The current issue and full text archive of this journal is available at
www.emeraldinsight.com/1754-2731.htm

A comparison of quality satisfaction between transactional and relational customers in e-commerce

Yung-Shen Yen
Department of Computer Science and Information Management, Providence University, Taichung, Taiwan

Received 7 November 2012
Revised 18 April 2013
1 August 2013
Accepted 16 September 2013

Abstract

Purpose – The purpose of this paper is to examine quality satisfaction between transactional and relational customers in e-commerce, and it also explores the moderating effect of perceived control and perceived enjoyment on quality satisfaction.

Design/methodology/approach – Multivariate analysis of variance and two-way ANOVA were conducted to test the study hypotheses. The samples include 470 university students in the northeastern USA to whom an online survey was administered.

Findings – Results show that system quality satisfaction is more significant for transactional customers, but information quality and service quality satisfactions are more important for relational customers. Moreover, perceived control and perceived enjoyment partially moderate quality satisfaction between transactional and relational customers.

Research limitations/implications – One limitation is that a student cohort is selected as the sample. This study verifies the understanding of quality satisfaction between transactional and relational customers in e-commerce.

Practical implications – Practitioners shall consider the quality of services for fitting different types of customers. While a high-quality system design is better for new customers, high-quality information and service support is helpful for loyal customers. However, if loyal customers have a high degree of perceived control, they may also be more sensitive to system quality satisfaction. Similarly, if new customers have a high degree of perceived control or a high degree of perceived enjoyment, they may be more sensitive to information quality satisfaction.

Originality/value – This study contributes to the knowledge regarding quality satisfaction for transactional and relational customers in e-commerce.

Keywords E-commerce, Perceived control, Perceived enjoyment, Quality satisfaction, Relational customers, Transactional customers

Paper type Research paper

1. Introduction

Quality satisfaction has been understood as a means of evaluating service success in the fields of marketing, economics, and strategy management (Löfgren *et al.*, 2011; Mittal *et al.*, 1998). As such, quality satisfaction is an adequate indicator of a company's future profits (Kolter, 1991) and can be used as a criterion for diagnosing product or service performance (Santouridis and Trivellas, 2010). Furthermore, the understanding of quality satisfaction is an important issue for service providers to survive in the marketplace (Kim *et al.*, 2009). Specifically, Mittal *et al.* (1998) argue that consumers may likely evaluate past purchase experiences of satisfaction based on one attribute rather than on the whole service experience, and accordingly, consumers may be both satisfied and dissatisfied with different aspects of the same product or service. For example, a consumer may be satisfied with the food but dissatisfied with the personal

The TQM Journal
Vol. 26 No. 6, 2014
pp. 577-593

1754-2731
DOI 10.1108/TQM-11-2012-0089

service in a fast-food restaurant. Thus, quality satisfaction represents customers' personal needs in the qualities to be satisfied. At this point, we expect that one online consumer perhaps cares more for the personal privacy, while another may prefer surfing experiences when transacting in e-commerce.

The customer relationship life cycle in e-commerce includes two stages: customer acquisition and customer retention (Chen and Popovich, 2003). In the customer acquisition stage, customers perceive a risk at the beginning of the buying process. Therefore, reducing customer perceived risk in the first contact is an important issue for service providers. In the customer retention stage, satisfaction, trust, and commitment are the main determinants for deterring customers from switching to other providers (Li *et al.*, 2006). Thus, how to increase switching barriers is a critical task for service providers. Mittal and Katrichis (2000) note that attributes that are important to new customers may not be the same characteristics that are important to loyal customers. As such, we expect that customers in different stages have different determinants of quality for the purchases, and thus quality satisfaction will vary between the acquisition and retention stages: the former may focus on attractive attributes of quality to acquire new customers, while the latter will emphasize relational attributes of quality to retain customers. Therefore, we ask, "What types of attractive qualities are suitable for new customers (or 'transactional customers'), and what types of relational qualities are essential for loyal customers (or 'relational customers')?" The field has not yet provided a direct investigation of these questions.

To find answers, this study adopted DeLone and McLean's (2004) information systems success model, which includes system quality, information quality, and service quality, for measuring perceived quality in e-commerce. Moreover, perceived control and perceived enjoyment act as the moderators in the model. An empirical research was conducted that examined the behaviors of a group of 470 savvy internet users in northeastern USA. The contributions of this study are twofold. The first is to examine quality satisfaction between transactional and relational customers in e-commerce. The second is to explore the moderating effects of perceived control and perceived enjoyment on quality satisfaction between transactional and relational customers.

2. Literature review and hypotheses development

2.1 The definitions of transactional and relational customers

From the view of relationship marketing, there is a continuum of customer relationships that ranges from transactional to relational orientations (Jackson, 1985). Thus, businesses may focus on both transactional and relational marketing as they serve different types of customers (Garbarino and Johnson, 1999). From the firm perspective, transactional customers are defined as the new customers or the customers who may remain with the firm for a short time and may demonstrate defection behavior. Relational customers represent the customers who stay longer with the firm and have a very low probability of defecting. However, there is no consensus for the measurement between transactional and relational customers (Li *et al.*, 2006). For example, Mittal and Katrichis (2000) classified customers as new or loyal based on a one-year cutoff for creditor card holders, a five-year cutoff for mutual fund investors, as well as a two-month cutoff (for new customers) and two-year cutoff (for loyal customers) for automobile ownership. Chiao *et al.* (2008) used the criterion of a two-year cutoff (for transactional customers) and two-year cutoff (for relational customers) for bank customers. Thus, the distinctions between new (or transactional) and loyal (or relational) customers are highly subjective

and dependent on the industries. In e-commerce, Reichheld and Schefter (2000) find that repeat customers purchase apparel in e-retailing more than twice as often in months 24-30 of their relationships than they do in the first six months. Thus, we can infer that for online customers to be loyal, the length of the relationship with the web site is likely at least 2-2.5 years. Therefore, we referred to the study of Chiao *et al.* (2008) and assumed that transactional customers are those whose relationship with a specific web site is less than two years, whereas relational customers are those whose relationship exceeds three years.

