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Understanding customers' loyalty intentions towards online shopping: an integration of technology acceptance model and fairness theory

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As with any other information system (IS), the success of online shopping depends largely on customer satisfaction and other factors that will eventually increase customers' loyalty intentions. This article integrates two major variables of technology acceptance model (TAM), trust, and fairness to construct a model for investigating the motivations behind customers' loyalty intentions towards online shopping. The hypothesised model is validated empirically using data collected from 311 customers of an online shopping store. The results indicated that distributive, procedural and interactional fairness were strong predictors of trust, which in turn influenced satisfaction. Distributive fairness and interactional fairness exhibited significant positive effects on satisfaction. Perceived usefulness and satisfaction influenced loyalty intention towards online shopping. Perceived ease of use acts indirectly on loyalty intention through the mediating effect of perceived usefulness. Implications for theory and practice and future research directions are discussed.

Keywords: e-commerce; fairness; loyalty intention; online shopping; technology acceptance model; trust

1. Introduction

The proliferation of network access and advances in Internet/Web technology has facilitated the rapid growth of electronic commerce (e-commerce). According to UNCTAD's E-commerce and Development Report (UN 2003), the global e-commerce market will reach US\$12.8 trillion by 2006. Recognising the advantages of online transactions, many organisations have turned to business-to-customer (B2C) e-commerce initiatives to meet business needs and objectives. According to Forrester Research, online shopping or B2C e-commerce sales in the United States will grow from \$172 billion in 2005 to \$329 billion in 2010 (Johnson and Tesch 2005). Concurrent with the organisational interest in online shopping, a large number of academic papers have been published on online shopping (Gefen *et al.* 2003, Pavlou and Fygenson 2006, Pavlou *et al.* 2007). These developments reflect the significance of online shopping among scholars and practitioners.

The goal of this study is to explore customers' loyalty intentions towards online shopping. As with any other information system (IS), the success of online shopping depends largely on user satisfaction and other factors that will eventually increase customers' loyalty intentions towards it (DeLone and McLean 2003). The importance of loyalty intentions is evident from the fact that customer

turnover can be costly, given that it costs more to acquire new customers than to retain existing ones (Hart *et al.* 1990, Reichheld and Scheffer 2000). In view of this, electronic vendors (e-vendors) should look for ways to increase customers' satisfaction levels and loyalty intentions. One approach an e-vendor can take is to improve technological attributes of the online shopping Web site (Pavlou 2003). However, having a Web site with good technological attributes does not guarantee the success of online shopping. Another promising approach involves the reduction of uncertainty (Pavlou 2003), and the development and maintenance of customer–vendor relationships (Gefen *et al.* 2003).

Online shopping inherently involves higher levels of uncertainty than shopping in a bricks-and-mortar store because online transactions lack the physical assurances of traditional shopping experiences (Grabner-Kraeuter 2002). Information asymmetry is a problem in online shopping in which the customers often have incomplete or distorted information about the product (Ba and Pavlou 2002), the process, the outcome, and the e-vendor (Grabner-Kraeuter 2002). Fairness and trust are especially critical when uncertainty and information asymmetry are present (Kumar *et al.* 1995, Ba and Pavlou 2002, Pavlou 2003, Diekmann *et al.* 2004) and are at the heart of relationships of all kinds (Lind *et al.* 1993, Morgan and

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Hunt 1994). According to uncertainty management model, fairness can remove trust-related uncertainty and alleviate much of the discomfort that uncertainty would otherwise generate (Van den Bos and Lind 2002). Fairness offers a useful means through which to explain and understand individuals' feelings of trust or mistrust (Saunders and Thornhill 2003). Literature in marketing and organisational justice has shown that fairness perceptions have direct effects on trust (e.g. Pillai *et al.* 2001, Aryee *et al.* 2002, Ramaswami and Singh 2003). However, the impacts of fairness perceptions on customers' trust in an e-vendor are still unclear in the online shopping context.

Online shopping can be considered as an exchange of time, effort, and money for receiving products or services. According to Zeithaml (1988), it is the overall assessment of what is received and what is given that shapes individuals' satisfaction with online shopping. Adams' (1965) equity theory theorises that individuals seek a fair balance between input (what is given) and output (what is received) and become satisfied and motivated whenever they feel their inputs are being fairly rewarded. Accordingly, a more complete study of the motivations underlying customers' satisfaction and loyalty intentions towards online shopping should address issues related to fairness. Marketing and organisational justice researchers (Niehoff and Moorman 1993, Blodgett *et al.* 1997, Ramaswami and Singh 2003) have identified three important dimensions of fairness: fairness of outcomes (distributive fairness), fairness of decision-making procedures (procedural fairness), and fairness of interpersonal treatment (interactional fairness). This study follows prior research in arguing that customers' satisfaction with online shopping is influenced by distributive fairness, procedural fairness, and interactional fairness.

The primary interface for customers to purchase products and services online is the Web site, a form of information technology (IT). As with most ISs, Web application acceptance and usage can be partially explained by technology acceptance model (TAM) (Davis 1989). TAM is a widely used theory of IT adoption in IS research. While TAM initially focused on system usage in the workplace, recent research has applied it to understanding online shopping (Gefen *et al.* 2003, Pavlou 2003, Vijayasarathy 2004). Therefore, loyalty intentions towards online shopping should consider the major TAM constructs, which theorise that intention to accept or use an IT is determined by perceived usefulness and perceived ease of use.

