



## OTHER ARTICLE

# Factors influencing satisfaction and loyalty in online shopping: an integrated model

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### Abstract

**Purpose** – Taking into consideration external (technology acceptance factors, website service quality) as well as internal (specific holdup cost) factors, this paper aims to explore how internet customer satisfaction and loyalty can be associated with each other and how they are affected by these dynamics.

**Design/methodology/approach** – This study adopts structural equation modelling (SEM) as the main analytical tool. It investigates the shopping experiences of users of the major shopping websites of Taiwan.

**Findings** – The research results point to the following: first, customer e-satisfaction will positively influence customer e-loyalty directly; second, technology acceptance factors will positively influence customer e-satisfaction and e-loyalty directly; third, website service quality can positively influence customer e-satisfaction and e-loyalty directly; and fourth, specific holdup cost can positively influence customer e-loyalty directly, but cannot positively influence customer e-satisfaction directly.

**Originality/value** – This paper draws on the research results for implications for shopping website management and design, then suggests some ways to enhance performance for the website shopping industry.

**Keywords** Internet shopping, Customer satisfaction, Customer loyalty

**Paper type** Technical paper

### Introduction

Based on International Telecommunication Union (ITU, 2005) data, the worldwide online population was 870 million at the end of 2004, representing 14 per cent of the global population at that time. The growth of the internet over the last decade has meant radical changes for retail trading for many goods markets. The fact that e-commerce itself can be classified as a kind of information technology and that many business activities are done through the computer and internet (including product transactions, advertising, selling services, etc.) reveals the core issue of how internet businesses can make themselves the internet customers' most trusted and shopped websites.

Previous studies have emphasised the issue of the consumer purchase process (Butler and Peppard, 1998; Walczuch and Lundgren, 2004; Kim *et al.*, 2008). Particularly, consumers' attitudes and beliefs regarding convenience and security concerns (shaped during the online purchase process) have significant effects on their intention to purchase online (Limayem *et al.*, 2000). Shanker *et al.* (2003) has also contended that service provided during and following the purchase is essential to e-consumers' repeat purchases.



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A number of studies have documented the significant role of website technology factors and service quality in influencing customer e-satisfaction and e-loyalty, concerned with consumers' psychological state, attitude and behaviour, derived from how they feel about their online shopping experiences (Szymanski and Hise, 2000; Devaraj *et al.*, 2002; Anderson and Srinivasan, 2003; Ribbink *et al.*, 2004; Shih, 2004; Flavian *et al.*, 2006). But little is known about the reflection of customer-related internal factors in the same regard. Hence, this paper takes another perspective and discusses how added internal factors such as specific holdup cost or habit, together with the external factors of website technology and service quality, affect online customer satisfaction and loyalty as a whole.

Taiwan's online population rate was 54 per cent in 2005, ranking seventeenth in the world (ITU, 2005). This study surveyed customers of the Taiwanese shopping websites Taiwan Yahoo, PCHome, Unimall and eBay. The study's main objectives, discussed below, sought the innovative exploration of online shopping behaviour, alongside the latest developments in established traditions of internet consumer research. This study aimed to:

- explore the relationship between customer satisfaction and loyalty in internet shopping;
- explore the effects of the technology acceptance factors (perceived usefulness (PU) and perceived ease of use (PEOU)), website service quality and specific holdup cost on customers' e-satisfaction and e-loyalty; and
- provide shopping website operators with some strategic recommendations based on the research results.

### **Literature review and hypotheses development**

This study focused on online business-to-consumer transactions. The study began by establishing a conceptual framework through a review of related theories and literature. The four topics of conceptualisation considered in this section are technology acceptance factors, website service quality, specific holdup cost, and customer e-satisfaction and e-loyalty. The hypotheses development was founded on each reviewed literature theme.

#### *Technology acceptance factors*

Websites are essentially a type of information technology. Direct confrontation is an internet transaction platform. Shopping websites allow customers to choose products based on their own needs and provide businesses with transaction platforms through interactive communications to fulfill the transactions. However, for the customer to easily consume online, he or she must first find the website useful and easy to use. This takes into account information search, internet subscription, payment methods and so forth.

A good number of previous studies have adopted technology acceptance factors as a measure of the willingness of customers to consume online. Davis (1989) proposed the Technology Acceptance Model (TAM) to explain and predict user acceptance of information systems (IS) or information technology (IT). Within TAM, perceived usefulness (PU) – defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989, pp. 330-1) –

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is a major factor, and perceived ease of use (PEOU) – defined as “the degree to which a person believes that using a particular system would be free of effort” – is a secondary factor in determining system usage. Davis (1989) also suggested that PEOU has a positive, indirect effect on system usage through PU.