2.2 System quality satisfaction between transactional and relational customers

The relationship between service quality and customer satisfaction has been examined in the e-commerce literature (Gable *et al.*, 2008; Lin, 2007). Specifically, DeLone and McLean's (2004) model, which includes the influence of system quality, information quality, and service quality on information system success, is more structured and comprehensive for studies in e-commerce. Indeed, this model has been used in several studies to examine the effects of various aspects of the relationship on customer satisfaction in e-commerce (e.g. Lin, 2007).

System quality refers to the computer-mediated communication services that assist customers in accomplishing their tasks as they navigate in e-commerce (Walther and Burgoon, 1992). As such, system quality may vary for different providers so as to fit their specific requirements. For example, a portal web site boosts high speed communication systems to overcome the obstacles of traffic bottleneck (e.g. Yahoo.com), whereas a networking community supports strongly interactive routes to allow members to communicate more efficiently (e.g. Facebook.com).

Compared with relational customers, transactional customers require high-quality system support to complete transactions in e-commerce. Because these customers have no commitment to the providers, transactional customers are often disloyal and may easily switch to other service providers if they are not satisfied. Thus, the customer's first contact with the service provider will affect subsequent purchase behavior. As a result, to increase customer incentives to purchases online, service providers should not only improve the speed of the systems for customers, but they also design an appealing interface to attract customers, such as one-click technology and straight navigation. We can expect that high-quality system design can mitigate customers' perceived risks and efforts in e-commerce, especially for new customers. Therefore, transactional customers will pay much more attention to system quality and be more satisfied than relational customers. Therefore, this study presents the *H1*:

H1. Transactional customers are more satisfied with system quality than relational customers in e-commerce.

2.3 Information quality satisfaction between transactional and relational customers

Information quality refers to information content, information security, and information customization intended to influence customers when making purchase decisions in e-commerce (DeLone and McLean, 2004). Due to the tremendous amount of unrelated information presented in e-commerce, customers prefer that the information is relevant, safe, and important to them (Gregg and Scott, 2006).

Liu *et al.* (2008) indicate that e-commerce services are information intensive. Consequently, the service providers integrate a variety of information for their customers, such as customized personal data, price comparisons with other providers, experienced

customer comments, and recommendations for related products. Thus, the higher the information quality, the greater the purchase intention of the customer, which, in turn, deters the customer from switching to other providers (Li *et al.*, 2006). Therefore, we expect that high-quality information can increase relational customer trust in the service provider. Accordingly, as relational customers will be more concerned with information quality, they will be more satisfied than transactional customers. Therefore, this study presents *H2*:

H2. Relational customers are more satisfied with information quality than transactional customers in e-commerce.

2.4 Service quality satisfaction between transactional and relational customers

Service quality, which is an overall judgment, is related to the superiority of the service (Parasuraman *et al.*, 1988). DeLone and McLean (2004) define service quality in e-commerce as being different from service quality in other fields. In their study, service quality was measured by the effectiveness of on-line support capabilities, such as answers to frequently asked questions, customized site intelligence, and order tracking. Thus, this study defines service quality as customer support, which includes responsiveness, assurance, empathy, and follow-up. In this sense, customer support in e-commerce is similar to in-store call centers for customer assistance (Liu and Arnett, 2000).

Prior studies indicate that customer support is very important in e-commerce because poor user support will translate into lost customers and lost sales (El Sawy and Bowles, 1997). In other words, high-quality service support can increase trust in the service provider. This study therefore assumes that good customer support can result in a long-term relationship between the customer and the provider. On this basis, relational customers will be more concerned with service quality and be more satisfied than transactional customers. Therefore, this study presents *H3*:

H3. Relational customers are more satisfied with service quality than transactional customers in e-commerce.

2.5 The moderating effect of perceived control

Cyber-psychologists often employ "flow" to explain customer behaviors on the internet (Csikszentmihalyi, 1997; Novak *et al.*, 2000). When people are in flow, they shift into an experience that absorbs them into the activity (Csikszentmihalyi, 1997). Huang (2003) summarizes four constructs to address flow – control, attention focus, curiosity, and intrinsic interest. Koufaris (2002) develops three constructs to measure flow – perceived control, perceived enjoyment, and concentration, and Moon and Kim (2001) argue that flow includes perceived enjoyment, concentration, and curiosity. As customers often have short attention spans in e-commerce, perceived control and perceived enjoyment are more suitable to the measurement of flow in e-commerce (Koufaris, 2002).

