



# Understanding customer satisfaction and loyalty: An empirical study of mobile instant messages in China

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## ABSTRACT

With the rapid development of mobile technology and large usage rates of mobile phones, mobile instant message (MIM) services have been widely adopted in China. Although previous studies on the adoption of mobile services are quite extensive, few focus on customer satisfaction and loyalty to MIM in China. In this study, we examine the determinants of customer satisfaction and loyalty. The findings confirm that trust, perceived service quality, perceived customer value, including functional value and emotional value, contribute to generating customer satisfaction with MIM. The results also show that trust, customer satisfaction and switching cost directly enhance customer loyalty. Additionally, this study finds that age, gender, and usage time have moderating effects. Finally, implications for the marketing of MIM are discussed.

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## 1. Introduction

With the development of wireless telecommunication technologies, many customer services that are used in the computer-based Internet have also appeared in mobile phones (Barnes, 2002; Xu, 2003); mobile instant message (MIM) is a typical example. MIM enables consumers, whether sitting at the computer or on the road, to connect instant message (IM) with existing communities and across the mobile Internet. MIM brings tremendous conveniences for customers, and is widely adopted by young people. Short message service (SMS) is another popular handheld-based communication tool. The differences between these two message services used on mobile handsets are that MIM provides more user-friendly features, such as various user portraits, emoticons (pictures expressing emotions, such as ☺ for happy), and convenient voice and video chatting, while SMS only offers simple text message (Gibbs, 2008). Further, the presence information of MIM allows users to know the status of their friends, whether they are online or offline, free or busy, which helps them to conduct real-time conversation, thus stimulating communication. However, users can send a much greater number of messages using SMS. According to the survey results of TNS Global (2008), 8% of mobile phone users worldwide have adopted MIM. While SMS is used by 55% of mobile phone users daily, MIM is used by 61% of them. More widely used than SMS, MIM is becoming the “primary

non-voice method of interacting – with potentially dramatic consequences for service and network providers’ revenue” (TNS Global, 2008).

With a large number of mobile phone users, 624 million (MIIT, 2008), as well as high adoption rates of desktop IM users (CNNIC, 2009), China’s MIM has gained great opportunity. According to a report by iResearch (2008a), MIM usage has the biggest percent of mobile phone users at 72%. There are various MIM products in China. The biggest IM service provider, Tencent, offers mobile QQ, which is extended from desktop to mobile phone. Because of the huge loyal IM user base, mobile QQ makes Tencent the top MIM service provider in China (iResearch, 2008b). China Mobile, a main MNO (mobile network operator) in China, also enters the MIM market with Fetion. There are other MIM services, such as Microsoft’s mobile MSN, Pica, China Unicom’s UMS, China Netcom’s MXIM, etc. For an MNO, deploying MIM can consolidate a firm’s position in the mobile commerce value chain with increasing ARPU (average revenue per user). For an IM service provider, developing MIM undoubtedly expands the channels of desktop IM. In such a competitive MIM market, MIM service providers are all making efforts to attract more users and gain more market shares. Thus, the ability to provide a high degree of customer satisfaction services is crucial to providers in differentiating themselves from their competitors. Specifically, in increasingly competitive markets, building strong relationships with customers, that is, developing the loyalty of consumers is seen as the key factor in winning market share and developing a sustainable competitive advantage (Luarn & Lin, 2003; Nasir, 2005). Loyal customers are crucial to business survival (Semejin, Van Riel Allard, Van Birgelen,

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& Streukens, 2005) because attracting new customers is considerably more expensive than retaining old customers (Reichheld & Scheffer, 2000). Therefore, enterprises strive to increase their market share by maximizing customer retention (Tsoukatos & Rand, 2006). “[T]he potential and opportunity value of customers gained over a long period of time” is another advantage to maintaining existing customers (Seo, Ranganathan, & Babad, 2008). Further, with the aid of information technology, customers are becoming more and more open to understanding the brand; thus, satisfaction alone may not be adequate to retain a long-term relationship (Kassim & Abdullah, 2008). Accordingly, it is important for MIM service marketers to understand what factors impact these users’ satisfaction and loyalty, and then to take measures to retain their customers.