Shih (2004) argued that individual attitudes toward e-shopping are strongly and positively correlated with user acceptance. His empirical research results confirmed that perceived ease of use of trading online (PEOUT) and perceived usefulness (PU) significantly determine individual loyalty towards e-shopping. The results also confirmed the significant effect of PEOU of the web on PEOUT, which in turn affects PU. However, PU was not found to affect user acceptance significantly. Additionally, user satisfaction with the internet and perceptions of the information systems and service were shown to affect user acceptance significantly.

Recent research also suggests that customer satisfaction in the online environment is significantly higher than in traditional channels as a result of ease of use in acquiring information (Hernandez *et al.*, 2009; Poddar *et al.*, 2009; Yang *et al.*, 2008; Verhagen and Dolen, 2009). Ease of use can also affect transaction costs when it pertains to information search (Shanker *et al.*, 2003). Following the preceding discussion, we proposed the hypotheses below:

- H1. When a shopping website’s technology acceptance factors are enhanced, customer e-satisfaction increases.
- H2. When a shopping website’s technology acceptance factors are enhanced, customer e-loyalty increases.

#### *Website service quality*

Parasuraman *et al.* (1985; 1988a) measured service quality (SERVQUAL) in the following ten phases: accessibility, communication, capability, courtesy, trustworthiness, reliability, responsiveness, safety, tangibility and understanding with customers; later reducing these measures to five: tangibility, reliability, responsiveness, assurance and empathy (Parasuraman *et al.*, 1988a, b).

In electronic commerce, service quality measures have been applied to assess the quality of search engines and factors associated with website success. However, consumers’ perceptions of online service quality remain largely unexplored. There are indications that electronic commerce service issues go beyond product price and may be the reason for consumers’ preference for the channel. Yang *et al.* (2008) used four dimensions of SERVQUAL – reliability, responsiveness, assurance and empathy – to measure the users’ cognition of SERVQUAL online. Keeney (1999) developed a means-ends objectives network for internet commerce. The means objectives represent aspects of the customer’s desired e-service experience (e.g. assure system security, maximise product information, maximise ease of use) and are operationalised by e-service process attributes during the customer’s interaction with the e-service.

Relevant to service dimensions of the website, Devaraj *et al.* (2002) reported results of a study that measured consumer satisfaction with the e-commerce channel through constructs prescribed by three established frameworks, namely the Technology Acceptance Model (TAM), Transaction Cost Analysis (TCA) and SERVQUAL. The study found that TAM components – perceived ease of use and perceived usefulness – are important in forming consumer attitudes and in strengthening the e-commerce

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channel. This study also found empirical support for the assurance dimension of SERVQUAL as a determinant in e-commerce channel satisfaction.

Lai *et al.* (2007) suggested that when customers perceive better website service quality, such as special treatment benefits, they will have more e-satisfaction; when customers feel e-satisfaction with the website, they will feel more e-loyalty; and when the website is responsive, it will directly influence the customers' e-loyalty. Furthermore, based on data from an online questionnaire of customers of an e-banking service, Oliveira (2007) employed structural equation modelling to examine the link between website service quality and customer loyalty. His research found a strong and significant link between the two constructs, suggesting that this relationship also holds in e-service settings.

Based on the literature, in this study website service quality is the customer's perception of the shopping website's ability to respond to customer's needs, be concerned about customers and provide a secure shopping environment. Also based on the literature, the following hypotheses were proposed:

- H3. When shopping website service quality is raised, customer e-satisfaction increases.
- H4. When shopping website service quality is raised, customer e-loyalty increases.

#### *Specific holdup cost*

Chiu (2006) divided transaction cost into four parts: explicit unit benefit cost, information search cost, moral hazard cost and specific holdup cost.

With regard to the implicit factors, the present study was mainly concerned with the customer's inner perceptions when shopping online. Thus, we will not discuss what explicit unit benefits the shopping website can offer to customers, but focus instead on how much a specific holdup cost – defined as a “particular intangible and tangible asset made in the course of the buying and selling” (Chiu, 2006, p. 64) – affects customers' e-satisfaction and e-loyalty. This is also because the issue of familiarity or habit has been largely overlooked in the study of e-commerce.

In general, specific holdup cost refers to the relative lack of transferability of assets intended for use in a given transaction to other uses. Highly specific assets represent sunk costs that have relatively little value beyond their use in the context of a specific transaction. The concept of specific holdup cost is similar to that of asset specificity. Coase (1988) suggested six main types of asset holdup specificity: site specificity, physical asset specificity, human asset specificity, brand names, dedicated assets and temporal specificity. Customers often develop specialised knowledge that would be of limited application outside of the relationship in which it was developed (Williamson *et al.*, 1975). Asset specificity arises because this knowledge is specific to a given relationship – specialised vocabularies, for example, could not be transferred to relationships with another partner.

