, & Khan, 2004). This could have been due to the issues of e-insecurity and privacy and also the ambiguity of regulations (Khatibi et al., 2003).

In Malaysia, e-shopping started in 2004, although it has been growing for almost eight years, Malaysian consumers were unfamiliar with and doubtful about this concept (Khatibi, Haque, & Karim, 2006). However, some consumers tend to shop online due to some factors such as convenience, lower price, more product choice (Chua, Khatibi, & Ismail, 2006), and cost saving (Kohli, Devaraj, & Mohmood, 2004). The vast majority are likely to purchase books and flight tickets and to reserve hotel rooms (Lim, Yap, & Lau, 2010). Hence, this study aims to gain a deeper understanding of customer e-loyalty amongst Malaysians. Specifically, it investigates the positive impact of customer interface quality, SERVQUAL, website quality, technology acceptance factors, and technology trust on customer e-loyalty. This study also investigates an indirect effect of the constructs on customer e-loyalty through trustworthiness.

## Literature Review

### E-loyalty

The term e-loyalty is applicable to consumers who are likely to buy from the same website, rather than switch to other websites (Flavián, Guinaliu, & Gurrea, 2006). In this study, e-loyalty is defined as perceived loyalty of customers towards websites and their intention to visit the same website on their second purchase. There are various complex drivers of e-loyalty according to Choi, S. I. Kim, and S. H. Kim (2010), Collier and Bienstock (2006), Deb and Chavali (2009), and Ponirir, Scott, and Von Der Heidt (2009). Therefore, for the purpose of this study, authors adopt three dimensions to examine customer e-loyalty: word-of-mouth, complaining behavior, and future purchase intention.

In the virtual world, word-of-mouth does not involve direct interaction with e-retailers and it influences consumers' perception in the long term (Buttle, 1998). In this context, e-word-of-mouth is referred to the content of information that is to be spread out and share opinions and also their past experience to the consumers quickly via the internet (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004). In the literature reviewing, word-of-mouth is an efficient platform than advertising, print ads, radio, and personal selling (Lin, Tzeng, Chin, & Chang, 2010). In fact, it is four times more efficient than personal selling, twice more efficient than using the radio, and seven times more efficient than using newspapers and magazines (Schoefer, 1998). Therefore, as stated by Katz and Lazarsfeld (1955) that word-of-mouth was the resourceful tool to influence purchasing decisions (Gruen, Osmonbekov, & Czaplewski, 2006).

Moreover, purchase intention is defined as a consumer's favorable intention to purchase products or services (Sam & Tahir, 2010). Whitlark, Geurts, and Swenson (1993) described purchase intention as when individuals, having evaluated a product or service, followed with actual purchase behavior (Lin et al., 2010). Pavlou (2003) suggested that purchase intention occurs when consumers are willing to shop online and engage in e-transactions (Kwek, Lau, & Tan, 2010). In this study, e-purchase intention evaluates an individual's behavior of purchase intention in the digital world (Salisbury, R. A. Pearson, A. W. Pearson, & Miller, 2001).

Additionally, complaining behavior is a negative response of dissatisfaction (Chirico & Presti, 2008), which leads to unsatisfied customers and negative word-of-mouth and discourages re-patronage (Blodgett,

Wakefield, & Barnes, 1995). Unsatisfied customers are likely to share their negative experiences with 11 persons compared to satisfied customers, who shared their experiences with about six persons (Hart, Heskett, & Sasser, 1990). However, although these consumers are unsatisfied, they are still likely to purchase the goods or service, maintain the relationship, generate positive word-of-mouth, and create trust (Tax, Brown, & Chandrashekar, 1998). In line with this, Technical Assistance Report Programs also found that the consumers who are likely to complain had higher repurchase intentions than non-complain consumers (Richins, 1983).

### **Antecedents of Customer E-loyalty**

**Customer interface quality.** Having a professional and good quality of website's interface is important in the virtual world. This is due to the fact that a blend of information will reach the potential customer quickly despite the high quality of website's interface. Besides, e-consumers and internet users are intended to purchase from the well-managed website's interface and it leads to successful business among e-retailers in this highly competitive e-environment. They are a range of dimensions of customer interface quality that significantly contributed to customer e-loyalty, for example, Swaminathan et al. (1999) indicated that cultivation, choice, community, convenience, customization, character, and interactivity are driven to e-loyalty (Mutum & Ghazali, 2010). Srinivasan, Anderson, and Ponnayolu (2002a) proposed seven antecedents of loyalty namely, customization, interactivity, cultivation, character, and convenience (Broekhuizen, 2006). For the purpose of this study, authors adapt convenience, customization, interactivity, and character. Convenience refers to ease of navigation, easy to sort information, and takes a short time to involve in the process of e-purchasing (Ye & Jia, 2010). According to the survey study of catalog age's consumer shopping behavior, 67% of the consumers concern the convenience factors on website shopping (Kau, Tang, & Ghose, 2003). Customization is related to the relevant information that matched the consumer's needs (R. Dholakia, Zhao, N. Dholakia, & Fortin, 2000). With customized website, e-consumers ease to create their own website to record their history of purchase, relevant products or services information, and their preference (J. H. Kim, M. Kim, & Kandampully, 2009). Furthermore, interactivity is a two-way communication process or interaction between the e-consumers and website (Srinivasan et al., 2002a). An efficient interactivity helps more e-consumers to address the needed information easily (Alba et al., 1997). It is therefore to attract and retain e-consumers with the same e-store (Cyr, Head, & Ivanov, 2009). In addition, due to the problem of indirect interaction between e-consumers and e-retailers, the attribute of character played a role as a "salesperson" in this manner. Character is defined as the surface looks of website or aesthetic (e.g., text and graphic). Having an aesthetical or emotional appealing on website captures more e-consumer to have one stop to look for it (Beaird, 2007).