Perceived control is defined as the level of the individual's control over the environment and over his own actions (Klobas, 1995). This concept is similar to Bandura's (1982) self-efficacy and Ajzen's (1991) perceived behavioral control. Klobas (1995) contends that perceived control can be estimated by asking customers their potential barriers and the cost of internet access. Gehrt *et al.* (1991) indicate that perceived control can be affected by online shopping experiences, internet usage time,

and knowledge. If customers have excellent experiences with or knowledge of the service provider, they perceive the situation to be safe and controllable. In contrast, customers with low perceived control may experience a decrease in their self-reliance and therefore be less satisfied with the service providers.

Arcury *et al.* (2002) argue that perceived control is highly related to safety. In other words, if the environment is safe for the customers, perceived control will also be high. For relational customers, the past experiences with the service provider will result in the customer's perceived high level of self-control in the relationship. Thus, we expect that high degrees of perceived control can improve the satisfaction for relational customers more so than for transactional customers. Perceived control, as a moderator, may affect differences in quality satisfaction between transactional and relational customers. Therefore, this study presents *H4*:

H4. Perceived control strengthens the importance of quality satisfaction for relational customers more strongly than for transactional customers.

2.6 The moderating effect of perceived enjoyment

Perceived enjoyment refers to the customer's perception that the service was intrinsically enjoyable (Trevino and Webster, 1992). Flow research indicates that perceived enjoyment can positively impact the use of computer-mediated environments for e-mail use (Trevino and Webster, 1992), other software use, and web site use (Novak *et al.*, 2000). Therefore, perceived enjoyment is positively and significantly related to the attitudes and intentions of consumers on the internet (Wolfinbarger and Gilly, 2001). In other words, perceived enjoyment is a significant factor influencing technology acceptance, especially for new customers (Davis *et al.*, 1992). Van der Heijden (2004) also argues that hedonic motivation is an essential incentive for customers when adopting internet services. Thus, we expect that perceived enjoyment will have more influence on the satisfaction of transactional customers than on relational customers in e-commerce. Therefore, this study presents *H5*:

H5. Perceived enjoyment strengthens the importance of quality satisfaction for transactional customers more strongly than for relational customers.

3. Research method

3.1 Research framework

Figure 1 depicts the research framework of this study according to the extant literature.

3.2 Measures

Transactional customers were operationalized in this study as the customers with less than two years of experience with a specific shopping web site, whereas relational customers were operationalized as customers with over three years of experience with a specific web site. This is consistent with the study of Chiao *et al.* (2008).

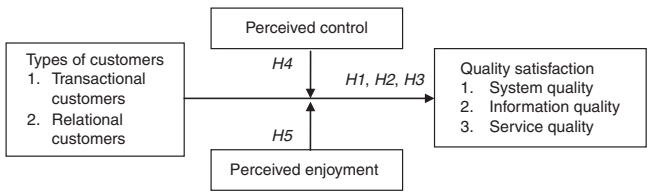

Figure 1.
Conceptual framework of this study

The fundamentals of quality satisfaction were modified from DeLone and McLean (2004) and Lin (2007), such that system quality includes eight items, information quality includes six items, and service quality includes five items. Two moderating variables, perceived control and perceived enjoyment, were referred by Ghani and Deshpande (1994) and include three and four items, respectively. A seven-point Likert scale was used to rate the satisfaction from 1 (strongly dissatisfied) to 7 (strongly satisfied).

To examine the preliminary instrument for face validity, this study invited three e-commerce experts who are assistant professors of a university to review the survey. They suggested we insert two items regarding customized services into information quality. The first item is "B7. The web site provides customized information." The second is "B8. The web site provides information tailored to meet the customer's needs." This result ensures that our instrument fits the study. Overall, Table I shows the revised instrument of the study.

3.3 Subjects

This study conducted a convenience sampling to collect empirical data. We selected a student association web site at a renowned university located in northeastern USA. The reasons for selecting a student web site are that the members of the web site must be current undergraduate or graduate students at the university, and the approximate number of registered members is 4,000. We sent our questionnaire to the members via a broadcast account. To act as an incentive for respondents to complete the survey, we offered gifts to valid respondents as rewards.

The sample size considered for this study required that each variable have at least ten respondents (Hatcher, 1994). There were 28 variables in the model of the study, thus 280 respondents or more would be adequate for the study. The questionnaires were collected for one month. The total number of respondents was 498, of which 28 copies were deleted, including those that had missing or incomplete data. Therefore, the valid respondents totaled 470, of which 268 were transactional customers and 202 were relational customers. As Table II shows, males (61.2, 66.3 percent, respectively) outnumber females (38.8, 33.7 percent, respectively). Undergraduate students (64.9, 61.9 percent, respectively) outnumber graduate students (35.1, 38.1 percent, respectively), and the 19-29 age group (80.2, 82.2 percent, respectively) is the largest in this study. The distribution of the sample matches the population of school: the ratio of male to female is 6:4, the ratio of undergraduate to graduate is 7:3, and the ratio of the 19-29 age group is 80 percent.

3.4 Reliability and validity test

The principle-axis factor analysis method was applied for exploratory factor analysis, and five factors were then selected. To further improve the distinction between factors, items that had factor loadings less than 0.4 or greater than 0.4 on two or more factors are removed from the measurement. This study deleted four items (A7, B4, C1, and C2), resulting in a set of 24 items across the five factors. The cumulative variance is 66.491 percent, and the standardized factor loading of each item is shown in Table III.

In the measurement of survey scale reliability, Cronbach's α is used. As the results reveal that each construct's scores are higher than 0.7 (Nunnally, 1978), as shown in Table III, this study carries adequate reliability.