Therefore, in terms of online shopping activities, if the customer is familiar with the transaction methods of a shopping website, he or she will use this shopping website more often. Forming a certain purchasing habit at this website, the customer may spend more time and effort in learning how to use or shop on the website. As a result, in dealing with the holdup cost specific to it, the customer can possibly be “fastened” to

the shopping website. In this regard, when customers and shopping websites, for example, make a specific holdup cost, customers' e-loyalty will be enhanced. To briefly summarise, the higher the specific holdup cost made by customers and shopping websites, the higher the level of e-loyalty. A high degree of e-loyalty is usually associated with a high degree of e-satisfaction. Given the above, the following hypotheses were proposed:

- H5. When the specific holdup cost paid by the online shopping customer is raised, e-satisfaction increases.
- H6. When the specific holdup cost paid by the online shopping customer is raised, e-loyalty increases.

#### *Customer satisfaction and loyalty*

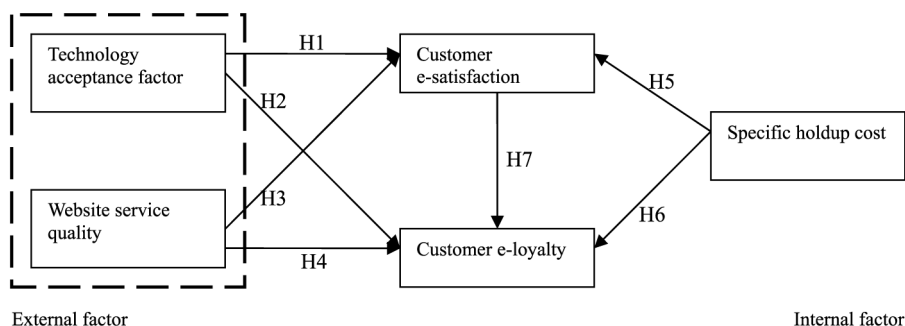
Satisfaction is a post-activity measuring index that measures the interior state of the customer's feelings about past purchases and experiences of shopping. Measuring the degree of satisfaction of customers is rather critical since satisfaction with the distribution service influences the customer's decision whether to continue using the channel. Oliver (1997) described customer satisfaction as the summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with a customer's prior feeling about the customer experience. Szymanski and Hise (2000) contended that consumer perceptions of online convenience, merchandising (product offerings and product information), site design and financial security play important roles in e-satisfaction assessments.

Oliver (1997, p. 233) defined customer loyalty as "a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior". This definition has been used extensively in related research on e-loyalty. Anderson and Srinivasan (2003, p. 417) identified e-loyalty as "a customer's favorable attitude toward an electronic business resulting in repeat buying behavior". Furthermore, they investigated the impact of satisfaction on loyalty in the context of electronic commerce. They concluded that although e-satisfaction has an impact on e-loyalty, this relationship is moderated by consumers' individual level factors and firms' business level factors. Among consumer level factors, convenience motivation and purchase size were found to accentuate the impact of e-satisfaction on e-loyalty, whereas inertia was found to suppress the impact of e-satisfaction on e-loyalty. With respect to business level factors, both trust and perceived value, as developed by the company, were found to significantly accentuate the impact of e-satisfaction on e-loyalty. Based on the above research, the present study proposed the following hypothesis:

- H7. When the customer's e-satisfaction is raised, e-loyalty increases.

#### **Methodology**

Derived from the hypotheses above, this study defined each variable operationally within the tentative model shown in Figure 1. We developed a seven-point Likert chart for conducting the targeted questionnaire survey. We designed a questionnaire with 41 questions. For the measurement questions, we mainly used measurements in line with noted dynamics of previous literature. The answers ranged from "strongly disagree",



**Figure 1.**  
Research framework

“disagree”, “slightly disagree” or “average” to “slightly agree”, “agree” or strongly agree”, where 1 signified strong disagreement and 7 represented strong agreement.

### *Sampling design*

The method of collecting the data for this study was to distribute questionnaires in two portions. The first portion comprised email questionnaires and the second, paper questionnaires. We sent the questions to internet users, inviting those with online shopping experience to answer. The sampling procedure used was non-probability sampling, that is, the questionnaire recipients of the email or hard copy were not chosen randomly, but through non-random snowball sampling. (For more details of the sampling, see Table I.)