**Service quality.** Service quality (SERVQUAL) is defined as an evaluation of service performance by service providers (Ye & Jia, 2010). Zeithaml, Parasuraman, and Malhotra (2002) defined SERVQUAL as an imperative of website to assist e-purchasing and delivery products and services (Al-Momani & Noor, 2009). The dimensions introduced by Parasuraman, Zeithaml, and Berry (1988) namely, responsiveness, reliability, empathy, assurance, and tangible are widely used scale. These five dimensions of SERVQUAL would be selected to measure customer e-loyalty in this study. This is due to that there is a limited study of research attached in the online outlook than offline SERVQUAL in the research study. Empathy is defined as an individualized attention (Gefen, Silver, & Devine, 2001) and deals with personalization given to e-customers (C. N. Madu & A. A. Madu, 2002). McKnight and Chervany (2002) stated that assurance is related to trusting beliefs and trusting intentions on certain websites (McKnight, Choudhury, & Kacmar, 2002). Tangible refers to

the image that displayed on the website. Griffith and Krampf (1998) found that responsiveness is an effective predictor in delivering service via online (Zeithaml et al., 2002). Reliability means the belief of service provider in providing the service accordant with their reliable and dependent manner (Gefen et al., 2001), timely, and accurate product presentation (Zeithaml et al., 2002).

**Website quality.** Website quality is a platform of information technology (IT) (Liu & Arnett, 2000). Good quality of website is important to gain the customer's belief, trusts in certain e-store, and boost the sales. The visualization website provides better understanding of e-customer behavior, enhances customer loyalty, and gives an effective customer service to customers (Ganapathy, Ranganathan, & Sankaranarayanan, 2004). In this study, authors adapt three dimensions of website quality namely, website design, website content, and website structure. Well-established website is attracting, ease-of-use, enhancing the users' skills, strengthening the long term relationship with buyers and sellers (Chen, Huang, Hsu, Tseng, & Lee, 2010), and predicting the success of e-business (Tarafdar & Zhang, 2008). Furthermore, website content is an important body of the website performance which focused by e-consumers (Nielsen, 1999). This information includes fast product search, value-added, and customized information (Liang & Lai, 2002). Additionally, website structure is defined as overall information of online companies and convenience of displayed information on website (Wang & Emurian, 2005). This website's structure will reflect the customer's view of website information, products, or services (Nielsen, 1999).

**Technology acceptance factors.** There are three important attributes of technology acceptance factors perceived usefulness, perceived ease-of-use, and perceived enjoyment. Perceived usefulness is noted as the use of technology that improves a consumer's performance (Davis, 1989). Usefulness itself is one of the benefits of using the internet. Despite perceived usefulness, perceived ease-of-use is defined as the degree of belief amongst individuals that is free of effort (Al-Momani & Noor, 2009); easy to use, easy to read, and quick to download (Lederer, Maupin, Sena, & Zhuang, 2000). In the literature, "user friendliness" (Purosothuman, 2008) of website is emphasized as well as its usability (Swaminathan et al., 1999). To this extent, ease of use affects e-purchasing intention (Klopping & McKinney, 2004). Lastly, perceived enjoyment is defined as the degree of performance (Davis, 1982) and intrinsic motivators in technology acceptance (Davis, 1989). This refers to the pleasurable feelings of technology use (Rauyruen, Miller, & Barrett, 2007).

**Technology trust.** Security is the important task of the internet (Suh & Han, 2003) and it is defined as technical safety in the virtual world against the hackers (Cox & Dale, 2001). E-security is referred to the secure of personal information and reduce the e-purchase risks (Yang, Jun, & Peterson, 2004). In this sense, an individual consumer believes that internet is secure in transaction and transmitting the personal information data in the database of online company (Salisbury et al., 2001). Apart from that, privacy is acknowledged as an individual control and limits their information to the e-retailers on website (Ribbink, van Riel, Liljander, & Streukens, 2004). Privacy is also defined as the personal data protection from hackers without other e-consumer's knowledge (Deb & Chavali, 2009) such as the personal detail information (e.g., mobile number), total amount of every trip of online purchasing, and financial information (e.g., credit card's number). These characteristics are expected to influence the confidence level of e-consumers and affect the amount of e-consumers to engage in purchasing behavior (Shim, Van Slyke, Jiang, & Johnson, 2010). Statistically, 69% of the e-users are unwilling to inform their personal information to the e-retailers, if they do not explain how their personal data to be use in e-store (Hoffman, Novak, & Paralta, 1999).