Convergent validity is examined by composite reliability (CR), standardized factor loadings (SFL), and average variance extracted (AVE) (Fornell and Larcker, 1981). Scholars employ SFL greater than 0.7, CR greater than 0.8, and AVE of at least 0.5 as

Construct	Variable items	References
System quality	A1. The web site is visually appealing	DeLone and McLean (2004), Lin (2007)
	A2. The user interface of the web site has a well-organized appearance	
	A3. The web site is reliable	
	A4. The web site is convenient to access	
	A5. The web site is easy to use	
	A6. The webs site gives me a variety of choices for purchasing decisions	
	A7. The web site provides quick feedback	
	A8. The web site has natural and predictable screen changes	
Information quality	B1. The web site provides up-to-date information	DeLone and McLean (2004), Lin (2007)
	B2. The web site provides accurate information	
	B3. The web site provides useful information	
	B4. The web site provides complete information	
	B5. Using a credit card to make purchase on the web site is safe	
	B6. In general, making payments on the web site is secure	
	B7. The web site provides customized information	
	B8. The web site provides the information tailored to meet the customer's needs	
Service quality	C1. The web site provides follow-up service	DeLone and McLean (2004), Lin (2007)
	C2. The web site is always willing to help customers	
	C3. The web site provides prompt service	
	C4. The web site provides personal service	
	C5. The web site provides service with empathy	
Perceived control	D1. I clearly know the right things to do during my visit	Ghani and Deshpande (1994)
	D2. I feel calm during my visit	
	D3. I feel in control during my visit	
Perceived enjoyment	E1. My visit to the web site is interesting	Ghani and Deshpande (1994)
	E2. My visit to the web site is fun	
	E3. My visit to the web site is exciting	
	E4. My visit to the web site is enjoyable	

Table I.
The instrument of this study

the criteria. The results, as shown in Table III, surpass the criteria; therefore, this study possesses adequate convergent validity.

For testing discriminate validity, Fornell and Larcker (1981) also suggest the use of related coefficients of the square root for each construct's AVE greater than other variables' coefficients. The AVE square root of each research variable is larger than the related coefficients, indicating that this study has adequate discriminate validity (Table IV).

4. Analysis and result

4.1 The main effect of quality satisfaction

Quality satisfaction between transactional and relational customers was analyzed using multivariate analysis of variance (MANOVA). As the results obtained from empirical data show in Table V, there are significant differences of quality satisfaction between transactional and relational customers (Wilk's $\lambda = 0.894$, $p = 0.000$). Moreover, system quality satisfaction ($F = 3.853$, $p = 0.042$), information quality satisfaction

Type of customer	Transactional customers *n*	Percent	Relational customers *n*	Percent
Gender				
Female	104	38.8	68	33.7
Male	164	61.2	134	66.3
Total	268	100.0	202	100.0
Education				
Undergraduate	174	64.9	125	61.9
Graduate	94	35.1	77	38.1
Total	268	100.0	202	100.0
Age				
19-29	215	80.2	166	82.2
30-40	48	17.9	31	15.3
41-50	5	1.9	5	2.5
Total	268	100.0	202	100.0

Table II.
Demographic characteristics of the sample

Construct and observable variables	M (SD)	SFL	CR	AVE	α
System quality			0.91	0.58	0.83
A1	5.54 (1.10)	0.70			
A2	5.45 (1.20)	0.80			
A3	5.20 (1.30)	0.79			
A4	5.50 (1.23)	0.78			
A5	5.27 (1.16)	0.73			
A6	5.70 (1.43)	0.73			
A8	5.43 (1.12)	0.79			
Information quality			0.92	0.65	0.81
B1	5.96 (1.26)	0.87			
B2	5.99 (1.27)	0.87			
B3	5.30 (1.15)	0.80			
B5	6.02 (1.26)	0.84			
B6	5.67 (1.10)	0.75			
B7	5.46 (2.16)	0.75			
B8	5.58 (1.07)	0.75			
Service quality			0.86	0.67	0.73
C3	4.51 (1.21)	0.81			
C4	4.92 (1.38)	0.77			
C5	4.54 (1.55)	0.87			
Perceived control			0.85	0.66	0.78
D1	5.40 (1.18)	0.84			
D2	5.11 (1.43)	0.81			
D3	5.50 (1.24)	0.78			
Perceived enjoyment			0.92	0.76	0.92
E1	5.01 (1.32)	0.88			
E2	4.49 (1.74)	0.91			
E3	4.32 (1.44)	0.78			
E4	4.73 (1.55)	0.90			

Table III.
Model of research construct

($F = 16.901$, $p = 0.000$), and service quality satisfaction ($F = 6.995$, $p = 0.008$) are significant in this study. Regarding the differences of quality satisfaction, the evidence reveals that system quality satisfaction for transactional customers ($\mu_{SAT} = 5.31$) is higher than that for relational customers ($\mu_{SAT} = 5.19$); information quality satisfaction for relational customers ($\mu_{SAT} = 5.89$) is higher than that for transactional customers ($\mu_{SAT} = 5.54$); and service quality satisfaction for relational customers ($\mu_{SAT} = 4.79$) is higher than that for transactional customers ($\mu_{SAT} = 4.52$). Therefore, *H1*, *H2*, and *H3* are supported.