Email questionnaires were answered within a month and the paper questionnaires were filled out within two weeks. A total of 221 were returned successfully. Ineligible questionnaires included those returned blank or with incomplete answers. In the email portion, 154 were sent and 150 were returned. Of these, four were ineligible and had to be rejected, leaving a total of 146 eligible responses. A total of 160 paper questionnaires were sent out and 150 were returned. Of these, 75 were ineligible, leaving 75 eligible (50 per cent of those returned). There were fewer ineligible in the sample of email questionnaires because participants could not send their email unless the questionnaire was complete. This exploited the internet advantages of spatial and temporal independence and confidentiality, and therefore achieved a large sample response within a short period of time. Customised scripting was also employed to smooth questionnaire procedures, preventing subjects from missing questions and reducing the probability of misunderstanding.

The research questionnaire was divided into six parts. The first asked the respondents about actual internet usage scenarios. The design of the second to fifth parts was based on the research framework. The conceptual dimensions included technology acceptance factors (PU and PEOU), website service quality, specific holdup cost, customer e-satisfaction and customer e-loyalty. The last part asked the respondents for some basic information about themselves.

This study used structural equation modelling (SEM) as its main analytical tool in order to allocate the cause and effect relation of the research model variables. Gerbing and Anderson (1988) have suggested that when using the LISREL statistical software package to test the structural model, multivariate normality should be valid in terms of

Descriptive statistics		%
Occupation	Manufacturing business	7.2
	Information business	1.4
	Financial business	2.3
	Restaurant business	0.5
	Government and educational business	3.2
	Student	70.1
	Housewife	0.5
	Service industry	5.0
	Others	10.0
	Income (per month in Taiwanese dollars)	1,000
1,001 ~ 3,000		4.1
3,001 ~ 4,000		5.9
4,001 ~ 5,000		12.7
5,001 ~ 8,000		8.6
8,001 ~ 10,000		36.2
10,001 ~ 20,000		9.0
20,001 ~ 30,000		7.2
30,001 ~ 40,000		7.7
40,001 ~ 50,000		1.8
50,001 +		3.6
Education	High school	0.9
	Junior college	2.3
	College	71.9
	Masters	22.2
	PhD	2.3
	Others	0.5
Age	16 ~ 20	11.8
	21 ~ 25	66.1
	26 ~ 30	14.9
	31 ~ 30	4.5
	31 ~ 35	2.3
	Others	0.5
Gender	Male	44.8
	Female	55.2
Daily online frequency	Twice a day	73.8
	Once a day	24.3
	Once every three days	2.3
Internet familiarity level	High familiarity	34.4
	Secondary familiarity	46.6
	Ordinary familiarity	29.0

**Table I.**  
Demographic statistics

data distribution and the sample size should be at least 150 so as to reach the closed form solution as well as the ideal solution. Thus this study gathered 200 samples in keeping with this size requirement. We surveyed customers who had shopping experience of Taiwan's most popular online shopping sites – Taiwan Yahoo, PCHome, Unimall and eBay, which account for 80 per cent of Taiwan's website shopping market share (Chou, 2006).

Then we used one-way ANOVA to analyse the collected data in order to determine whether respondents' demographic variables (including gender, age, education, occupation, income, daily online frequency and internet familiarity level) had significant discrepancies in their impacts on the model's conceptual dimensions. Only specific holdup cost was notably affected by the daily online frequency of online customers (see Table II). One can also observe from this that as internet customers' online frequency rises, specific holdup cost built into the shopping website will increase considerably.

Table III shows that the technology acceptance factors, website service quality and customer e-satisfaction were remarkably affected by the internet familiarity level of online customers – when the internet customer's internet familiarity level increases, the technology acceptance factors, website service quality and customer e-satisfaction also significantly increase.

*Reliability and validity*

This study made a confirmatory factor analysis using the LISREL 8.14 statistical software package. Using modification indices (MI), the source of incompatibility in the model fit was understood. The statistical significance of the survey framework's factor loading was determined (it is generally considered that this must be higher than a standard number of 0.5 (Hair *et al.*, 1998)) to ascertain whether it was needed to delete some complex survey variables. Through the repeated filtration of MI and the deletion of questions with a factor loading of less than 0.5, we condensed the survey to a total of 19 questions from an original 41, as shown in Table IV.