### **Trustworthiness**

Trust and trustworthiness are two different contexts (Toma, 2010). Trust is defined as an act of a trustor (Corritore, Kracher, & Wiedenbeck, 2003), however, trustworthiness is acknowledged as the characteristics of trustees that are worthy to trust (Rusman, Van Bruggen, & Koper, 2007). According to Serva, Benamati, and Fuller (2005), trustworthiness leads to trust and both of these are not similar but are linked with each other (Akter, D'Ambra, & Ray, 2011). In this study, trustworthiness is played a role as mediator. Trustworthiness embodies the worthy attributes perceived by individual called trustier (Pittayachawan, 2007). In the model of Mayer, Davis, and Schoorman (1995), trustworthiness includes three dimensions: ability, benevolence, and integrity. In this study, authors adopt three specific beliefs on honesty, benevolence, and competence. In the literature reviewing, benevolence is defined as perceived courtesy of trustee towards trustors (Rusman et al., 2007). Competence is the knowledge, talents, and expertise that wish to complete the purchasing (Hosmer, 1995). It entails the knowledge and skills of trustee to desire trustors (Chopra & Wallace, 2003). Additionally, consumers believe that trustee will be honest, sincere, and comply with its commitments (Chiu, Chang, Cheng, & Fang, 2009) by providing good and reliable flow of service in delivering the promises as promised (Chen & Dhillon, 2003).

### **Technology Acceptance Model (TAM)**

TAM is an influential model (Baraghani, 2007) that is established by Davis (1989). It is developed based on theory of reasoned action (TRA) by Fishbein and Ajzen (1975), who adapted belief-attitude-intention-behavioral relationship to IT acceptance. TAM and TRA are relevant in exploring website use intention in this research. In TRA, beliefs influence an individual's attitude and lead to behavioral intentions. Researchers in the past have applied TAM in technology acceptance (Catalán & Laque, 2010), e-commerce (Hernández, Jiménez, & Martín, 2009), e-transaction (Katos, 2009), and e-purchasing intentions (Tang & Chi, 2010).

### **Commitment-trust Theory (CTT)**

Despite applying TAM, this study also adopts CTT to explain how trustworthiness links with the customer e-loyalty. CTT, generally, is developed by Morgan and Hunt (1994), which assigns trust and commitment as mediator. CTT has been applied in e-tourism (Kim, Chung, & Lee, 2010), e-banking (Lii, 2009), and e-commerce (Chen et al., 2010), and user behavior of computer (Corritore et al., 2003). In CTT, trust and commitment are closely linked and build up strong relationship among sellers and buyers (Mukherjee & Nath, 2007). Trust convinces people who have higher confidence (Moorman, Zaltman, & Deshpande, 1992). Commitment involves vulnerability, however, it plays a prime role of exchange partner relationship which forms and maintains the long lasting relationship with other people (Morgan & Hunt, 1994). Veloutsou, Saren, and Tzokas (2002) argued that CTT led to customer retention (Abosag, Tynan, & Lewis, 2006). Trust is also important to reduce risks, lead to e-purchase intention, and maintain relationship with customers (Wen, 2009).

### **Development of Hypotheses**

Previous studies have found that customer interface factors contributed to e-loyalty (Mehta, 2005). As stated in literatures, the element of interactivity (Ng & Matanda, 2008), customization (Kassim & Ismail, 2009; Tarafdar & Zhang, 2008), and convenience (Chang & Chen, 2008) positively impact customer e-loyalty. Accordingly, SERVQUAL also influenced e-store loyalty in e-retailing (Ponirir et al., 2009). Despite

SERVQUAL, website content, website structure, website performance, and attractiveness are found to perform e-loyalty (Palmer, 2002). Wolfenbarger and Gilly (2003) indicated that well-designed website has positive impact on customer loyalty (Koo, 2006). Numerous research studies showed that usefulness, ease-of-use, and enjoyment influence attitude and e-purchasing intention (Monswé, Dellaert, & de Ruyter, 2004; Van Der Heijden & Verhagen, 2004). A survey study found that usefulness and ease of use positively impact consumer's attitude of e-retailing in Hong Kong (Liao & Shi, 2009) and intentions to use e-service (Roca, García, & De La Vega, 2009). Additionally, e-security affects e-loyalty (Tarafdar & Zhang, 2008). Thereby, this paper hypothesized that:

- H1: Customer interface quality is positively related to customer e-loyalty;
- H2: Good SERVQUAL is positively related to customer e-loyalty;
- H3: Good website quality is positively related to customer e-loyalty;
- H4: Technology acceptance factors are positively related to customer e-loyalty;
- H5: Technology trust is positively related to customer e-loyalty.

Several researchers have explained the influence of trust on customer e-loyalty (Ribbink et al., 2004). When the customers trust e-retailers, they will disclose their personal information (Kim, 2003), the e-retailers are easier to deal with in the future and money transactions easier to track. Moreover, trust is an efficient marketing tool, which can attract more customers to engage in future buying behavior (Gefen, 2000) and influence their e-purchasing intentions (Jarvenpaa, Tractinsky, & Vitale, 2000). Thereby, this paper posited that:

- H6: Trustworthiness is positively related to customer e-loyalty.