4.2 The moderating effect of perceived control

For testing the moderating effect, this study set the moderating variable as a nominal scale. A median of items means separates the moderating variable into low and high levels (e.g. 1 = low and 2 = high). Thus, two-way ANOVA analysis was used to analyze. The results, as shown in Table VI, reveal that the moderating effect of perceived control is significant for system quality satisfaction ($F = 6.467$, $p = 0.011$) and information quality satisfaction ($F = 21.814$, $p = 0.000$), but not for service quality satisfaction ($F = 3.603$, $p = 0.058$). Detailed analysis, as Table VII shows, reveals that the shift of system quality satisfaction for relational customers (the score shifts from 4.61 to 5.86, namely, 1.25) is significantly greater than that for transactional customers (the score shifts from 4.73 to 5.64, namely, 0.91). Thus, perceived control has more influence on system quality satisfaction for relational customers than for transactional customers. However, the shift of information quality satisfaction for transactional customers (the score shifts from 4.72 to 6.00, namely, 1.28) is significantly greater than that for relational customers (the score shifts from 5.62 to 6.19, namely, 0.57). The result implies that perceived control has more influence on information quality satisfaction for transactional customers than for relational customers. Therefore, the evidence partially supports *H4*.

4.3 The moderating effect of perceived enjoyment

The moderating effect of perceived enjoyment is significant for information quality satisfaction ($F = 20.270$, $p = 0.000$), but not for system quality satisfaction ($F = 0.175$, $p = 0.676$) or for service quality satisfaction ($F = 0.168$, $p = 0.682$), as shown in Table VIII. Detailed analysis, as shown in Table IX, reveals that the shift of information quality satisfaction for transactional customers (the score shifts from 4.59 to 5.91, namely, 1.32) is significantly greater than that for relational customers (the score shifts from 5.72 to 6.30, namely, 0.58). Hence, *H5* is also partially supported.

	1	2	3	4	5
1. System quality	*0.76*				
2. Information quality	0.60	*0.81*			
3. Service quality	0.62	0.51	*0.82*		
4. Perceived control	0.70	0.64	0.55	*0.81*	
5. Perceived enjoyment	0.48	0.28	0.32	0.54	*0.87*

Note: Diagonal elements in italised represent the square root of AVE

Table IV.
Correlation between research constructs

Table V.
The main effect of MANOVA

Effect		*Value*	*F*	*Hypothesis df*	*Error df*	*Sig.*	
Type							
Pilai's Trace		0.106	18.372	3.000	466.000	0.000	
Wilk's λ		0.894	18.372	3.000	466.000	0.000	
Hotelling's Trace		0.118	18.372	3.000	466.000	0.000	
Roy's Largest Root		0.118	18.372	3.000	466.000	0.000	
Source	*Dependent variable*		*Type III sum of squares*	*df*	*Mean square*	*F*	*Sig.*
Type	System quality satisfaction		3.685	1	3.685	3.853*	0.042
	Information quality satisfaction		14.506	1	14.506	16.901*	0.000
	Service quality satisfaction		8.624	1	8.624	6.995*	0.008
Dependent variable	*Type*		μ_{SAT}	*SE*			
System quality satisfaction	Transactional		5.31	0.85			
Information quality satisfaction	Relational		5.19	0.93			
	Transactional		5.54	1.00			
	Relational		5.89	0.85			
Service quality satisfaction	Transactional		4.52	1.04			
	Relational		4.79	1.18			

Note: *Significant at $p < 0.05$

Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.
Corrected model	System quality	137.438[a]	3	45.813	90.216	0.000
	Information quality	121.137[b]	3	40.379	63.771	0.000
	Service quality	126.699[c]	3	42.233	42.884	0.000
Intercept	System quality	12,219.511	1	12,219.511	24,063.022	0.000
	Information quality	14,287.624	1	14,287.624	22,564.778	0.000
	Service quality	9,616.066	1	9,616.066	9,764.256	0.000
Type	System quality	0.291	1	0.291	0.573	0.449
	Information quality	33.766	1	33.766	53.328	0.000
	Service quality	20.569	1	20.569	20.886	0.000
Perceived control	System quality	130.742	1	130.742	257.461	0.000
	Information quality	95.368	1	95.368	150.616	0.000
	Service quality	112.876	1	112.876	114.616	0.000
Type × perceived control	System quality	3.284	1	3.284	6.467*	0.011
	Information quality	13.812	1	13.812	21.814**	0.000
	Service quality	3.548	1	3.548	3.603	0.058
Error	System quality	236.641	466	0.508		
	Information quality	295.063	466	0.633		
	Service quality	458.928	466	0.985		
Total	System quality	13,329.204	470			
	Information quality	15,746.816	470			
	Service quality	10,780.778	470			
Corrected total	System quality	374.079	469			
	Information quality	416.200	469			
	Service quality	585.627	469			

Notes: [a]$R^2 = 0.367$(adjusted $R^2 = 0.363$); [b]$R^2 = 0.291$ (adjusted $R^2 = 0.286$); [c]$R^2 = 0.216$ (adjusted $R^2 = 0.211$). *,**Significant at $p < 0.05$ and $p < 0.01$, respectively