A reliability analysis was performed on the subjects of the 19 remaining questions. Reliability assessments are used to test the consistency or stability of research results obtained from the repetitive measures within the same population or equivalent. The most common method for reliability analysis is Cronbach's alpha ( $\alpha$ ) coefficient. The Cronbach's  $\alpha$  of the technology acceptance factors, website service quality, specific holdup cost, customer e-satisfaction and customer e-loyalty were 0.902, 0.784, 0.694, 0.841 and 0.854 respectively. Nunnally's (1978) recommended level of 0.7 for evaluating composite reliability can be used to assess internal consistency and 0.5 can indicate an

	<i>F</i>	Daily online frequency	Sig.
Specific holdup cost	4.228*		0.016*

**Note:** \* $p < 0.05$

**Table II.**  
One-way ANOVA of  
online frequency in  
relation to conceptual  
dimensions

	<i>F</i>	Internet familiarity level	Sig.
Technology acceptance factors	7.584**		0.001**
Website service quality	2.985*		0.05*
Customer e-satisfaction	3.398*		0.035*

**Notes:** \* $p < 0.05$  \*\* $p < 0.01$

**Table III.**  
One-way ANOVA of  
internet familiarity level  
in relation to conceptual  
dimensions



Construct	Question (Please base your answers on the one shopping website that you most frequently use)
Technology acceptance factors	1 I feel that the browse function in the shopping website can increase my shopping efficiency
	2 I feel that the credit function in the shopping website can raise my shopping efficiency
	3 I feel that the operations of the shopping website are easy to understand and convenient to use
	4 I feel that the shopping website saves me a lot of other related shopping time
Website service quality	5 When I shop again, the same shopping website personnel or records would remember my related consumption habits
	6 I am confident in buying products from the shopping website
	7 I feel secure in buying products from the shopping website
	8 I trust that the shopping website can provide appropriate service to me
Specific holdup cost	9 In order to understand how to use the shopping website, I have already spent time and effort to learn
	10 I use this shopping website because I am already used to it
	11 If I give up this shopping website and use another one, I need to spend more time and effort learning afresh
	12 I have spent much time and energy to confirm that this shopping website fits with my needs and preferences
Customer e-satisfaction	13 I am satisfied with this shopping website's related business process
	14 I like the content and layout of this shopping website
	15 Holistically speaking, I am satisfied with this shopping website's service level
Customer e-loyalty	16 I will promote this shopping website to my close friends
	17 In thinking about internet shopping, I first think about this shopping website
	18 I can hardly consider changing to other shopping websites
	19 In future years, I would still often purchase from this shopping website

**Table IV.**  
Final questionnaire

acceptable reliability coefficient, although lower thresholds are sometimes used in the literature. Our composite reliability was tested as 0.72. And the values of all other Cronbach's  $\alpha$  were higher than 0.5. The Cronbach's  $\alpha$  for technology acceptance factors was as high as 0.902, and even the conceptual dimension with the lowest Cronbach's  $\alpha$  – specific holdup cost at 0.694 – was higher than 0.5 and therefore within the acceptance range. At this point it bears mentioning that our snowball method of sampling, although effective at reaching specific populations, might make generalisation from the samples more unreliable (Heckathorn, 1997) than random sampling would have. Therefore under our sampling policy we believe that our data reliability is rather high.

From the viewpoint of expert validity, that the research concepts were based on the literature assures their expert validity. The analysis showed that the factor loadings of

each concept were all higher than 0.6, which implies that the study reached convergent validity. Discriminant validity is used to test the degree to which the research concept is not similar to (diverges from) other concepts that it theoretically should not be similar to. We followed Anderson and Gerbing's (1988) method of testing discriminant validity. In this study the coefficient between any two constructs was significantly less than 1, and the 95 per cent confidence interval (plus or minus two standard errors) did not contain a value of 1, and so supported discriminant validity between constructs.

*SEM analysis*

Using the research framework in Figure 1 as a basis, the study employed SEM to explore the linear structure relationship between the variables, deriving the maximum likelihood estimates on the path coefficient. From the model fit shown, the GFI, AGFI, NFI and NNFI of the overall model was 1; the overall model's CFI also equalled 1. This shows that the fit of the model is very good. The results of the SEM analysis are shown in Table V. Figure 2 shows the path analysis based on the hypotheses.

The path analysis results allow us to distinguish each variable's different effects on customer e-satisfaction and customer e-loyalty; discrepancies in their influence process are also assessed. The study's seven hypotheses can be verified if the path coefficients are positive and the absolute *T* value is larger than 1.96 (as  $p < 0.05$ ). The test results supported a large portion of the original hypotheses' path structure – aside from *H5*, which was not supported, the remaining hypotheses (*H1*, *H2*, *H3*, *H4*, *H6* and *H7*) were all supported (see Table V). That is, customer e-satisfaction can directly and positively

Hypothesis and path	Estimated path coefficient	<i>t</i> -value
<i>H1</i> (technology acceptance factors → customer e-satisfaction)	0.45	7.51*
<i>H2</i> (technology acceptance factors → customer e-loyalty)	0.26	7.48*
<i>H3</i> (website service quality → customer e-satisfaction)	0.26	4.36*
<i>H4</i> (website service quality → customer e-loyalty)	0.21	5.28*
<i>H5</i> (specific holdup cost → customer e-satisfaction)	0.08	1.41
<i>H6</i> (specific holdup cost → customer e-loyalty)	0.15	3.50*
<i>H7</i> (customer e-satisfaction → customer e-loyalty)	0.37	6.16*