Several studies have been conducted to attempt to understand customer satisfaction or loyalty of mobile services customers (for example, Gerpott, Rams, & Schindler, 2001; Kim, Park, & Jeong, 2004; Lai, 2004; Lin & Wang, 2006; Turel & Serenko, 2006; Wang & Liao, 2007). Most of these studies emphasize that customer loyalty and analysis of factors affecting it are important for the success of mobile services firms. Furthermore, they agree that customer satisfaction is the main important mediate goal for mobile service providers on their way to obtaining economic success. Nevertheless, the aforementioned studies were conducted in countries other than China, and studied mobile services other than MIM. There is a dearth of literature on China’s MIM context. Since foreign markets have different levels of market development and distinct consumer behavior, those previous studies may provide limited application to China’s MIM market. As a big developing country, China’s mobile market has some uniqueness (Lu, Dong, & Wang, 2007; Xu, 2003). For example, MNO plays a dominant role in the mobile commerce value chain, and mobile phone users depend much on MNO. In the early phase of mobile commerce, government regulations on MNO are few; even if the service quality is low, customers have to bear it. Moreover, the MIM users are mainly young people, especially college students, who are usually early adopters of new technologies. Thus, a user’s perception of satisfaction and loyalty in China may differ from that found in other studies. Therefore, there is a need to develop a model to explore factors influencing customer satisfaction and loyalty of MIM in China.

Perceived service quality and customer value are supported as drivers of customer satisfaction (Lim, Widdows, & Park, 2006). We perceive that the relationships may also be significant in China’s MIM context. Moreover, MIM users often select the providers they trust to transact with, which develops their satisfaction. Trust can also be seen as a critical factor for customers to build and maintain relationships with providers (Semejin et al., 2005). Satisfaction has always been viewed as the main input for customer loyalty. However, satisfied users may switch to another brand for the low switching costs (Lam, Shankar, Erramilli, & Murthy, 2004), such as lower provider costs or ease in notifying other friends and adapting to another new MIM tool. As a result, we suggest customer satisfaction and switching cost are important predictors of customer loyalty of MIM. Other influences may depend on the moderating effects of customer characteristics, such as age, gender, and usage time. Understanding the moderating effects of customer characteristics, providers can tailor MIM to preferences in segments, thus increasing the likelihood that the service will be satisfactory and continually used. Thus, we also view age, gender, and usage experience as moderators. Considering several major factors which affect the perceptions of MIM users, this research builds a customer satisfaction and loyalty model. The model is then applied to a population of MIM users in China. Using a structural equation modeling method (SEM), we get some results. It is believed that the results can provide recommendations for practitioners and offer valuable insights for future mobile services research.

Section 2 provides the study’s theoretical background and hypothesis development. In Section 3, we present the methodology and offer the results, explain our research model and develop the research hypothesis. Section 4 then provides the discussion. Section 5 summarizes the implications of our study for both research and practice. Finally we give conclusions and limitations of this research.

## 2. Theoretical backgrounds and hypothesis development

In this section, we first discuss the roles of the three main predictors of customer satisfaction from the literature. This is followed by a description of how customer satisfaction, trust and switching cost affect customer loyalty.

### 2.1. Customer satisfaction and loyalty

Customer satisfaction, which refers to “the summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer’s prior feelings about the consumption experience” (Oliver, 1981), is often considered as an important determinant of repurchase intention (Liao, Palvia, & Chen, 2009) and customer loyalty (Eggert & Ulaga, 2002). It is a most important research topic in the information system area (Au, Ngai, & Cheng, 2008). If the customer has good experiences of using MIM over time, then he will have cumulative customer satisfaction. Previous literature theorized that customer satisfaction can be classified into two types: transaction-specific satisfaction and general overall satisfaction (Yi, 1991). Transaction-specific customer satisfaction refers to the assessment customers make after a specific purchase experience, and overall satisfaction means the customers’ rating of the brand based on their experiences (Johnson & Fornell, 1991). From these descriptions, we can view overall satisfaction as a combination of all previous transaction-specific satisfactions (Jones & Suh, 2000). As MIM is a communication tool, it may involve non-transactional satisfaction. Fournier and Mick (1999) argued that only transaction-specific research of satisfaction will narrow the conceptual boundaries, and they called for the research on non-transactional satisfaction, as well as other researchers (Anderson, Fornell, & Lehmann, 1994). Since customer satisfaction reflects the degree of a customer’s positive feeling for a service provider in a mobile commerce context, it is important for service providers to understand the customer’s vision of their services. On the other hand, a high level of customer satisfaction may have a positive impact on customer loyalty (Mittal, Ross, & Baldasare, 1998).