Table VI.
The moderating effect of perceived control

Quality satisfaction	Customer type	Perceived control	μ_{SAT}	SE
System quality	Transactional	Low	4.73	1.01
		High	5.64	0.51
	Relational	Low	4.61	0.67
		High	5.86	0.72
Information quality	Transactional	Low	4.72	1.03
		High	6.00	0.62
	Relational	Low	5.62	0.83
		High	6.19	0.76
Service quality	Transactional	Low	4.00	1.16
		High	4.82	0.83
	Relational	Low	4.25	0.82
		High	5.43	1.21

Table VII.
Quality satisfaction between customer type and perceived control

4.4 Implications of the study

The results of the study affirm that quality satisfaction may differ between transactional and relational customers (Mittal *et al.*, 1998). This finding reveals that system quality satisfaction is higher for transactional customers than for relational customers. High system quality can reduce customer's anxiety and lessen the risks of

Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.
Corrected model	System quality	82.494[a]	3	27.498	43.946	0.000
	Information quality	113.467[b]	3	37.822	58.220	0.000
	Service quality	69.985[c]	3	23.328	21.082	0.000
Intercept	System quality	10,571.976	1	10,571.976	16,895.707	0.000
	Information quality	12,201.690	1	12,201.690	18,782.197	0.000
	Service quality	8,309.121	1	8,309.121	7,509.181	0.000
Type	System quality	7.022	1	7.022	11.223	0.001
	Information quality	54.913	1	54.913	84.527	0.000
	Service quality	35.861	1	35.861	32.408	0.000
Perceived enjoyment	System quality	80.724	1	80.724	129.010	0.000
	Information quality	86.088	1	86.088	132.516	0.000
	Service quality	61.203	1	61.203	55.311	0.000
Type × perceived enjoyment	System quality	0.109	1	0.109	0.175	0.676
	Information quality	13.168	1	13.168	20.270**	0.000
	Service quality	0.186	1	0.186	0.168	0.682
Error	System quality	291.585	466	0.626		
	Information quality	302.733	466	0.650		
	Service quality	515.642	466	1.107		
Total	System quality	13,329.204	470			
	Information quality	15,746.816	470			
	Service quality	10,780.778	470			
Corrected total	System quality	374.079	469			
	Information quality	416.200	469			
	Service quality	585.627	469			

Table VIII.
The moderating effect of perceived enjoyment

Notes: [a]$R^2 = 0.221$ (adjusted $R^2 = 0.216$); [b]$R^2 = 0.273$ (adjusted $R^2 = 0.268$); [c]$R^2 = 0.120$ (adjusted $R^2 = 0.114$).**Significant at $p < 0.01$

Quality satisfaction	Customer type	Perceived enjoyment	μ_{SAT}	SE
System quality	Transactional	Low	4.63	1.11
		High	5.58	0.52
	Relational	Low	4.94	0.87
		High	5.82	0.77
Information quality	Transactional	Low	4.59	1.12
		High	5.91	0.64
	Relational	Low	5.72	0.84
		High	6.30	0.71
Service quality	Transactional	Low	3.92	1.25
		High	4.76	0.83
	Relational	Low	4.57	1.09
		High	5.33	1.23

Table IX.
Customer satisfaction between customer type and perceived enjoyment

transaction failure for transactional customers (Büttner *et al.*, 2006). Thus, we can infer that system quality satisfaction can mitigate customer perceived risk, which, in turn, enhances customer purchase intentions for transactional customers.

Trust has been examined to affect the relationship of customer satisfaction and customer loyalty in the literature (Chiao *et al.*, 2008). In this study, the finding

reveals that information quality satisfaction is higher for relational customers than for transactional customers. Thus, service providers should provide relevant, safe, and customized information for customers, as doing so benefits the relationship between customers and providers and develops customer confidence in the providers (Negash *et al.*, 2003). Service quality satisfaction is higher for relational customers than for transactional customers. That is, relational customers are more satisfied with customer supports than are transactional customers. Thus, we can infer that information quality and service quality satisfactions can improve customer trust, which, in turn, enhances customer purchase intentions for relational customers.

As for the moderating effect test, the evidence reveals that *H4* and *H5* are partially supported. Perceived control strengthens the importance of system quality satisfaction for relational customers more strongly than for transactional customers. This result supports our assumption, which means that relational customers will be more sensitive than transactional customers to system quality satisfaction. In terms of perceived control, relational customers have more impact on system quality satisfaction than transactional customers. That is, relational customers are not only concerned with information quality and service quality for their satisfaction (e.g. see *H2* and *H3*), but they are also influenced by system quality, especially for relational customers with high perceived control. Thus, good system quality can enhance the security of online purchases for relational customers, which in turn increases satisfaction. However, perceived control strengthens the importance of information quality satisfaction for transactional customers more strongly than for relational customers. This result does not support our assumption. Instead, information quality satisfaction is more sensitive for transactional customers with high perceived control. Although transactional customers have higher satisfaction regarding system quality than relational customers (e.g. see *H1*), they will also have greater impact on information quality satisfaction than relational customers, especially for transactional customers with high perceived control. That is, good information quality can improve the security of online purchases for transactional customers, which, in turn, increases satisfaction. Thus, we can infer that perceived control is more sensitive to system quality satisfaction for relational customers, but information quality satisfaction is more sensitive for transactional customers.

Moreover, the evidence also reveals that perceived enjoyment strengthens the importance of information quality satisfaction for transactional customers more strongly than for relational customers. This result supports our assumption. Although transactional customers have lower information quality satisfaction than relational customers (e.g. see *H2*), they may have more impact on information quality satisfaction, especially for transactional customers with high perceived enjoyment. That is, good information quality can increase the amusement of online purchases for transactional customers, which, in turn, increases satisfaction. Thus, we can infer that perceived enjoyment is more sensitive to information quality satisfaction for transactional customers.