Notes:  $t > 1.96$ ;  $p < 0.001$ , represented by \*

Table V. SEM analysis results

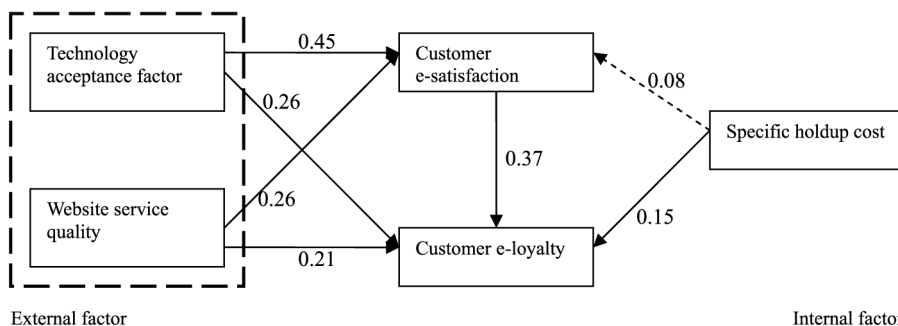


Figure 2. Path analysis

affect customer e-loyalty; the technology acceptance factors can directly and positively affect customer e-satisfaction and customer e-loyalty; the service quality provided by the website can directly and positively affect customer e-satisfaction and customer e-loyalty. However, the specific holdup cost cannot directly and positively influence customer e-satisfaction but can directly and positively affect customer e-loyalty. The other important path analyses are as follows:

- The path analysis shows that technology acceptance factors are a relatively more important variable. The external factors (technology acceptance factors and website service quality) are also comparatively more important than the internal factor (specific holdup cost) when it comes to effects on website shoppers' e-satisfaction and e-loyalty.
- From the customer e-satisfaction side, the influence value of the technology acceptance factors was 0.45, while website service quality was 0.26. At this point, one sees that technology acceptance factors have a stronger effect than service quality on customer e-satisfaction with online shopping.
- From the customer e-loyalty side, the effect of the technology acceptance factors was the highest, with an influence value of 0.26. It was followed by website service quality at 0.21 and last was the specific holdup cost at 0.15.
- Customer e-satisfaction plays a role of mediator. The technology acceptance factors can influence customer e-loyalty through customer e-satisfaction, and its mediation influence level equalled 0.45 times 0.37, valuing at 0.1665. Website service quality also influences e-loyalty through e-satisfaction. Its mediation influence level was 0.26 times 0.37, giving a product of 0.0926. From this, we see that the indirect influence of the technology acceptance factors is larger than that of website service quality.
- From the above analysis, one can conclude the direct and indirect path effects. It is also apparent that the technology acceptance factors had a greater direct path influence on customer e-loyalty than indirect ones ( $0.26 > 0.1665$ ). Website service quality had a larger direct path effect on customer e-loyalty than indirect ones ( $0.21 > 0.0926$ ).

### **Implications and suggestions**

From the research results discussed above, we have revealed the conceptualisation around "specific holdup cost" or "habit" more clearly and centrally than other marketing or e-commerce studies have.

#### *Technology acceptance factors*

Our research found that technology acceptance factors can positively influence the e-satisfaction and e-loyalty of customers directly, and that it is a relatively important variable – this is in large part accordant with previous research results (e.g. Chiu, 2006; Flavian *et al.*, 2006; Fullerton, 2005). Given this, the technology and functions offered by website operators should certainly take into consideration consumer welfare and convenience in order to positively influence online purchasing behaviour. The website technologies provided should allow customers to save time and effort while having greater shopping efficiency, resulting in enhanced customer satisfaction and loyalty. Shopping websites can provide customisable features for customers, such as a recall

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customer information system and an order tracking system. A recall customer information system can recall customers' billing and shipping address when they return to a website to place an order. An order tracking system can help customers track the status of their orders 24 hours a day. Shopping website features should be considered primary in every site design to generate positive perceptions of usefulness and informativeness while avoiding irritation – consumers should be able to understand the site layout and navigate easily in their search for products and services offered at the site.