By explicating the unique role of fairness, this article aims at contributing to the continued development and success of online shopping. A research model for this purpose is developed by integrating two major

variables of TAM with trust and the three dimensions of fairness, which are essential when uncertainty and information asymmetry are present in the technology-driven environment of online shopping. The hypotheses are validated empirically using data collected from 311 customers of an online store. Research questions addressed in this study are: (i) whether the three dimensions of fairness indeed have a positive effect on customers' trust in an e-vendor, (ii) whether the three dimensions of fairness, trust, and perceived usefulness are important determinants of customers' satisfaction with online shopping, (iii) whether perceived usefulness and satisfaction are significant determinants of customers' loyalty intentions and (iv) whether perceived ease of use acts indirectly on loyalty intention through the mediating effect of perceived usefulness.

2. Literature review

2.1. TAM

TAM posits that IT usage is a direct function of behavioural intention to use, which is in turn a function of perceived usefulness and attitude towards usage. Attitude towards usage is jointly determined by perceived usefulness and perceived ease of use. Davis (1989) defined perceived usefulness as 'the degree to which a person believes that using a particular system would enhance his or her job performance' and perceived ease of use as 'the degree to which a person believes that using a particular system would be free of effort'. TAM also incorporates a causal relationship between perceived ease of use and perceived usefulness. Venkatesh and Davis (2000) proposed an extended TAM or TAM2, in which attitude was dropped from the model because it was found to be a weak mediator.

TAM was originally developed to predict users' initial adoption of a new IT. However, Bhattacharjee (2001) argued that long-term validity of an IS and its eventual success depend on users' continued use (continuance) rather than its initial adoption. Bhattacharjee (2001) proposed an expectancy-confirmation model of IS continuance (ECM-IS) that is adapted from the expectancy-confirmation theory (ECT). The ECT theorises that repurchase intention is determined by post-consumption satisfaction, which in turn is determined by post-consumption confirmation and pre-consumption expectation. The ECM-IS considers perceived usefulness as post-adoption expectation and posits that it influences satisfaction and subsequent IS continuance intention. Bhattacharjee and Premkumar (2004) provided empirical evidence that users' beliefs change over time and users form post-usage perception of usefulness as they experience IT usage.

Although TAM initially focused on IS use in the workplace (Hu *et al.* 1999, Venkatesh and Davis 2000),

the theory is applicable and has been successfully adopted to study online shopping behaviour. Prior research suggests that TAM needed to be extended by incorporating additional variables in order to improve its specificity and explanatory power (Hu *et al.* 1999, Moon and Kim 2001). Some studies have extended TAM and applied it to examine behavioural intention towards online shopping (Gefen *et al.* 2003, Pavlou 2003, Vijayasathy 2004). However, little empirical work has been done to extend TAM and apply it to study post-consumption intention, i.e. loyalty intention. Additionally, fairness is a fundamental basis for relationship maintainability in online shopping (Lind *et al.* 1993). However, prior TAM-based studies have ignored the importance of fairness in the online shopping context.

2.2. Fairness and trust

Before 1975, the study of fairness was primarily concerned with distributive fairness. Much of this research was derived from initial work conducted by Homans (1961) and Adams (1965). Homans' (1961) simple formula for distributive fairness stressed that 'a man's rewards in exchange with others should be proportional to his investments'. Based in theories of social exchange, dissonance, and social comparison, distributive fairness focuses on the role of equity, where an individual assesses the fairness of an exchange by comparing the output/input ratio for oneself with that of referent others (Adams 1965). Procedural fairness began with Thibaut and Walker's (1975) work on dispute-resolution processes. Thibaut and Walker suggested that people's reactions to third-party allocation and dispute-resolution decisions are influenced by the fairness of the decision-making procedures, independent of the influence of the fairness or favourability of the outcomes. Bies and Moag (1986) separated out the interpersonal aspect of procedural fairness, labelled as interactional fairness. The differentiation between three dimensions of fairness is well established, not only in the study of consumer behaviour (Teo and Lim 2001, Martínez-tur *et al.* 2006) but also in other research areas such as organisational fairness (Aryee *et al.* 2002, Ramaswami and Singh 2003), service recovery (Smith *et al.* 1999), complaint handling (Blodgett *et al.* 1997, Maxham and Netemeyer 2002), and Web-based learning (Chiu *et al.* 2007).

Trust is defined as a belief that the trustee will behave according to the trustor's expectations by showing ability, benevolence and integrity (Mayer *et al.* 1995). Ability is the belief in the trustee's ability to fulfil its obligations as expected by the trustor. Benevolence is the belief that the trustee will not act opportunistically against the trustor, even given the

opportunity. Integrity is the belief that the trustee will be honest and keep its commitments (Pavlou and Fygenson 2006). Fairness is concerned with an individual's perceptions about the output/input ratio, the procedure that produces the outcome and the quality of interpersonal treatment. Accordingly, trust and fairness are conceptually distinct.

Existing research indicates employees' perceptions of fairness drive managerial and organisational trust. That is, to the extent employees are confident their manager or organisation is treating them fairly, they will be inclined to trust their manager or organisation. For example, Aryee *et al.* (2002) indicated that distributive fairness, procedural fairness, and interactional fairness were significant predictors of trust in organisation, whereas interactional fairness had a strong effect on trust in the supervisor. Ramaswami and Singh (2003) found that distributive fairness and interactional fairness had a significant effect on salespeople's trust in the supervisor. Fairness perceptions are also involved in overall customer satisfaction (Clemmer and Schneider 1996). Despite the fact that consideration of the three dimensions of fairness provides a richer portrait of the relationships between fairness and customer satisfaction, there is a lack of empirical studies on the topic. Some exceptions are the research carried out by Clemmer and Schneider (1996), Teo and Lim (2001), and Martínez-tur *et al.* (2006). However, the relative strength of the three dimensions of fairness on customers' trust in the e-vendor and satisfaction is still unclear in the online shopping context. No empirical work has been done to address this issue.