**Mediating Role of Trustworthiness.** Trust mediates the relationship between interactivity and e-loyalty (Cyr et al., 2009). The finding of Ribbink et al. (2004) and Kassim and Ismail (2009) identified that customization insignificantly affects trust in online buying. Deriving on this evidence, this paper implies that trustworthiness mediates the relationship between customer interface quality and customer e-loyalty. Besides, most of the consumers are unwilling to participate in e-purchasing due to the higher risks (e.g., financial risk). In this respects, e-service provider should improve their service in terms of empathy to increase consumer trust towards e-service, such as air-ticketing (Sam & Tahir, 2010). The positive preference of website quality is the best predictor of e-trust and leads to customer e-loyalty (Deb & Chavali, 2009). Karvonen (2000) found that the beauty of website assists trust building (Ganguly, Dash, & Cyr, 2009). In this regards, authors expect that there is an indirect effect of developed constructs on customer e-loyalty through trustworthiness. Additionally, several studies (Flavián & Guinaliu, 2006; Mukherjee & Nath, 2007) showed that security influenced a person's trust in the Internet. The study of Kim et al. (2010) found that perceived security is linked to consumer trust in purchasing e-tourism products in South Korea. Apart from security, a sense of trust on security and privacy provided, it convinces the e-shoppers to use the website. The proposed hypotheses are stated as below:

- H7: Trustworthiness mediates the relationship between customer interface quality and customer e-loyalty;
- H8: Trustworthiness mediates the relationship between SERVQUAL and customer e-loyalty;
- H9: Trustworthiness mediates the relationship between technology acceptance factors and customer e-loyalty;
- H10: Trustworthiness mediates the relationship between website quality and customer e-loyalty;
- H11: Trustworthiness mediates the relationship between technology trust and customer e-loyalty.

## Methodology

The survey site of this study is in Malaysia, specifically in Kuala Lumpur, PutraJaya, and CyberJaya. According to Malaysian Ministry of Energy, communication and multimedia have indicated that the concentration of internet users in Malaysia was very high (56%) in central peninsula Malaysia, compared to Northern Malaysia (14%), Southern Malaysia (11%), Eastern Malaysia (5%), Sabah (5%), and Sarawak (5%) (Nordin, 2002). Moreover, PutraJaya is a planned city and equipped with various modern facilities. As such, it is rational to assume that majority of the population is made up of technology savvy group, living in a technology-based society, and active internet users. Additionally, Cyberjaya (the Silicon Valley of Malaysia) is developed as IT-themed city with superior information communication technology, multimedia industries, research and development centers, and higher learning institutions (Multimedia University) (Retrieved from <http://en.wikipedia.org/wiki/Cyberjaya>). It is therefore to assume that majority of residents are well-educated, with high computer literacy and keen to use multimedia technology.

A self-administrated survey was used to obtain the primary data through a set of questionnaire. The questionnaire was divided into two parts. Part A described the predictors that affected customer e-loyalty. Part B focused on the respondent demographics. Each dimension contained multi-items measured by a seven-point Likert-scale. A total of 500 set of questionnaire were distributed and 405 sets were returned. Out of 405 returned questionnaire, 395 were usable. A non-probability purposive sampling method was conducted to select representative respondents, because these selected respondents were able to provide the needed information (Sekaran, 1992). Confidentiality was guaranteed in all cases.

## Findings

The data is analyzed using SmartPLS 2.0 (M3). PLS is a latent variable modeling technique which incorporates the multiple dependent constructs and recognizes measurement error (Karim, 2009). It is more useful, because PLS has the ability to identify path relationships of statistical significance (Goodhue, Lewis, & Thompson, 2006). Other powerful features of PLS path modeling are to examine the model fit in a straightforward manner, test the proposed hypotheses (Luo, Li, Zhang, & Shim, 2010), and provide a more accurate estimation of the mediating effects by looking into the free measurement errors (Chin, Marcolin, & Newsted, 2003).

Briefly, 53.9% of the respondents were female and males were 46.1%. In this study, 230 respondents were still singles and 164 were married. Academically, a majority of the respondents had undergraduate degree holders ( $n = 307$ , 77.7%) followed by master's degree ( $n = 41$ , 10.4%) and lastly, diploma holders ( $n = 30$ , 7.6%). Moreover, the respondents held a minimum secondary school level of qualification ( $n = 10$ , 2.5%). With this educational attainment, it was rationale to indicate that they were cultured and knowledgeable. In this study, the category of 26 to 30 years old ( $n = 113$ , 28.6%) was ranked the highest followed by 21.5% ( $n = 85$ ), in the range of 18 to 25 years old. As such, the younger consumers were well educated and having generous income to participate in e-commerce (Dillon & Reif, 2004). Furthermore, it was about 21.3% ( $n = 84$ ) of 31 to 35 years old and 66 respondents (16.7%) from the 36 to 40 years old group, and lastly 27 respondents (6.8%) in the age group ranging from 41 to 45 years old. Regarding ethnic compositions, the sample consisted of more Chinese (48.4%) than Malays (30.1%), followed by Indians (8.9%) and others (12.7%). Next, the respondents recorded having a monthly income ranging from RM3,001 to RM5,000. Besides, 29.9% were within the range from

RM1,001 to RM3,000, followed by 17.5% who earned RM5001 to RM7000. Additionally, 43% of respondents were categorized as others and they were university or college students, waitresses, part-time workers, cleaners, and others. The second largest group was professionals which recorded 33.7% respondents followed by executives (10.6%).