Brand loyalty is defined as “a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior” (Oliver, 1999). According to Sivadas and Baker-Prewitt (2000), customer loyalty is the ultimate objective of customer satisfaction measurement. It is found to be a key determinant of a brand’s long-term viability (Krishnamurthi & Raj, 1991). Moreover, compared with loyal customers, non-loyal customers are much more influenced by negative information about the products or services (Donio, Massari, & Passiante, 2006). Therefore, retaining existing customers and strengthening customer loyalty appear to be very crucial for mobile service providers to gain competitive advantage. In this study, we measure customer loyalty as customers’ behavioral intention to continuously use mobile instant messages with their present service providers, as well as their inclinations to recommend this MIM tool to other persons.

Satisfied users will have a higher usage level of MIM service than those who are not satisfied, and they are more likely to possess a

stronger continuous intention and to recommend the MIM tools to their friends or relatives (Zeithaml, Berry, & Parasuraman, 1996). If a service provider can satisfy the needs of the customer better than its competitors, it is easier to create loyalty (Oliver, 1999). Fornell (1992) stated that high customer loyalty is mainly caused by high customer satisfaction. Clarke (2001) proposed that effective satisfaction must be able to create loyalty amongst customers. Previous studies have demonstrated that customer satisfaction positively affects customer loyalty (Choi, Seol, Lee, Cho, & Park, 2008) or negatively affects switching intention (Walsh, Dinnie, & Wiedmann, 2006). As mentioned earlier, there are several MIM service providers in China. Once a customer feels dissatisfied with the service provider because of low service quality or other factors, then he/she will be much more likely to change to another. A few dissatisfied customers may complain after a poor service experience, but will not switch. However, many dissatisfied customers will not complain but will switch silently and create negative word of mouth (Dube & Maute, 1996). We can hypothesize that this relationship between customer satisfaction and customer loyalty will be applicable in MIM. Thus, we propose the following hypothesis:

**H1.** Customer satisfaction has a positive effect on customer loyalty.

## 2.2. The importance of trust

Trust has often been studied in the electronic commerce context. According to McKnight and Chervany (2002), trust can be viewed as trusting belief and trusting intention. Trusting belief refers to the users' perceptions of attributes of service providers, including the ability, integrity, and benevolence of the providers; trusting intention describes the truster's willingness or intention to depend on the trustee. Therefore, trusting intentions include a one-time or continuous usage of MIM services. In both the electronic commerce and mobile commerce context, customers cannot fully regulate the business agreement; thus it is necessary for them to rely on the service providers not to engage in unfair and opportunistic behavior (Gefen, 2002). Seen as a considerably important factor for building and maintaining relationships, trust is viewed as a main part of the success of electronic commerce (Lee & Turban, 2001), as well as of mobile commerce (Siau & Shen, 2003). In the MIM context, mobile phone users must provide personal information, such as their phone numbers, in order to become subscribers. They will also send messages to their friends from both computer-based IM and MIM. In the experience of usage, if customers perceive no risks or unexpected conditions that will impair their communications from the service or the service provider, trust will be built.

When a customer trusts a service provider, he or she will expect to increase satisfaction and loyalty towards the vendor (Kassim & Abdullah, 2008). In general, if a consumer does not trust the provider based on past experience, he or she will probably be dissatisfied with that provider. Researchers found that trust will affect satisfaction in the long term (Kim, Ferrin, & Rao, 2009). When a customer's feeling of faith in the provider is satisfied, his satisfaction will be enhanced over time (Chiou & Droge, 2006). On the other hand, earning customer trust is a main contributor to customer loyalty. Since trust can reduce risk in the process of creating exchange relationships, customers are inclined to be very "cooperative" with this trustworthy service provider by demonstrating behavioral evidence of their loyalty (Morgan & Hunt, 1994). That is, when customers trust the service provider, they will continually use the service and even recommend the service to others. Researchers found that trust positively influenced customer attitude or behavior intention in mobile commerce context (Lee, 2005; Wang, Lin, & Luarn, 2006). In MIM service, trusting beliefs can be defined as "consumers' perceptions of particular attributes of MIM