3. Research model and hypotheses

The proposed theoretical model is shown in Figure 1. Because TAM has been used to explain continued use of IT and B2C channels (Devaraj *et al.* 2002, Bhattacharjee and Premkumar 2004, Wixom and Todd 2005) and can be backward looking, it is plausible to integrate two major variables of TAM with satisfaction, trust and the three dimensions of fairness. The role of satisfaction as a predictor of intention is critical and has been well established in IS, marketing, and the reference disciplines (see Oliver 1980, Bhattacharjee 2001, DeLone and McLean 2003). Both theoretical and empirical support exists for the strong association between intention to engage in a behaviour and the actual behaviour (Davis *et al.* 1989, Venkatesh and Davis 2000). Here, we have chosen to use loyalty intention as a surrogate for actual behaviour, and define it as 'the subjective probability that a customer will continue purchasing products from the online store in the future'. Repurchase intention and willingness to recommend have been widely used as indication of loyalty intention (Boulding

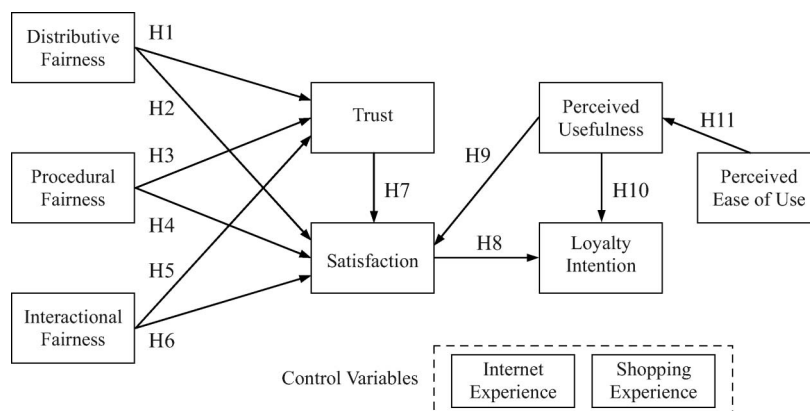


Figure 1. Online shopping loyalty intention model.

et al. 1993, Homburg and Giering 2001, Kao *et al.* 2007). In this study, the measure of loyalty intention focuses on repurchase intention, which is analogous to Bhattacharjee's (2001) concept of continuance intention. Trust and fairness are considered because of the uncertainty and information asymmetry of the online shopping environment. Our research model does not include the direct effects of perceived ease of use on satisfaction and loyalty intention because for experienced repeat customers, perceived ease of use (a process variable) concerns seem to be resolved and displaced by extrinsic goals (outcome variables), e.g. perceived usefulness of online shopping (Karahanna *et al.* 1999). All seven key variables are defined and explained, and their relationship with loyalty intention is proposed as follows.

3.1. Distributive fairness

Distributive fairness refers to the extent to which consumers feel that their invested efforts are fair when compared with the final online shopping outcomes. Equity theory postulates that individuals who are fairly rewarded experience satisfaction and will be motivated to engage in a certain behaviour (Adams 1965). According to Kumar *et al.* (1995), distributive fairness is helpful in building good relationships between customers and vendors, which in turn will lead to customers' satisfaction. Pillai *et al.* (2001) argue that when outcome distributions are considered fair, higher levels of trust are likely to ensue. In other words, customers' trust in the vendor will be built when the products they receive are proportional to their investments. Although the influence of fairness perceptions on customer trust and satisfaction has not been explicitly examined in the online shopping research, support for the relationships can be found in other settings. For example, Chiu *et al.* (2007) found

that distributive fairness exerted a significant influence on learners' satisfaction with Web-based learning. Prior research indicates that distributive fairness is a significant predictor of employees' trust in the organisation (Aryee *et al.* 2002) and trust in the supervisor (Ramaswami and Singh 2003). Therefore:

H1: Distributive fairness is positively associated with customers' trust in the e-vendor.

H2: Distributive fairness is positively associated with customer satisfaction.

3.2. Procedural fairness

Procedural fairness refers to the perceived fairness of policies and procedures involved in the online transaction effort. According to Seiders and Berry (1998), the transaction process is an integral part of online shopping, thus e-vendors can enhance customers' satisfaction with online shopping by engaging in activities that enhance customers' perceptions of procedural fairness. Folger and Greenberg (1985) argued that how outcomes are determined may be more important than the actual outcomes. Prior research indicates that if consumers believe that the procedures used to produce the outcomes are fair, they are likely to be satisfied with the outcomes – even if the outcomes are considered unfair (Lind and Tyler 1988). Researchers (Folger and Konovsky 1989, Maxham and Netemeyer 2002) suggest that perception of procedural fairness enhances the probability of maintaining a long-term overall satisfaction between exchange parties. According to Cohen-Charash and Spector (2001), procedural fairness is associated with trust in the online vendor because procedural fairness indicates that the vendor acts fairly as a rule and hence can be trusted. Prior studies found that procedural fairness was significantly and positively related to

customer satisfaction with the purchase of products and services (Clemmer and Schneider 1996, Teo and Lim 2001, Martínez-tur *et al.* 2006). Support for the role of procedural fairness on trust is provided by Pillai *et al.* (2001) and Aryee *et al.* (2002). Therefore:

H3: Procedural fairness is positively associated with customers' trust in the e-vendor.

H4: Procedural fairness is positively associated with customer satisfaction.

3.3. Interactional fairness

Interactional fairness refers to the extent to which consumers feel that they have been treated fairly by customer service representatives throughout the online shopping process. This study focuses on the online store's response manner. Cox and Dale (2002) found that online consumers often need to contact a customer service representative over the telephone and by other conventional communication means. Furthermore, Cho *et al.* (2003) argued that online consumers might encounter interactional fairness from customer service representatives' efforts via telephone calls and email responses. Therefore, interactional fairness is applicable to the online shopping context. Because poor customer relations and service-related issues are the major complaints of online consumers (Nasir 2004), interactional fairness plays an important role in the success of the online transaction process. Teo and Lim (2001) found that interactional fairness was positively and significantly related to consumers' satisfaction with computer retailers. Harris (2003) showed that interactional fairness was significantly associated with customers' satisfaction with online complaint handling. According to Folger and Konovsky (1989), when online vendors demonstrate respect for the rights and dignity of buyers through communication and high-quality interactions, they signal that customers are valued and that promotes trust in vendors. Support for the role of interactional fairness on trust is provided by Aryee *et al.* (2002) and Cohen-Charash and Spector (2001). Therefore:

H5: Interactional fairness is positively associated with customers' trust in the e-vendor.