### Assessment of the Measurement Model

Firstly, the statistical analysis was conducted to identify the causal relationships between the observed variables (items) and the underlying constructs. Hence, confirmatory factor analysis (CFA), including convergent validity and discriminant validity, was performed to measure the validity of the constructs of the study. As shown in Table 1, the item loadings in each construct exceeded the acceptable value of 0.5, as suggested by Hair, Black, Babin, Anderson, and Tatham (2010). All average variance extracted (AVE) value exceeded the acceptable level, 0.5 (Halawi & McCarthy, 2008) (see Table 2). All composite reliability (CR) fulfilled the recommended value (0.7) as suggested by Gefen, Straub, and Boudreau (2000) (see Table 2). Meanwhile, Cronbach  $\alpha$  values for each constructs exceeded the ideal value of 0.7 as recommended by Sekaran (1992) (see Table 2). Therefore, the model constructs of this study achieved good convergent validity with the evidence of all items loaded higher on the proposed factors than other factors (own loading are higher than cross loadings) (Chin, 2010) (see Table 1). To assess discriminant validity, the square root of AVEs conducted to test the inter-correlation amongst the tested variables (Chin, 2010) (see Table 3 and Table 4). Overall, the results showed that the square root of AVE (in bold) exceeded the correlations with other variables. In summary, it is to confirm that the measurement model of this study is acceptable.

Table 1

#### *Loading and Cross Loading*

<b>Constructs</b>	<b>CIQ</b>	<b>SERVQUAL</b>	<b>WEBQUAL</b>	<b>TAF</b>	<b>TEC_TRUST</b>	<b>E-LOY</b>	<b>T_WORHINESS</b>
CON	0.752	0.543	0.574	0.543	0.429	0.554	0.543
CUS	0.860	0.742	0.890	0.734	0.679	0.725	0.729
INT	0.722	0.549	0.518	0.535	0.520	0.592	0.583
CHA	0.772	0.536	0.582	0.599	0.599	0.593	0.574
EMP	0.693	0.880	0.724	0.801	0.651	0.713	0.755
ASS	0.561	0.783	0.591	0.581	0.660	0.600	0.655
TANG	0.734	0.848	0.781	0.811	0.30	0.727	0.732
RESP	0.686	0.868	0.717	0.778	0.656	0.702	0.734
REL	0.682	0.856	0.704	0.703	0.679	0.669	0.750
WDES	0.895	0.742	0.890	0.734	0.679	0.725	0.729
WCON	0.784	0.792	0.942	0.801	0.699	0.731	0.763
WSTR	0.724	0.741	0.942	0.774	0.699	0.671	0.763
PU	0.743	0.798	0.762	0.906	0.701	0.730	0.779
PEOU	0.752	0.821	0.791	0.923	0.652	0.704	0.767
ENJ	0.670	0.756	0.750	0.899	0.563	0.674	0.679
SEC	0.639	0.738	0.698	0.683	0.933	0.663	0.766
PRI	0.636	0.698	0.653	0.629	0.929	0.655	0.733
WOM	0.693	0.731	0.668	0.722	0.673	0.862	0.688
CB	0.560	0.546	0.495	0.463	0.466	0.705	0.505
FPI	0.739	0.677	0.715	0.674	0.572	0.863	0.628
HON	0.673	0.770	0.730	0.753	0.681	0.647	0.862
BEN	0.700	0.756	0.694	0.688	0.744	0.682	0.903
COMP	0.718	0.767	0.717	0.748	0.729	0.684	0.910



Table 2

*Result of Measurement Model*

Model Construct	Measurement Item	Cronbach's $\alpha$	Loading	CR <sup>a</sup>	AVE <sup>b</sup>
E-loyalty	WOM	0.741	0.862	0.853	0.661
	FPI		0.863		
	CB		0.705		
CIQ	CON	0.745	0.752	0.840	0.569
	CUS		0.860		
	INT		0.722		
	CHA		0.772		
SERVQUAL	EMP	0.902	0.880	0.927	0.719
	ASS		0.783		
	TANG		0.848		
	RESP		0.868		
	REL		0.856		
WEBQUAL	WDES	0.899	0.890	0.937	0.832
	WCON		0.942		
	WSTR		0.942		
TAF	PU	0.896	0.906	0.935	0.827
	PEOU		0.923		
	ENJ		0.899		
TEC_TRUST	SEC	0.846	0.933	0.928	0.866
	PRI		0.929		
Trustworthiness	HON	0.871	0.862	0.921	0.796
	BEN		0.903		
	COMP		0.910		

Notes. <sup>a</sup> Composite reliability (CR) = square of the summation of the factor loadings / (square of the summation of the factor loadings + square of the summation of the error variances); <sup>b</sup> Average variance extracted (AVE) = summation of the square of the factor loadings / (summation of the square of the factor loadings + summation of the error variances).

Table 3

*Summary Results of the Model Constructs*

Model Construct	Measurement Item	Standardized estimate	t-value
E-loyalty	WOM	0.862	33.040
	FPI	0.863	28.964
	CB	0.705	9.052
CIQ	CON	0.752	13.080
	CUS	0.860	33.878
	INT	0.722	11.034
	CHA	0.772	9.496
SERVQUAL	EMP	0.880	33.940
	ASS	0.783	15.992
	TANG	0.848	26.873
	RESP	0.868	33.694
	REL	0.856	29.530
WEBQUAL	WDES	0.890	42.645
	WCON	0.942	88.833
	WSTR	0.942	39.543

Table 3 continued

Model Construct	Measurement Item	Standardized estimate	t-value
TAF	PU	0.906	51.821
	PEOU	0.923	53.701
	ENJ	0.899	36.089
TEC_TRUST	SEC	0.933	71.310
	PRI	0.929	56.910
Trustworthiness	HON	0.862	23.630
	BEN	0.903	43.542
	COMP	0.910	43.307

Note. Final items numbers (initial numbers).