service providers, including the ability, integrity and benevolence of the vendors", while trusting intentions exist when "the truster feels secure and is willing to depend, or intends to depend, on the trustee" (Lin et al., 2006). When customers perceive the MIM service provider is reliable and generally trustworthy, customers will be satisfied with their services, and will be more likely to have repeat usage behavior of mobile instant message services. The statement that trusting beliefs will directly affect trusting intentions was supported by previous studies (Mayer & Davis, 1999). Thus, we propose that customers' perception of trusting beliefs of a specific MIM service provider will lead to their attitude (customer satisfaction), which in turn will lead to behavior intention of continual usage of MIM (customer loyalty). Because trust also can directly and positively affect customer loyalty (Chiou, 2004; Lin et al., 2006), we expect these relationships can be applicable to MIM. Thus, we have the following hypotheses:

**H2.** Trust has a positive effect on customer loyalty.

**H3.** Trust has a positive effect on customer satisfaction.

## 2.3. Perceived service quality

Providing a high level of service quality is very important for service providers to compete with other competitors (Bharati & Berg, 2005; Kemp, 2005; Yoo & Park, 2007). Zeithaml et al. (1996) described service quality as "the extent of discrepancy between the customers' expectations and perceptions". Dabholkar, Shepherd, and Thorpe (2000) stated that since service quality has sub-dimensions of reliability and responsiveness, it will lead to customer satisfaction. According to Parasuraman, Zeithaml, and Berry (1988), service quality includes five dimensions: reliability, tangibles, responsiveness, assurance, and empathy. They and many other researchers demonstrated the validity and reliability of those measures for perceived service quality (Cronin & Taylor, 1992; Soteriou & Chase, 1998). The literature on the relationship between customer satisfaction and service quality is ambiguous (Chong, Kennedy, Riquie, & Rungie, 1997). There are three competing theories about the linkages of service quality and customer satisfaction: satisfaction is an antecedent of service quality, service quality is the predictor of satisfaction, and the two constructs are interchangeable (Kassim & Abdullah, 2008). Despite the disagreement, the claim that customers might take attitudes or actions after using the services has been supported by many studies (Kassim & Abdullah, 2008). Moreover, Shin and Kim (2008) suggested service quality is a consumer's overall impression of the relative efficiency of the service provider, and they found that service quality is significantly related to customer satisfaction. Our view on the relationship between these two constructs is based on the claim that perceived service quality is a predictor of customer satisfaction.

Researchers maintain that perceived service quality is cognitive and thus followed by satisfaction (Oliver, 1999). Several empirical studies confirmed that a higher level of service quality was related to a higher level of customer satisfaction (Brady & Robertson, 2001; Cronin, Brady, & Hult, 2000; Dabholkar et al., 2000; Yang, Wu, & Wang, 2009). Zeithaml et al. (1996) also stated the customer's perception of service quality was the main factor predicting customer satisfaction. High service quality could attract new customers, retain existing customers, and even lure customers away from competitors whose service quality is perceived to be lower (Babakus, Bientstock, & Scotter, 2004). As in the MIM context, when customers perceive that the service quality of an MIM service provider is higher, they will have increased satisfaction, which will in turn lead to a higher customer loyalty. Thus, this study proposes that:

**H4.** Perceived service quality has a positive effect on customer satisfaction.



## 2.4. Customer value

Customer value is considered a concept that includes many heterogeneous components (Sweeny et al., 2001). Sheth, Newman, and Gross (1991) argued that a customer's purchase choice was influenced by a multiple consumption value dimension, and they developed a framework of five dimensions of value: functional value, conditional value, social value, emotional value, and epistemic value. Different dimensions have different roles in the user's decision. For example, functional value and social value determine whether to use this service or another, and emotional value is the key to using the selected service. Perceived value occurs throughout the purchasing process of customer, one-time purchase or repurchase (Woodruff, 1997). Perceived value is different from customer satisfaction, but is related to it (Sweeny et al., 2001).