H6: Interactional fairness is positively associated with customer satisfaction.

3.4. Trust

Following Pavlou and Fygenson (2006), trust is defined as the buyer's belief that the seller will behave benevolently, capably, and ethically. According to theory of reasoned action (TRA) (Ajzen and Fishbein

1980), trust beliefs create favourable feelings towards online shopping. According to Morgan and Hunt (1994), trust is an important factor in consumer outcome evaluation; i.e. consumers' trust in the e-vendor influences their satisfaction. Some researchers have observed or theorised, in accordance with social exchange theory (see Blau 1964), that trust evaluations will exert a direct influence on perceptions of satisfaction (e.g. Singh and Sirdeshmukh 2000, Chiou 2004). Lin and Wang (2006) found that trust plays a pivotal role in driving customer satisfaction in the mobile commerce context. Therefore:

H7: Customers' trust in the e-vendor is positively associated with their satisfaction.

3.5. Satisfaction

Satisfaction refers to customers' evaluation and affective response to the overall experience of online shopping. Affective response is known to be associated with intense states of arousal that lead to focused attention on specific targets and may therefore impact ongoing behaviour (Patterson and Spreng 1997). Oliver (1980) theorises that satisfaction is positively associated with future intention, both directly and indirectly via its impact on attitude. In the final step of satisfaction formation processes, satisfaction determines intentions to patronise or not to patronise the store in the future (Swan and Trawick 1981). Prior studies have provided empirical support for the relationship between customers' satisfaction and loyalty intentions in the context of B2C e-commerce (Devaraj *et al.* 2002, Tsai *et al.* 2006). Accordingly, the following hypothesis is proposed:

H8: Customers' satisfaction is positively associated with their loyalty intentions.

3.6. Perceived usefulness

Perceived usefulness is defined as the extent to which a consumer believes that using online shopping will enhance his/her transaction performance. According to Ajzen and Fishbein (1980), a person who believes that performing a given behaviour will lead to mostly positive outcomes will hold a favourable feeling towards performing the behaviour. According to Davis *et al.* (1989), individuals form loyalty intentions towards online shopping based largely on a cognitive appraisal of how it will improve their shopping performance. According to Bhattacharjee (2001), an individual is more likely to form favourable feelings of satisfaction and intend for continued usage when such usage is perceived to be useful. Customers accomplishing the

shopping task of product acquisition in an efficient manner will be more likely to exhibit stronger repurchase intentions (Babin and Babin 2001). Prior research shows that perceived usefulness has a significant effect on customer satisfaction (Devaraj *et al.* 2002) and loyalty intention (Cyr *et al.* 2006). Therefore:

H9: Perceived usefulness is positively associated with loyalty intention.

H10: Perceived usefulness is positively associated with customer satisfaction.

3.7. Perceived ease of use

Perceived ease of use refers to the extent to which a consumer believes that online shopping will be free of effort. TAM implies that, other things being equal, an online shopping Web site perceived to be easier to use is more likely to induce perception of usefulness. Davis *et al.* (1989) argued that improvements in ease of use may also be instrumental, contributing to increased performance. To the extent that increased ease of use leads to improved performance, ease of use would have a direct effect on perceived usefulness (Venkatesh and Davis 2000). Prior studies have provided evidence for the effect of perceived ease of use on perceived usefulness in the context of online shopping (Devaraj *et al.* 2002, Gefen *et al.* 2003, Pavlou 2003). Accordingly, the following hypothesis is proposed:

H11: Perceived ease of use is positively associated with perceived usefulness.

3.8. Control variables

- *Internet experience.* Because online shopping involves Internet use, rich Internet experience stimulates individuals to engage in online transactions (Pavlou *et al.* 2007). Hence, Internet experience is proposed as control variable on loyalty intention.
- *Shopping experience.* The number of a buyer's online transactions with the target online vendor is also controlled for, because shopping experience is likely to have an impact on future online shopping intentions (Shim *et al.* 2001).

4. Research methodology

4.1. Subjects and procedure

The unit of analysis in this study is the individual customer of an online shopping store (PChome Online). Established in Taiwan in 2000, PChome is the earliest and most famous online shopping store in Taiwan. It was the nation's largest online store in 2004, and it

currently offers over 15,000 different commodities (Chen 2004). The population of interest is all individuals who used PChome for online shopping and had experience in contacting customer service representatives. To validate the measures of interactional fairness, we required respondents to indicate whether they had contact experience. To collect data from active buyers, only those respondents that had at least one transaction on PChome in the past six months were selected.

The data for the study was collected in June 2007 via an online survey, because it is not geographically limited and can reduce survey cost and time (Dillman 2000). In addition, an online survey is consistent with the context of this study, which focuses on the usage of online shopping. The duration of the survey was two months. A questionnaire was created for the online survey and placed on a Web site at the National Central University in Taiwan. Public notice of the survey was published on a number of bulletin board systems (BBS) and chat rooms. A total of 1174 surveys were received. However, 850 respondents did not have any experience in contacting customer service representatives and 13 respondents did not make any purchases in the past six months. The remaining 311 usable questionnaires were used for analysis. Completeness of the survey data was assured by making it impossible for respondents to submit responses with missing values. Table 1 summarises the demographic profile of respondents.