Shopping website service providers should continue to improve the user-friendliness of the site, making the tools easy to use and accessible. In order to achieve the highest levels of market performance, shopping website managers also need to provide useful information about the shopping website to enhance users' positive experiences of using the shopping website (Lee and Park, 2008). Moreover, they can encourage customers to share the use experience with others and provide various incentives (e.g. providing the minimum order amount, volume discounts and promotional discounts) to make voluntary propositions on effective shopping website implementation. "Voluntary propositions" refer to the shopping websites' platform-sharing among customers. It is also an interactive scheme to provide a substantial, new knowledge source to newcomers. The dynamic interchange between these customers can not only help customers understand how shopping website services work but can also enhance the customers' loyalty.

Shopping website designers may also make use of humour, appealing graphics or 3D virtual models to attract and retain customers and motivate consumers to purchase from the site.

Aside from this, the study also verified research by Shih (2004) and Szymanski and Hise (2000). Shih (2004) contended that perceived ease of use of trading online (PEOUT) and perceived usefulness (PU) significantly determine individual attitudes toward e-shopping. Szymanski and Hise (2000) pointed out that satisfaction with online shopping increases as perceptions of convenience become more positive. Therefore, if a shopping website manager wishes to attract more internet shoppers, he or she must think of means to increase the website's usefulness. For example, the shopping website can be made simple and easy to understand in order to reduce the customer's shopping time and make internet shopping more effective. This point is also related to our one-way ANOVA analysis outcome, which indicated that when the internet customer's internet familiarity level increases, the technology acceptance factor and customer e-satisfaction significantly increase, too. Then again, knowing from our SEM results that the technology acceptance factor has a greater direct path influence on customer e-loyalty than indirect ones, and that the indirect path means only through enhanced customer e-satisfaction can technology acceptance factor have indirect but positive impact on customer e-loyalty, one would consider strengthening the shopping website's technology related appeal as noted, in order to maximize its direct loyalty effect, particularly for the customers who are not so familiar with internet use or shopping. This is because for those e-shoppers who have a high level of internet familiarity the website operators might need to pay more efforts in meeting their e-satisfaction, and then winning their e-loyalty.

#### *Website service quality*

From our research results, we note that the effect of website service quality on customer e-satisfaction and e-loyalty is basically in accord with in the findings of

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previous research (e.g. Anderson and Srinivasan, 2003; Shih, 2004; Ribbink *et al.*, 2004) – website service quality can positively influence the e-satisfaction and e-loyalty of customers directly. Thus, in the face of increasing competition, internet shopping websites want to attract and retain customers and the first condition is to provide good website service quality to customers. In order to achieve this goal, Hung *et al.* (2005) pointed out that shopping website operators must first understand the customer groups that they serve. The majority of website operators are not initially very aware of who their customers are, including related personal or background information. But after a while, customers leave browsing as well as transaction records on the website, even signing on as shopping website VIP members. Towards the end of satisfying the customers, shopping website operators should try to enhance service quality through the use of related business analysis and an understanding of their customers' traits, buying preferences and shopping habits.

In addition, through content analysis of online customer comments, Wang and Huarng (2002) identified nine service quality factors that affect e-satisfaction:

- (1) general feedback on the website design;
- (2) competitive price of the product;
- (3) merchandise availability;
- (4) merchandise condition;
- (5) on-time delivery;
- (6) merchandise return policy;
- (7) customer support;
- (8) email confirmation of customer order; and
- (9) promotion activities.

These are suggestions for shopping websites to enhance internet service quality and therefore customer e-satisfaction.

Furthermore, internet retailers can also implement different policies to allow customers to trust their service quality more. From the agency theory viewpoint, firms can use three different methods for transaction relations to be more effective: information policies, guarantee policies and reputation policies (Spremann, 1988). In addition, the expansion of electronic commerce may be expected to lead to an increase in the volume of agency relationships, such as outsourcing or business partnerships (Croson and Jacobides, 1997). Thus the shopping agent is an effective technology that will strengthen e-commerce collaboration, speed up e-commerce globalisation, and bring it to success. Its e-service quality rating system will certainly be a useful tool for improving e-service in the global e-commerce environment.

Finally, the one-way ANOVA analysis results show that when the internet customer's internet familiarity level lifts, the website service quality and customer e-satisfaction significantly increase too. As the SEM analysis points to the fact that website service quality has a larger direct path influence on customer e-loyalty than indirect ones and that the indirect path entails customer e-satisfaction as a mediator, operators should consider upgrading the shopping website's service quality through the recommendations above in order to amplify its direct loyalty effect, particularly for those who are not familiar with internet shopping. This is also because the website

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operators might need to struggle more to first increase the e-satisfaction of those who are familiar with the internet, and then win their e-loyalty.

#### *Specific holdup cost*

This research has also shed light on the fact that the specific holdup cost does not positively influence customer e-satisfaction directly but does positively affect customer e-loyalty directly.