We explore four aspects of customer value to assess mobile instant message services, including functional value, emotional value, social value, and monetary value. Functional value refers to the practical or technical benefits that users can obtain when using MIM. Because of the various functions of MIM, such as sending messages, voice chatting, and browsing news, people use it frequently. When a user wants to communicate with a friend anytime and anywhere, he will satisfy his functional value by using MIM. Emotional value means users' mental or psychological needs for mobile instant messages. When using MIM, customers will send interesting pictures or jokes and then have fun. Thus, users' emotional value can be satisfied through MIM services. Social value is defined as the benefits users can feel when they are connected to others by using MIM. Since MIM is mainly used for communication, customers' feelings of belonging to a certain group may enhance perceived value. Monetary value means how much the MIM service is satisfactory considering the cost, time or effort spent in using the MIM. This factor cannot be ignored because economic considerations are often regarded as an important aspect for customers' usage of information systems. In China, in order to enlarge market share, MIM service providers make competitive pricing strategies. For example, China Mobile's Fetion only charges for the GPRS network traffic fee. Mobile QQ charges from 5 to 10 Yuan more per month. If customers perceive these charges are reasonable and acceptable, they will feel the monetary value of this MIM is satisfied. As a result, they will be more likely to be satisfied with the service. Customer satisfaction can be predicted from consumer value. The four dimensions of consumer value are hypothesized to have an effect on customer satisfaction. Thus, we have the following hypotheses:

- H5a.** Functional value has a positive effect on customer satisfaction.
- H5b.** Emotional value has a positive effect on customer satisfaction.
- H5c.** Social value has a positive effect on customer satisfaction.
- H5d.** Monetary value has a positive effect on customer satisfaction.

## 2.5. Customer loyalty and switching cost

Switching cost is "the costs that the consumer incurs by changing one service provider to another" (Lee, Lee, & Feick, 2001), including the costs that can be measured in monetary terms, the psychological aspect of facing a new firm, and the time and effort involved in using a new service or product (Kim, Kliger, & Vale, 2003). Since it pertains to time and psychological effort involved in facing the uncertainty of dealing with a new service provider, switching cost can be a barrier to changing service providers. Thus it is a mechanism for improving customer loyalty (Dick & Basu, 1994). According to Burnham, Frels, and Mahajan (2003), all vari-

eties of switching costs can be simplified as three types: procedural, financial and relational switching costs. Procedural switching costs mainly include economic risk costs, evaluation costs, setup costs, and learning costs; financial switching costs involve benefit loss costs and monetary loss costs; relational switching costs contain personal relationship loss costs and brand relationship loss costs (Burnham et al., 2003). Having a direct effect on customer loyalty, switching cost offers many advantages for service providers. For example, it weakens customers' sensitivity to price and satisfaction of the product brand (Fornell, 1992), and they will view the brands with similar functions as different brands (Klemperer, 1987). Specifically, increasing a customer's perceptions of the risks in switching to other providers, the trouble in building a new contact relationship, and the difficulty in using an alternative service, will increase the likelihood that he/she keeps the relationship with the current service provider.

Previous studies tested the relationship between switching cost and customer loyalty, and their findings indicated that switching cost was an important factor in predicting customer loyalty (Albert, 2002; Aydin, Özer, & Arasil, 2005). When people use a mobile instant message service provided by one particular service provider and perceive the switching cost for changing to a new MIM service provider is high (for example, telling many old friends the new address and learning the new services), they will have higher customer loyalty. Thus, we have the following hypothesis:

- H6.** Perceived switching cost has a positive effect on customer loyalty.

## 2.6. Moderating effects

Moderating effects on the relationship between the independent and dependent variables have attracted many researchers' interest. Researchers argue that the contribution to marketing theory development will be larger if moderating variables are included in the research model (Dabholkar & Bagozzi, 2002; Nysveen, Pedersen, & Thorbjørnsen, 2005). Age, gender, and usage experience are found as key modifiers of an individual's perception and activity (Venkatesh, Brown, Maruping, & Bala, 2008; Venkatesh & Davis, 2000). Several studies also show these results (Chang & Chen, 2008; Ha, Yoon, & Choi, 2007; Hong & Tam, 2006; Lu et al., 2009; Nysveen et al., 2005; Sanchez-Franco, Ramos, & Velicia, 2009). Because customers with longer MIM usage time have more experience with the operations, they should be better able to exploit communication effectiveness than new users would be. We focus on age, gender, and usage time as moderating variables in order to understand more about the different perceptions of various customer segments for MIM satisfaction and loyalty. Thus, we have the following hypothesis.