4.2. Measurement development

All measurement items (see Table 2) were adapted from the literature. A pretest of the questionnaire was

Table 1. Demographic profile ($N = 311$).

Characteristics	Statistics
<i>Gender</i>	
Male	130 (41.8%)
Female	181 (58.2%)
<i>Age</i>	Mean = 25.6, SD = 5.61
<i>Education</i>	
Junior high school	19 (6.1%)
High school	15 (4.8%)
Some college	202 (65%)
Master	75 (24.1%)
<i>Job</i>	
Employment	171 (55%)
Student	140 (45%)
<i>Years of experience with the Internet</i>	Mean = 8.08, SD = 2.19
<i>Number of times product bought on PChome in the past six months</i>	Mean = 3.86, SD = 4.05

Table 2. Summary of measurement scales.

Construct	Measure	Mean	SD	Loading
<i>Perceived ease of use (PEOU); composite reliability = 0.93</i>				
PEOU1	It is easy to become skillful at using the Web site	5.60	1.06	0.84
PEOU2	Learning to operate the Web site is easy	5.52	1.07	0.84
PEOU3	The Web site is flexible to interact with	5.31	1.07	0.81
PEOU4	My interaction with the Web site is clear and understandable	5.50	1.01	0.86
PEOU5	The Web site is easy to use	5.54	1.03	0.87
<i>Perceived usefulness (PU); composite reliability = 0.92</i>				
PU1	The Web site enables me to search and buy goods faster	5.21	1.04	0.84
PU2	The Web site enhances my effectiveness in goods searching and buying	5.24	1.07	0.86
PU3	The Web site makes it easier to search for and purchase goods	5.46	1.09	0.85
PU4	The Web site increases my productivity in searching and purchasing goods	5.45	0.96	0.85
PU5	The Web site is useful for searching and buying goods	5.22	1.17	0.75
<i>Distributive fairness (DF); composite reliability = 0.91</i>				
DF1	I think what I got is fair compared with the price I paid	4.93	1.14	0.84
DF2	I think the order fulfilment process is appropriate	5.12	1.00	0.82
DF3	I think the value of the products that I received from the online store is proportional to the price I paid	4.95	1.16	0.86
DF4	I think the products that I purchased at the online store are considered to be a good buy	4.36	1.16	0.74
<i>Procedural fairness (PF); composite reliability = 0.84</i>				
PF1	I think the procedures used by the online store for handling problems occurring in the shopping process are fair	4.62	1.09	0.78
PF2	I think the online store allows customers to complain and state their views	5.17	1.04	0.73
PF3	I think the policies of the online store are applied consistently across all affected customers	4.69	1.20	0.72
PF4	I think the online store would clarify decisions about any change in the Web site and provide additional information when requested by customers	4.62	1.22	0.77
<i>Interactional fairness (IF); composite reliability = 0.91</i>				
IF1	Customer service representatives of the online store treat me with respect when interacting with me through email or telephone	5.03	1.04	0.85
IF2	Customer service representatives of the online store treat me with friendliness when interacting with me through email or telephone	5.12	1.04	0.91
IF3	Customer service representatives of the online store treat me with politeness when interacting with me through email or telephone	5.23	1.06	0.88
<i>Trust (TR); composite reliability = 0.88</i>				
TR1	Based on my experience with the online store in the past, I know it is honest	4.82	1.29	0.83
TR2	Based on my experience with PChome in the past, I know it is not opportunistic	4.71	1.27	0.76
TR3	Based on my experience with the online store in the past, I know it keeps its promises to customers	4.89	1.11	0.83
TR4	Based on my experience with PChome in the past, I know it is trustworthy	4.99	1.13	0.84
<i>Customer satisfaction (CS); composite reliability = 0.91</i>				
CS1	I think purchasing products from the online store is a good idea	5.04	1.10	0.86
CS2	I am pleased with the experience of purchasing products from the online store	5.06	1.09	0.91
CS3	I like purchasing products from the online store	4.74	1.06	0.81
CS4	Overall, I am satisfied with the experience of purchasing products from the online store	5.16	1.09	0.81
<i>Loyalty intention towards online shopping (LI); composite reliability = 0.91</i>				
LI1	I intend to continue purchasing products from the online store in the future	5.33	0.89	0.86
LI2	It is likely that I will continue purchasing products from the online store in the future	5.46	1.06	0.86
LI3	I will continue purchasing products from the online store in the future	5.42	1.07	0.90
<i>Internet experience (IE); Composite reliability = 1.00</i>				
IE1	How many years have you been using the Internet?	5.33	0.89	0.86
<i>Shopping experience (SE); composite reliability = 1.00</i>				
SE1	How many times have you purchased products from the online store in the past six months?	5.33	0.89	0.86

performed using 20 part-time university students majoring in IT-related courses to assess the questionnaire's logical consistency, ease of understanding, sequence of items, and contextual relevance. The comments collected from these students led to several minor modifications of the wording. For all the measures, a seven-point Likert scale was adopted with anchors ranging from strongly disagree (1) to strongly agree (7).

Items for measuring perceived ease of use and perceived usefulness were adapted from Davis (1989) and Gefen *et al.* (2003). Items for measuring distributive fairness, procedural fairness, and interactional fairness were based on Folger and Konovsky (1989), Moorman (1991), and Maxham and Netemeyer (2002). Items for measuring trust were based on Gefen *et al.* (2003). Satisfaction was measured with items based on Oliver and Swan (1989) and Maxham and Netemeyer (2002). Items for measuring loyalty intention towards online shopping were adapted from Moon and Kim (2001) and Vijayasarathy (2004).

4.3. Data analysis

Data analysis involved analyses of the measurement model and structural model using LISREL 8.50. The measurement model was first evaluated in terms of reliability, convergent validity and discriminant validity. The measurement model (containing 36 items) is estimated at once. Table 2 presents the composite reliability values and the factor loadings (lambdas) of the complete model.