Table 4

*Discriminant Validity of Constructs*

Constructs	CIQ	E-LOY	SERVQUAL	TAF	TEC_TRUST	T_WORHINESS	WEBQUAL
CIQ	0.754						
E-LOY	0.521	0.813					
SERVQUA	0.594	0.606	0.848				
TAF	0.505	0.673	0.571	0.909			
TEC_T	0.685	0.507	0.671	0.405	0.931		
T_WORTH	0.581	0.552	0.458	0.617	0.605	0.893	
WEBQUA	0.588	0.478	0.432	0.544	0.526	0.599	0.912

Note. Diagonals represent the square root of the average variance extracted while the other entries represent the correlations.

**Assessment of the Structural Model**

Once all the constructs in the measurement model were validated, structural model was then to be tested. The bootstrapping technique was conducted to generate *t*-value for each of the hypothesized relationship and the potential impact of covariates. The researcher conducted the bootstrapping approach with 500 samples, with 0 cases per sample to test the path coefficient ( $\beta$ ) and proposed hypotheses. Table 5 and Figure 1 presented the results of the hypotheses testing. The findings revealed that customer interface quality ( $\beta = 0.457$ ;  $t = 3.974$ ), SERVQUAL ( $\beta = 0.312$ ,  $t = 2.433$ ), website quality ( $\beta = 0.169$ ;  $t = 3.333$ ), technology acceptance factors ( $\beta = 0.329$ ;  $t = 2.575$ ), technology trust ( $\beta = 0.139$ ,  $t = 3.410$ ), and trustworthiness ( $\beta = 0.035$ ;  $t = 2.265$ ) were found to be related to customer e-loyalty, with the evidence that these six formulated hypotheses exceeded the recommended value, 1.96 ( $< 0.05$ ), hence, H1, H2, H3, H4, H5, and H6 were supported.

Generally, a global fit measure (GOF) was conducted for path modeling, it is defined as the geometric mean of average communality and average  $R^2$  (especially endogenous variables) (Chin, 2010) (see the formula). In this study, GOF value was 0.61 ( $R^2 = 0.747$ , average AVE = 0.661 for e-loyalty) and 0.72 ( $R^2 = 0.808$ , average AVE = 0.796 for trustworthiness). Both of GOF value exceeded the largest cut-off value (0.36) and it was indicated that the proposed model of this study had better explaining power than that based on the recommended value of  $GOF_{\text{small}} = 0.1$ ,  $GOF_{\text{medium}} = 0.25$ , and  $GOF_{\text{large}} = 0.36$  (Akter et al., 2011).

$$GOF = \sqrt{AVE \times R^2}.$$

Table 5  
Path Coefficient and Hypothesis Testing

H	Relationship	Coefficient	t-value	Decision
H1	CIQ → e-loyalty	0.457	3.974	YES
H2	SEVQUAL → e-loyalty	0.312	2.433	YES
H3	Website quality → e-loyalty	0.169	3.333	YES
H4	TAF → e-loyalty	0.329	2.575	YES
H5	Tech_trust → e-loyalty	0.139	3.410	YES
H6	Trustworthiness → e-loyalty	0.035	2.265	YES
H7	CIQ trustworthiness → e-loyalty	0.141	1.200	YES
H8	SEVQUAL trustworthiness → e-loyalty	0.328	3.167	NO
H9	Website quality trustworthiness → e-loyalty	0.036	4.344	YES
H10	TAF trustworthiness → e-loyalty	0.169	4.519	YES
H11	Tech_trust trustworthiness → e-loyalty	0.016	3.591	YES

Note. .t-value>1.96 (p < 0.05\*); t-value >2.58 (p < 0.01\*\*).