5. Conclusion and suggestion

5.1 Conclusion

This study contributes to theoretical and practical benefits. Theoretically, this study finds that system quality satisfaction is more important for transactional customers, but information quality and service quality satisfactions are more important for relational customers. This finding can explain why online stores often provide an

appealing and speedy system to handle thousands of deals for transactional customers (Lin, 2007) and also offer customized information and strong support services to satisfy relational customers' personal demands (DeLone and McLean, 2004). Moreover, perceived control may impact quality satisfaction differently. Although information quality and service quality are more important to relational customers than to transactional customers, relational customers who have a high degree of perceived control are also more influenced by system quality. Similarly, transactional customers are more concerned with system quality satisfaction than are relational customers, but they may also be concerned with information quality satisfaction if they have a high degree of perceived control or perceived enjoyment. Therefore, we conclude that while information quality and service quality are important for relational customers, system quality cannot be ignored because the customers with high perceived control may be more sensitive to the degree of satisfaction. Furthermore, it is likely that system quality is important for transactional customers, but information quality will also be critical for those customers with a high degree of perceived enjoyment.

Practically speaking, the practitioners should consider the quality of services to meet the needs of the different types of customers. For example, high-quality system design is better for new customers, while high-quality information and service support is helpful for loyal customers. However, if loyal customers have a high degree of perceived control, they may be more sensitive to system quality satisfaction. Similarly, if new customers have a high degree of perceived control or perceived enjoyment, they may be more sensitive to information quality satisfaction.

5.2 Limitations and future research

Along with these important implications, this study contains some limitations. First, this study is conducted with university student samples. While the use of one cohort may limit generalization of the findings in this study, a sample of students does have a moderate degree of representativeness with respect to users of the internet (Lin, 2007).

Second, this study used a cross-sectional design and cannot identify casual relationships. Subsequent studies may conduct a longitudinal approach to observe the dynamic change of quality satisfaction in different stages. Third, this study classified customers as transactional or relational based on length of stay. However, customer loyalty can be considered from other perspectives, such as a behavioral approach, attitudinal approach, and integrated approach (Oh, 1995). Subsequent studies may consider the determinants, such as subjective judgment, purchase frequency, and buying motivation, as the criterion for the distinctions between transactional and relational customers (e.g. Davis *et al.*, 1992).

References

Ajzen, I. (1991), "The theory of planned behavior", *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179-211.

Arcury, T.A., Quandt, S.A. and Russell, G.B. (2002), "Pesticide safety among farmworkers: perceived risk and perceived control as factors reflecting environmental justice", *Environmental Health Perspectives*, Vol. 110 No. 2, pp. 233-240.

Bandura, A. (1982), "Self-efficacy mechanism in human agency", *American Psychologist*, Vol. 37 No. 2, pp. 122-147.

Büttner, O.B., Schulz, S. and Silberer, G. (2006), "Perceived risk and deliberation in retailer choice: consumer behavior towards online pharmacies", *Advances in Consumer Research*, Vol. 33 No. 1, pp. 197-202.

Chen, I.J. and Popovich, K. (2003), "Understanding customer relationship management (CRM): people, process and technology", *Business Process Management Journal*, Vol. 9 No. 5, pp. 672-688.

Chiao, Y., Chiu, Y. and Guan, J. (2008), "Does the length of a customer-provider relationship really matter?", *The Service Industries Journal*, Vol. 28 No. 5, pp. 649-667.

Csikszentmihalyi, M. (1997), *Creativity: Flow and the Psychology of Discovery and Innovation*, Perennial, New York, NY.

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1992), "Extrinsic and intrinsic motivation to use computers in the workplace", *Journal of Applied Social Psychology*, Vol. 22 No. 14, pp. 1111-1132.

DeLone, W.H. and McLean, E.R. (2004), "Measuring e-commerce success: applying the DeLone & McLean information systems success model", *International Journal of Electronic Commerce*, Vol. 9 No. 1, pp. 31-47.

El Sawy, O.A. and Bowles, G. (1997), "Redesigning the customer support process for the electronic economy: insights from storage dimensions", *MIS Quarterly*, Vol. 21 No. 4, pp. 457-483.

Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equations with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50.

Gable, G.G., Sedera, D. and Chan, T. (2008), "Re-conceptualizing information system success: the IS-impact measurement model", *Journal of the Association for Information Systems*, Vol. 9 No. 7, pp. 377-408.

Garbarino, E. and Johnson, M.S. (1999), "The different roles of satisfaction, trust, and commitment in customer relationships", *Journal of Marketing*, Vol. 63 No. 1, pp. 70-87.

Gehrt, K.C., Ungram, T.N. and Howe, V. (1991), "Non store versus store retailing: a situationally based market structure assessment", *Journal of Direct Marketing*, Vol. 5 No. 2, pp. 44-53.

Ghani, J.A. and Deshpande, S.P. (1994), "Task characteristics and the experience of optimal flow in human-computer interaction", *The Journal of Psychology*, Vol. 128 No. 4, pp. 381-391.

Gregg, D.G. and Scott, J.E. (2006), "The role of reputation systems in reducing on-line auction fraud", *International Journal of Electronic Commerce*, Vol. 10 No. 3, pp. 95-120.