Reliability was examined using the composite reliability values. As shown in Table 2, all the values were above 0.7, which is the commonly acceptable level for explanatory research. Additionally, the convergent validity of the scales was verified using two criteria

suggested by Fornell and Larcker (1981): (i) all indicator loadings should be significant and exceed 0.7 and (ii) average variance extracted (AVE) for each construct should exceed the variance due to measurement error for a given construct (i.e. AVE should exceed 0.50). For the current confirmatory factor analysis (CFA) model, all loadings were above the 0.7 threshold (see Table 2). Table 3 shows that all AVE were well above the recommended value level of 0.5.

Finally, the discriminant validity of the scales was assessed using the guideline suggested by Fornell and Larcker (1981): the square root of the AVE from the construct should be greater than the correlation shared between the construct and other constructs in the model. Table 3 lists the correlations among the constructs, with the square root of the AVE on the diagonal. All the diagonal values exceeded the inter-construct correlations; hence the test of discriminant validity was acceptable. Therefore, we conclude that the scales have sufficient construct validity.

Five model-fit indexes were used to assess the overall goodness of fit of the structural model: normed chi-square (chi-square divided by degrees of freedom: χ^2/df), adjusted goodness of fit index (AGFI), non-normed fit index (NNFI), comparative fit index (CFI) and root mean square error of approximation (RMSEA). Table 4 summarises the overall fit indices of the research model. The fit indices surpass the recommendations suggested by earlier studies (Jöreskog and Sörbom 1993, Chau 1997), suggesting adequate model fit.

The significance of individual paths was examined and summarised in Figure 2. Ten out of eleven paths exhibited a *P*-value of <0.05. As hypothesised, distributive fairness, procedural fairness, and interactional fairness were associated with trust, with path coefficients of 0.15, 0.32 and 0.43. Hypotheses 1, 3 and

Table 3. Correlations of latent variables.

Construct	AVE	Construct									
		PEOU	PU	DF	PF	IF	TR	CS	LI	IE	SE
PEOU	0.71	0.84									
PU	0.69	0.73	0.83								
DF	0.67	0.49	0.53	0.82							
PF	0.56	0.49	0.52	0.51	0.75						
IF	0.77	0.53	0.60	0.52	0.69	0.88					
TR	0.64	0.49	0.60	0.53	0.64	0.68	0.80				
CS	0.71	0.62	0.74	0.58	0.56	0.67	0.68	0.84			
LI	0.76	0.59	0.73	0.53	0.51	0.61	0.59	0.78	0.87		
IE	1.00	0.11	0.11	−0.02	0.02	0.07	0.04	0.11	0.12	1.00	
SE	1.00	0.02	0.01	−0.04	−0.02	−0.04	0.06	0.10	0.09	0.03	1.00

Note: Diagonal elements (in bold) are the square root of the average variance extracted (AVE). Off-diagonal elements are the correlations among constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements. PEOU, perceived ease of use; PU, perceived usefulness; DF, distributive fairness; PF, procedural fairness; IF, interactional fairness; TR, trust; CS, customer satisfaction; LI, loyalty intention; IE, Internet experience; SE, shopping experience.

5 were supported. Distributive fairness and interactional fairness were associated with customer satisfaction, with path coefficients of 0.13 and 0.25. Hypotheses 2 and 6 were supported. However, contrary to our expectations, procedural fairness did not have a positive and significant effect on customer satisfaction. Hypothesis 4 was not supported. Consumer trust in the e-vendor had a significant effect on satisfaction, with a path coefficient of 0.29. Hypothesis 7 was supported. Consumer satisfaction had a significant effect on loyalty intention, with a path coefficient of 0.64. Hypothesis 8 was supported. Perceived usefulness had positive effects on satisfaction and loyalty intention, with path coefficients of 0.46 and 0.28. Hypotheses 9 and 10 were supported. Finally, perceived ease of use had a positive effect on perceived usefulness, with a path coefficient of 0.80. Hypothesis 11 was supported.

The explanatory power of the research model is also shown in Figure 2. The model accounts for 65–74% of the variance (R^2 scores). Overall, the research model accounts for 74% of the variance of loyalty intention towards online shopping. In addition, the two control variables – Internet experience and shopping experience – were modelled as one-item constructs with 0 error variance and modelled as direct

determinants of loyalty intention in LISREL. The path coefficients indicated that Internet experience and shopping experience did not have a significant effect on loyalty intention. To address the potential concern of common method variance from the reliance on self-report measures, we applied Harman's one-factor test (Podsakoff and Organ 1986) (see Appendix 1).

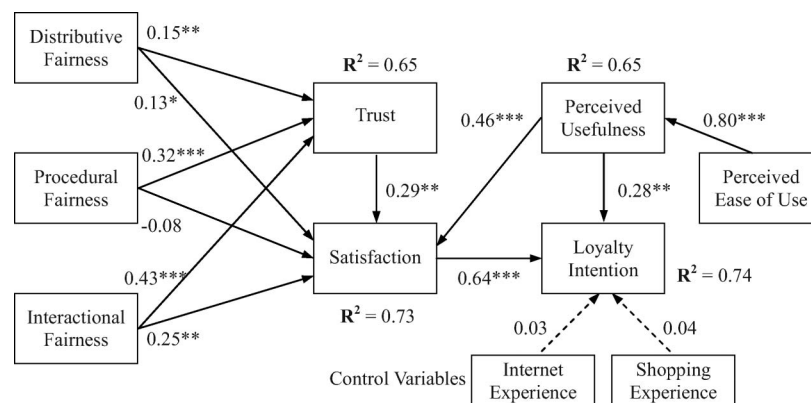
5. Discussion and implications

Overall, the results provide strong support for the theoretical model of relationships among perceptions of fairness, trust, perceived usefulness, perceived ease of use, satisfaction, and loyalty intention towards online shopping. A number of findings are worth mentioning. First, perceived usefulness was found to have significant effects on customers' satisfaction and loyalty intentions. As expected, online consumers evaluated 'performance' as mainly depending on the Web site's effectiveness in searching and buying goods. Individuals are likely to form favourable feelings of satisfaction and increase their use of online shopping if they believe that it will improve their shopping performance and effectiveness.