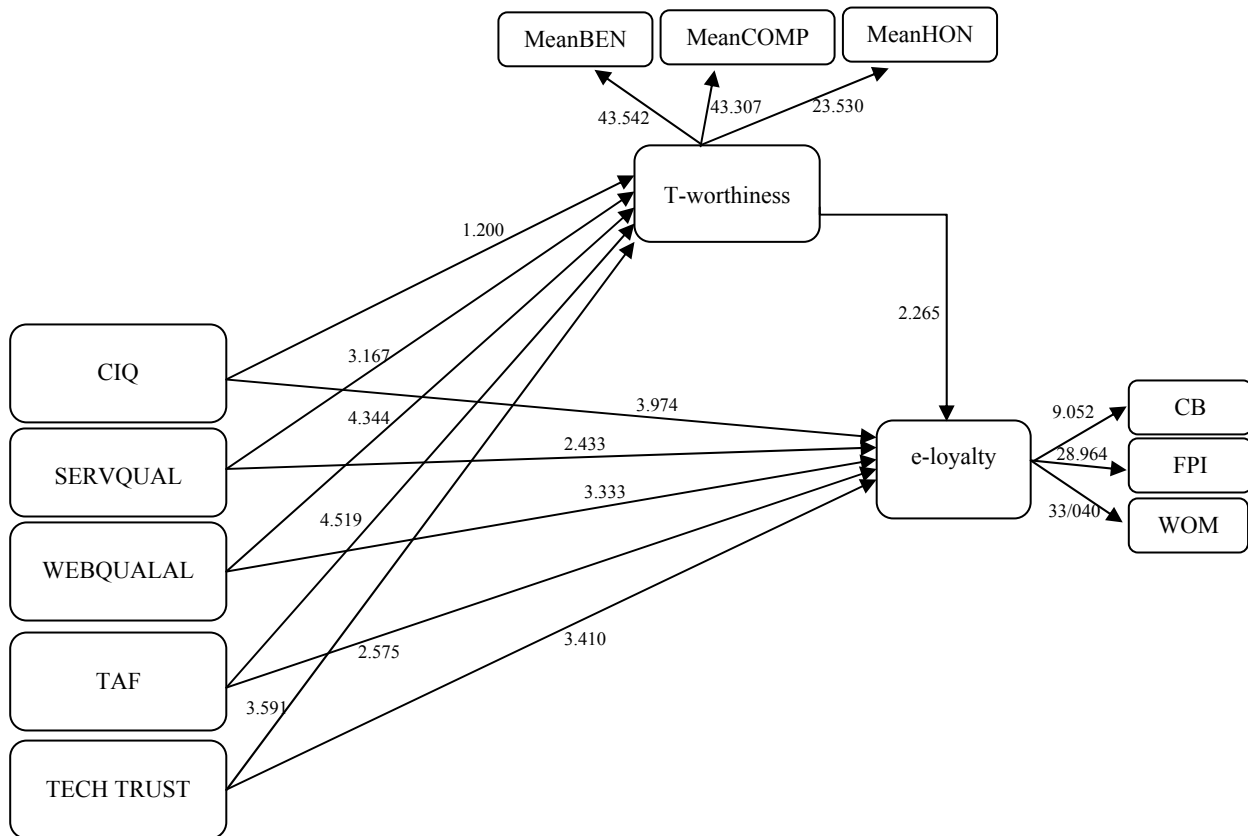


Figure 1. Research model with PLS coefficients.

**The Mediating Effect**

According to McKinnon, Warsi, and Dwyer (1995), the mediating effects only exist when (a) independent variables have a significant impact on mediator, (b) independence variables have a significant impact on dependent variables in the absence of mediator, (c) mediator has a significant impact on dependence variables, and (d) the effect of independent variables and dependence variables become smaller with the existence of mediator (Ramayah, Samat, & Lo, 2011). The indirect effect of hypotheses has been presented in Table 5.

SERVQUAL, website quality, technology acceptance factors, and technology trust were positively related to trustworthiness with  $\beta = 0.328, p < 0.01$ ;  $\beta = 0.036, p < 0.01$ ;  $\beta = 0.169, p < 0.01$ ; and  $\beta = 0.016, p < 0.01$  respectively, as well as trustworthiness on customer e-loyalty ( $\beta = 0.035, p < 0.01$ ). However, on the basis of testing the mediating effect, the findings revealed that customer interface quality was negatively related to trustworthiness ( $\beta = 0.141, p < 0.01$ ). Moreover, in terms of direct effect of independent variables and customer e-loyalty, all the proposed independent variables were related to customer e-loyalty. As such, it was rational to conclude that the indirect effect of SERVQUAL, website quality, technology acceptance factors, and technology trust were positively related to customer e-loyalty through the mediating effect of trustworthiness. In this sense, trustworthiness has played a key role as mediator in this study and, H8, H9, H10, and H11 was supported. H7 was rejected due to the fact that customer interface quality was not fulfilling the basic of mediating effect.

### Discussion

The findings showed that there is a positive impact of customer interface quality, SERVQUAL, website quality, technology acceptance factors, and technology trust on customer e-loyalty. This study also found that there is an indirect effect of SERVQUAL, website quality, technology acceptance factors, and technology trust on customer e-loyalty through the mediating effect of trustworthiness. These generalized findings enticed e-consumers and internet users to participate in e-purchasing.

As expected, the findings of current study were in line with the study of Chang and Chen (2008) that customer interface factors contributed to customer e-loyalty. Srinivasan, Anderson, and Ponnnavolu (2002b) also reported that interactivity influenced customer e-loyalty (Balabanis, Reynolds, & Simintiras, 2006). Despite customer interface quality, Oliveira (2007) also found that e-SERVQUAL directly linked to customer e-loyalty (Lin & Sun, 2009). This is due to the fact that acquiring new customers is costly exercise and the existing customer purchase more (Long & McMellon, 2004). Generally, e-users generated favorable or unfavorable feeling towards the website from the first sight of accessing. As such, website quality is important in the e-consumer's point of view. Smith (2001) revealed that easy to navigate, dependable distribution systems, efficient website, and the value of products or services influenced customer e-loyalty (Olson & Boyer, 2005). Due to the good website quality, Stanford, Tauber, Fogg, and Marable (2002) found that e-customers are more likely to access a given website accordance with good accessibility and attractive image of website (Corritore et al., 2003). The findings showed that perceived usefulness impacts customer loyalty of e-shopping (Shih, 2004). This finding is confirmed by Ha and Stoel (2009) that perceived usefulness, trust, and enjoyment are in turn to drive customer intention to shop online. Lastly, internet privacy and security relatively affected e-trust (Kim, 2003). Several studies (Belanger, Hiller, & Smith, 2002; Kim & Shim, 2002) have found that security is predictor of consumer intention to shop via online. This was due to the fact that many e-consumers are unwilling to provide personal information over the internet (Salisbury et al., 2001).