Chiu (2006) divided specific holdup assets into six types: special possessed knowledge assets, special physical facility or service assets, specific assets of loyal customers, intangible specific assets, interior acknowledgement and special intangible social pressure. We posit that the specific holdup cost has a direct influence on customer e-loyalty because when customers pay specific holdup costs they reap the above benefits and then form a shopping habit that increases their e-loyalty. For example, when a customer spends a long time understanding and familiarising him- or herself with shopping and payment procedures at a certain shopping website, the specific holdup cost paid on related intangible things must increase. But at the same time, the customer also benefits by gaining a “special possessed knowledge asset” in the process. This also means that a particular in relaxation, ease and efficiency resulting from familiarity must seem apparent when the customer uses the same shopping website, resulting in less willingness to switch to another, perhaps unfamiliar, shopping website. The customer will also wish to continue using a particular website to purchase as a result of brand group pressure or a special leader’s endorsement. Customer’s behaviour of repeated purchase will enhance brand awareness and brand image, in turn, building customer loyalty (Keller, 1993). All these illustrate why and how specific holdup cost can bring about enhanced customer e-loyalty.

However, since most e-customers chiefly care about whether they can make the most efficient comparisons among many shopping websites, they are therefore less willing to be pinioned by one specific shopping website. Consequently, when the specific holdup cost between the customer and a certain shopping website is set too high, customer e-satisfaction will drop instead. In addition, because of the above-enumerated types of specific holdup costs, customers can also become loyal patrons of any shopping website. But this loyalty after all comes mainly from the holdup situation of customers themselves or from the stickiness of unique technologies or services offered, and not from customers’ virtual e-satisfaction with the shopping convenience, product marketing, website facility or finance security provided by the particular shopping website. This can perhaps explain why this study found that the specific holdup cost cannot positively influence customer e-satisfaction directly.

Similarly, analysis of the survey data collected by Forker and Stannack (2000) indicates that buyers and suppliers have a better “shared understanding” (smaller satisfaction gap) within the “competitive” relationship than within the “cooperative” relationship. Transaction costs such as asset specificity investment are one of the reasons leading to the situation noted. Also, partnership satisfaction was tested on a sample of 230 architect-contractor partnerships by Lui and Ngo (2005). They defined two structural factors, asset specificity and partner reputation, to be first examined. The results revealed that action acquiescence and action simplicity (namely process factors) explained significant variance in partnership satisfaction and beyond those

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explained by the two structural factors. This implies that shopping website operators should focus more on strengthening process factors (in our study, external factors) such as technology acceptance factors and website service quality in order to augment customers' e-satisfaction.

Campbell (1997, p. 60) put forward the view that the specific holdup cost is concerned in large part with a condition where "repeat purchases occur on the basis of situational cues rather than on strong partner commitment". Such a mindset or virtual structure or condition where customers have formed a habit of repeatedly returning back to the same shopping website to consume thus strengthen value as well as transfer costs and win out against competitors who cannot offer such special services to customers. The customers are thus fastened to the mindset or virtual structure or condition (Campbell, 1997). Therefore, aside from fulfilling personal service quality and information levels, shopping websites can also provide specific member services through social organisation such as chat room links or VIP membership. In short, in order to increase customer e-loyalty, shopping website operators should make the transfer cost to other websites high, so that the shopping website can maintain a longer transaction relationship with the customers.

Finally, as the one-way ANOVA indicated, only the specific holdup cost is notably affected by the "daily online frequency" of online customers. That is, as internet customers' online frequency rises, the specific holdup cost built into the shopping website will increase considerably. This implies that e-customers with a high daily online frequency are more likely to invest specific holdup costs in the website shopping. Hence the specific holdup cost is highly relevant to habit at this point. So, websites also need to target who those customers are and then implement the strategies noted above to attract them for higher return rates, since based on the SEM analysis, the specific holdup cost has a direct and positive path effect on the customer e-loyalty.

### **Limitation and future research direction**

It is difficult to be precise about the most appropriate sample size for conducting such research. However, we expect follow-up studies to expand the sample range so that the relevant research might be more representative. Also future studies might adopt random sampling for different purposes.

The topic discussed in this study is still developing at present – it is hoped that it will be continually explored with the addition of other drivers such as cultural and social factors affecting e-satisfaction and e-loyalty, thus enriching the research contents. Therefore, we hope that future studies can adopt a wider range of constructs to make the whole study share more benefits.

Finally, the characteristics of the internet products' themselves can also affect customers' decisions to shop on the websites. From a management perspective, consumers in fact treat high-involvement and low-involvement products with different behavioral models. The product's unit price influences the desires of the consumer for internet shopping as well. Thus, we propose that much research is needed to discover the effects of different product characteristics on customer e-shopping.

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