Second, results indicate that perceived ease of use has a strong effect on perceived usefulness ($\beta = 0.46$). The finding suggests that perceived ease of use acts indirectly on loyalty intention through the mediating effect of perceived usefulness. The mediating effect of perceived usefulness on the relationship between perceived ease of use and loyalty intention was assessed following Baron and Kenny's (1986) procedures: (i) perceived ease of use has a significant effect on loyalty intention ($\beta = 0.17$), (2) perceived ease of use has a significant effect on perceived usefulness ($\beta = 0.80$), and (3) perceived usefulness has a loyalty intention ($\beta = 0.24$) but the effects of perceived ease of use on

Table 4. Overall model fit indices for the research model.

Model fit indices	Results	Recommended value
χ^2/df	1.94 ($\chi^2 = 969.77$; $df = 501$)	≤ 3.0
AGFI	0.82	≥ 0.8
NNFI	0.94	≥ 0.9
CFI	0.94	≥ 0.9
RMSEA	0.055	≤ 0.08



* $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed t-tests)

Figure 2. SEM analysis of the research model.

loyalty intention ($\beta = 0.05$) decreases to a insignificant level.

Third, results indicate that all three fairness types are related to customers' trust, which in turn is a significant predictor of customer satisfaction. Interactional fairness is the strongest predictor of trust, followed by procedural fairness and distributive fairness. A possible explanation for the relatively strong effect of interactional fairness is that customers have reasonably complete information about how the vendor interacted with them (because of the information's relative transparency). In addition, the extent of explained variance in trust ($R^2 = 0.65$) implies that distributive fairness, procedural fairness, and interactional fairness are possibly among the most important antecedents of customers' trust in online vendors, shedding light on the trust-building potential of the three dimensions of fairness. Following Baron and Kenny's (1986) procedures, we found that a mediating effect of satisfaction on the relationship between trust and loyalty intention.

Fourth, distributive fairness and interactional fairness are significant predictors of customer satisfaction, which is the most dominant predictor of loyalty intention ($\beta = 0.64$). Additionally, the R^2 values show that distributive fairness, procedural fairness, and interactional fairness together account for 73% of the variance of satisfaction. It seems appropriate to suggest that creating individuals' perceptions of distributive fairness and interactional fairness is as important as creating perceptions of usefulness and ease of use; moreover, this is a primary means of enhancing customers' loyalty intentions towards online shopping. TAM researchers are strongly advised to look further into the relationships between these constructs and explore them both conceptually as well as empirically.

Fifth, procedural fairness does not have a significant and positive effect on satisfaction. This finding is inconsistent with Folger and Greenberg's (1985) argument that the method of determining outcomes may be more important than the actual outcomes received. A possible explanation for the insignificant effect of procedural fairness is that customers are not forming perceptions about procedural fairness in every transaction. Providing valid reasons for changing policies and handling customers' problems does not happen frequently. Customers are not really interested in policies and how problems are handled, unless they ran into problems. If most transactions are fulfilled according to the expectations of the customers, then they would not be interested in it, and hence whether they think positively or negatively about it, does not influence their level of satisfaction. Another possible explanation is that procedural fairness is usually studied in the work environments and conflict

resolutions in which individuals have face-to-face contacts. It may be more difficult for customers to evaluate the fairness of procedures in the online shopping environment. In other words, customers have incomplete information about the transaction procedures (because of the information's relative opacity) (Ramaswami and Singh 2003).

5.1. Implications for theory and practice

This research has unique implications for IS practitioners, especially for online shopping vendors whose business models and revenues are based on long-term and repeat sale of products and services. There are at least two types of issues that differentiate online consumers from offline consumers: the interface with e-vendors and the degree of uncertainty. Compared to shopping in a traditional bricks-and-mortar environment, customers maintain a higher level of uncertainty about the shop, the vendor, the quality of the product, and the settlement performance in the online shopping environment (Tan and Thoen 2001). The important role of distributive fairness implies that to increase consumers' satisfaction, the online store should provide customers with all the information needed to make proper purchasing decisions, including information about the product and price. e-vendors can use numerous different policies to increase consumers' perceptions of distributive fairness, including information policies and guarantee policies (Grabner-Kraeuter 2002). Information policies aim at reducing information asymmetries between buyers and sellers by applying various communicative measures such as advertising, public relations, virtual communities, online message boards, and chat rooms. Guarantee policies comprise different instruments that offer money back for unsatisfactory purchases and allow returns of damaged products. Information and guarantee policies can also build an image that e-vendors are concerned with consumers' rights and interests, and are sincere in dealing with transactions, which in turn leads to customers' perceptions of interactional fairness.

Web site developers need to concentrate on the technological characteristics of their Web sites (front offices). User-friendly interfaces, easy-to-comprehend layouts, effective search engines, updated information, well-organised catalogues, efficient navigation schemes, and simple checkout procedures may all contribute to consumers' perceptions of usefulness of online shopping, which in turn leads to their loyalty intentions towards online shopping. Therefore, in order to attract and keep customers, it is imperative that e-vendors do not ignore good design principles in the construction of their Web sites (Vijayasarathy 2004). In addition, to increase consumers' perceptions

of usefulness and ease of use, Web site developers could also utilise back office systems to provide personalised content and personalised recommendations on Web sites. Such back office systems could also be used to quickly assist customers with order status, automatically respond to consumers' queries, and follow sales, orders and cancellations. Those back office functions can increase customers' perceptions of distributive fairness and interactional fairness, which in turn lead to consumer satisfaction.