Another intriguing finding that emerged from this study was trustworthiness successfully mediated customer interface quality, website quality, technology acceptance, and technology trust factors on customer e-loyalty. When e-consumers or e-shoppers have had no direct interaction with the e-retailers, trustworthiness (trust beliefs) plays an important role. In other words, trust (trustworthiness) acts as a confidence tool to move potential customers towards website purchases, and thus spread favorable word-of-mouth to the others and their friends (Santos & Von Der Heyde Fernandes, 2008). As stated in the literature reviewing, a sense of trust can

be earned by repeatedly meeting customers' perceived value (Yao, Zhou, & Meng, 2007) and providing accurate information (Abdul-Rahman & Hailes, 2000). Trust also maintains the relationships and forms the commitment (Morgan & Hunt, 1994). Therefore, there is an interrelationship between trust (trustworthiness), behavioral intention, and attitude towards e-purchasing from e-store. However, contrary to expectations, the research found that trustworthiness did not mediate SERVQUAL and customer e-loyalty. This finding may be the result of a failure in service provision by the e-retailer, during which they did not provide good individualized attention.

Apart from that, TAM has been adapted to help website designers and e-retailers better understand the impact of web technology on Malaysian internet users and potential or existing e-buyers. This study also utilized CTT which is built on the basis that trust and commitment were complements, to test the influence of trustworthiness through predictors, and has proven to be the useful theoretical base to explain technology acceptance in Malaysia context. It drove to explain, assure e-consumer behavior, and be able to interpret the effect of trustworthiness through numerous predictors on customer e-loyalty. A well-built trust and commitment aided to build up the strong relationship and strengthen the relationship between e-retailers and e-consumers in digital world. With this powerful relationship, trustworthiness played an indirect influence on customer e-loyalty in this study.

### **Limitation and Direction of Future Research**

This study suffers from some limitations. Firstly, it lacked diversity in terms of the sample used. The survey concentrated on the urban area only without choosing rural areas. In other words, the respondents from urban area had different perceptions on technology use, such as online purchasing, from those who were not selected. As perceptions towards technology use change over the time, the findings of the present study were limited to the internet buyers only and also these specific locations. Secondly, the sample size of this study (395 samples) achieved and fulfilled Roscoe's rule (Sekaran, 1992). However, the researcher should maximize the samples to generate higher generalization of the findings in future. Thirdly, the quality of data used in this study may be doubted because of the way the questionnaire was answered by respondents. Fourthly, the product or service types should be under consideration. In this study, respondents were free to think of any product or service website before filling the questionnaire. In this regard, a future researcher has to classify clearly what products or services websites to use in order to avoid selecting inaccurate variables.

### **Implication**

None of the studies have examined the developed constructs in this study and its direct impact on customer e-loyalty, in this sense, this study's insights will improve the understanding of the relationship between these constructs within Malaysia. This was expected to add to the body of knowledge on e-consumer behavior. The role of trustworthiness and its importance drove to customer e-loyalty among Malaysians. The effect of trustworthiness between the constructs and customer e-loyalty will also add more knowledge to the literature of e-commerce and online consumer behavior from an academic perspective. Presently, there is limited literature that focuses on the adoption, acceptance, and intention to use websites amongst Malaysians. Due to this, it was important for e-marketers to understand attitudes and behaviors' in order to encourage more Malaysians to involve in electronic-based activities. As reflected in the findings from the current study, marketing academics and professionals attempted to discover the most significant antecedents of customer e-loyalty which was important to e-business applications in Malaysia. These antecedents might assist the

e-marketer and e-designers to develop and reengineer the strategic tools to promote Malaysians to use the Internet for shopping regarding to the re-patronage behavior in online shopping. The current research intends to generalize awareness of the usefulness of the internet. Consequently, the adoption intention of websites will be improved and, furthermore, perceptions towards computer use will be positive. In addition, the findings also revealed to e-retailers the importance of designing professional and well-structured websites with good content, in order to attract and retain existing and new e-consumers. As a result of rapid technological growth, the internet was the most effective marketing tool to deal with customers. Indeed, the volume of e-business will increase because of the ability to conduct business more quickly and across the country.

### Conclusions

The analytical results indicated that customer interface quality, SERVQUAL, website quality, technology acceptance factors, and technology trust positively and direct related to customer e-loyalty. The findings also showed that there is an indirect effect of trustworthiness on customer e-loyalty. The generalized added to the body of literature in developing the antecedents of customer e-loyalty in Malaysia. This work also contributed to a better understanding of the determinants of e-purchasing behavior and intention amongst Malaysian e-consumers that led to prompt Internet marketing in the country. Generally speaking, it is of help for e-retailers and website designers to understand what Malaysian online buyers want, as well as how to encourage them to become involved in e-shopping. At the same time, Malaysian e-consumers perceive positively the internet as the fastest and most efficient communication channel. Apart from this, it increases the market share in this competitive marketplace and also helps e-marketers to develop a consistent web-based shopping strategy to boost the e-economy.

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