Hatcher, L. (1994), *A Step-by-step Approach to Using the SAS System for Factor Analysis and Structural Equation Modelling*, SAS Institute, Cary, NC.

Huang, M.H. (2003), "Designing web site attributes to induce experiential encounters", *Computers in Human Behavior*, Vol. 19 No. 4, pp. 425-442.

Jackson, B.B. (1985), *Winning and Keeping Industrial Customers: The Dynamics of Customer Relationships*, D.C. Heath and Company, Lexington, MA.

Kim, K.Y., Yun, D.K. and Kim, D.Y. (2009), "Expectations measurements in mobile data service: a case study", *International Journal of Mobile Communications*, Vol. 7 No. 1, pp. 91-116.

Klobas, J.E. (1995), "Beyond information quality: fitness for purpose and electronic information resource use", *Journal of Information Science*, Vol. 21 No. 2, pp. 95-114.

Kolter, P. (1991), *Marketing Management-Analysis, Planning, Implementation, and Control*, 7th ed., Prentice-Hall, Inc., Englewood Cliffs, NJ.

Koufaris, M. (2002), "Applying the technology acceptance model and flow theory to online consumer behavior", *Information Systems Research*, Vol. 13 No. 2, pp. 205-223.

Li, D., Browne, G.J. and Wetherbe, J.C. (2006), "Why do internet users stick with a specific web site? A relationship perspective", *International Journal of Electronic Commerce*, Vol. 10 No. 4, pp. 105-141.

Lin, H. (2007), "The impact of web site quality dimensions on customer satisfaction in the B2C e-commerce context", *Total Quality Management & Business Excellence*, Vol. 18 No. 4, pp. 363-378.

Liu, C. and Arnett, K. (2000), "Exploring the factors associated with web site success in the context of electronic commerce", *Information & Management*, Vol. 38 No. 1, pp. 23-33.

Liu, C., Wang, C. and Lee, Y. (2008), "Revisit service classification to construct a customer-oriented integrative service model", *International Journal of Service Industry Management*, Vol. 19 No. 5, pp. 639-661.

Löfgren, M., Witell, L. and Gustafsson, A. (2011), "Theory of attractive quality and life cycles of quality attributes", *The TQM Journal*, Vol. 23 No. 2, pp. 235-246.

Mittal, V. and Katrichis, J.M. (2000), "Distinctions between new and loyal customers", *Marketing Research*, Vol. 12 No. 1, pp. 26-32.

Mittal, V., Ross, W.T. Jr and Baldasare, P.M. (1998), "The asymmetric impact of negative and positive attribute-level performance on overall satisfaction and repurchase intentions", *Journal of Marketing*, Vol. 62 No. 1, pp. 33-47.

Moon, J.-W. and Kim, Y.-G. (2001), "Extending the TAM for a world-wide-web context", *Information & Management*, Vol. 38 No. 4, pp. 217-230.

Negash, S., Ryan, T. and Igbaria, M. (2003), "Quality and effectiveness in web-based customer support systems", *Information & Management*, Vol. 40 No. 8, pp. 757-768.

Novak, T.P., Hoffman, D.L. and Yung, Y.-F. (2000), "Measuring the customer experience in online environments: a structural modeling approach", *Marketing Science*, Vol. 19 No. 1, pp. 22-42.

Nunnally, J. (1978), *Psychometric Theory*, 2nd ed., McGraw-Hill, New York, NY.

Oh, H.C. (1995), "An empirical study of the relationship between restaurant image and customer loyalty", Unpublished PhD dissertation, Virginia Polytechnic Institute and State University, Blacksbury, VA.

Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1988), "SERVQUAL: a multi-item scale for measuring consumer perceptions of service quality", *Journal of Retailing*, Vol. 64 No. 1, pp. 12-37.

Reichheld, F.F. and Schefter, P. (2000), "E-loyalty – your secret weapon on the web", *Harvard Business Review*, Vol. 78 No. 4, pp. 105-113.

Santouridis, I. and Trivellas, P. (2010), "Investigating the impact of service quality and customer satisfaction on customer loyalty in mobile telephony in Greece", *The TQM Journal*, Vol. 22 No. 3, pp. 330-343.

Trevino, L.K. and Webster, J. (1992), "Flow in computer-mediated communication: electronic mail and voice mail evaluation and impacts", *Communication Research*, Vol. 19 No. 5, pp. 539-573.

Van der Heijden, H. (2004), "User acceptance of hedonic information systems", *MIS Quarterly*, Vol. 28 No. 4, pp. 695-704.

Walther, J.B. and Burgoon, J.K. (1992), "Relational communication in computer-mediated interaction", *Human Communication Research*, Vol. 19 No. 1, pp. 50-88.

Wolfinbarger, M. and Gilly, M. (2001), "Shopping online for freedom, control and fun", *California Management Review*, Vol. 43 No. 2, pp. 34-55.

About the author

Dr Yung-Shen Yen is an Associate Professor of Computer Science and Information Management at the Providence University, Taichung. He obtained his PhD in Business Administration from National Chengchi University, Taiwan. His research has focussed on customer relationships in electronic commerce. He has published numerous articles in related journals, such as *Internet Research*, *International Journal of Mobile Communications*, and *African Journal of Business Management*. Dr Yung-Shen Yen can be contacted at: ysyen@pu.edu.tw