Compared with pure-play vendors (Internet-based vendors) who do not have a traditional storefront, multi-channel vendors can support more programmes to increase customers' perceptions of interactional fairness, such as universal customer service and 'buy-online-and-pick-up-or-return-in-store'. Multi-channel programmes can be used to build an image that the vendors are concerned with consumers' rights and interests, while displaying sincerity in dealing with transactions. Since multi-channel programmes offer customers more opportunities to interact with sales and customer service staff, it is imperative that vendors have proactive planning about customer service (e.g. employee training and a written instruction for customer service) to minimise the impact of unfair interpersonal treatment.

In terms of theory building, this study attempts to develop a theoretical research model by integrating variables in different research streams and applying them to a new context. The current research represents an important contribution to theories of customer loyalty intention by integrating fairness perceptions, trust, and two major variables of TAM, i.e. perceived usefulness and perceived ease of use. This study will motivate the research community to move from traditional IT acceptance models such as TAM to a deeper understanding of online shopping behaviour by integrating with variables associated with uncertainty, i.e. trust and fairness. The results support TAM, thus helping researchers to understand the relationships among perceived ease of use, perceived usefulness, and the continuance of online shopping by individual customers. By establishing the appropriateness of TAM as a theoretical anchor for online shopping continuance, this study suggests that trust and the three dimensions of fairness – distributive fairness, procedural fairness and interactional fairness – could improve our understanding of online shopping behaviour. Marketing and organisational justice research has empirically proven the role of fairness in customer satisfaction and the relationship between fairness and trust. However, the role of technology acceptance constructs and their integration with trust and fairness has neither been theorised nor empirically validated for the online shopping environment. The findings

demonstrate the value of considering the subjective perceptions of fairness and trust. Indeed, fairness perceptions engender trust and distributive fairness and interactional fairness influence customer satisfaction. Although the current research examines the motivations of some people to use online stores as a shopping channel, additional research could consider why some people do not use it at all.

Our findings suggest that when procedures and their enactment are separated, it is interactional fairness that plays a dominant role in engendering customers' trust in the online vendor and satisfaction with online shopping. Interactional fairness may be more potent not only because of its intrinsic value (e.g. treating customers with respect and politeness) but also because of its signalling value (e.g. as a 'signal' for the transaction procedures) (Ramaswami and Singh 2003).

5.2. Limitations

Although the findings are encouraging and useful, the present study has certain limitations. First, as the respondents to the survey were limited to a Taiwanese online store, this study may have limited applicability to other international B2C e-commerce markets. Second, the results may have been impacted by self-selection bias since our sample comprises only active buyers. Individuals who had already ceased to shop online might have different perceptions about the influence of major TAM constructs, trust, and the three dimensions of fairness, and so could have been differently affected by them. Therefore, the results should be interpreted as only explaining loyalty intentions of current customers of online shopping. Whether the results can be generalised to individuals who ceased to shop online or to disaffected customers will require additional research. Third, the online survey system was designed to remind and force respondents to answer all survey items. It does provide completeness but at a cost. Respondents may prefer not answering a question than giving an erroneous answer. The online survey system could be redesigned to remind respondents about unanswered items but allow them to choose not to answer the questions. Finally, as the data are cross-sectional and not longitudinal, the posited causal relationships could only be inferred rather than proven.

5.3. Future research

Prior research (Overby and Lee 2006) suggests that online shopping involves hedonic as well as utilitarian value. Overby and Lee (2006) found that hedonic and utilitarian values are related to preference towards the Internet retailer and intentions. Therefore, an

interesting area for future research is to identify various types of hedonic and utilitarian values and examine their relative importance in driving customers' loyalty intentions towards online shopping.

Parasuraman *et al.* (2005) proposed the concept of electronic service (e-service) quality and developed scales for measuring it. They also examined the influence of the e-service quality dimensions on value and loyalty. Therefore, another interesting area for future research is to examine the relative influence of the e-service quality dimensions on customers' satisfaction and loyalty intentions towards online shopping.

Lastly, the research data – the customers' responses – were cross-sectional and did not present an opportunity to examine the long-term trend of these hypothesised relationships. Further longitudinal studies are recommended to validate our research model in this regard.

6. Conclusion

Customer loyalty is critical to the online vendors' endurance and success. Fairness, trust, and TAM have been widely studied in different fields. By integrating these perspectives, a richer understanding of customers' underlying beliefs and subsequent loyalty intentions can be gained. Future researchers and e-vendors will find our proposed model a fertile ground for further refinement and development to understand how to motivate and maintain customers' loyalty intentions towards online shopping.

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Appendix 1

Traditionally, researchers using the Harman's one-factor technique load all of the variables in their study into an exploratory factor analysis (EFA). We utilised a CFA approach to Harman's one-factor test (McFarlin and Sweeney 1992, Sanchez and Brock 1996). The rationale for this test is that if common method variance poses a serious threat to the analysis and interpretation of the data, a single latent factor would account for all manifest variables (Podsakoff and Organ 1986). A 10-factor model was tested first. Fit indices produced by Lisrel suggested the seven-factor model fit reasonably well: normed chi-square = 1.87 ($\chi^2 = 906.99$; $df = 484$), AGFI = 0.82, NNFI = 0.94, CFI = 0.95 and RMSEA = 0.053. The one-factor model did not fit the data well: normed chi-square = 8.45 ($\chi^2 = 4527.28$; $df = 536$), AGFI = 0.49, NNFI = 0.67, CFI = 0.68 and RMSEA = 0.155. These results suggest that common method variance did not pose a serious threat in the study.