- H7a-i.** Gender has moderating effects on the relationship between customer satisfaction and its antecedents, customer loyalty and its antecedents.

- H8a-i.** Age has moderating effects on the relationship between customer satisfaction and its antecedents, customer loyalty and its antecedents.

- H9a-i.** Usage time has moderating effects on the relationship between customer satisfaction and its antecedents, customer loyalty and its antecedents.

## 2.7. Research model

Based on the theoretical background discussed above, this study establishes a research model which suggests 10 primary links and three pairs of moderating links between the constructs involved in customer satisfaction and loyalty in MIM, as shown in Fig. 1.

The first link (H1) suggests the effect of customer satisfaction on customer loyalty. The second and third links propose separate effects of trust on customer satisfaction and customer loyalty. The fourth link is that service quality is considered as a predictor of customer satisfaction. The fifth to eighth links (H5a–d) suggest that the four sub-constructs of customer value are related to customer satisfaction. The ninth link (H6) hypothesizes that switching cost is an antecedent of customer loyalty. The last three links (H7–9) hypothesize moderation effects.

### 3. Methodology

#### 3.1. Measure development

A questionnaire survey was used to collect data on mobile phone users' perceptions of mobile instant message. Most of the instruments used to measure the constructs in this study are adapted from previous studies in order to ensure content validity. Items measuring customer value, including functional value, emotional value, social value, and monetary value, are adapted from [Sweeny and Soutar \(2001\)](#). Perceived service quality is measured by items adapted from [Shin and Kim \(2008\)](#). The items measuring trust are taken from [Gefen, Karahanna, and Straub \(2003\)](#). Items measuring switching cost are adapted from [Gefen \(2002\)](#). Customer satisfaction is measured by three items adapted from [Croinnet et al. \(2000\)](#). Customer loyalty is measured by three items adapted from [Lin and Wang \(2006\)](#). After we developed the preliminary questionnaire, we conducted two pretests using MIM users and e-commerce researchers and practitioners. In the first pretest, we asked MIM users for their feedback on the questionnaire and revised the questions they identified as ambiguous. Next, we interviewed two academic e-commerce researchers and two m-commerce busi-

**Table 2**

Descriptive statistics of respondent characteristics.

Variable		Count	%
Gender	Male	256	47.3
	Female	285	52.7
Age	<24 (young customers)	256	47.3
	>24 (old customers)	285	52.7
	25–30	191	35.3
	31–35	63	11.6
	36–40	18	3.3
	>40	13	2.4
Education level	High school	28	5.2
	Associate degree	77	14.2
	Bachelor's degree	264	48.8
	Master's degree or above	172	31.8
Monthly income	<1000 Yuan	153	28.3
	1000–2000 Yuan	130	24.0
	2000–3000 Yuan	117	21.6
	3000–4000 Yuan	94	17.4
	>4000 Yuan	47	8.7
Years using MIM	<1 year (new customers)	296	54.7
	Long usage time customers	245	45.3
	1–2 years	155	28.6
	2–3 years	73	13.5
	3 years or more	17	3.2

ness practitioners. We asked them for feedback on our survey and revised the questions based on their suggestions. Detailed information about the constructs and the sources are shown in [Table 1](#). All the items are measured on seven-point Likert scales, with anchors ranging from “strongly disagree” to “strongly agree”.

**Table 1**

Construct measuring.

Factor	Item	Source
Functional value	MIM is reliable. FV1	<a href="#">Sweeny and Soutar (2001)</a>
	MIM has good functions. FV2	
	MIM fulfills my needs well. FV3	
	MIM is well provided. FV4 (delete)	
Emotional value	I feel good when I use MIM. EV1	
	Using MIM is enjoyable. EV2	
	MIM gives me pleasure. EV3	
	Using MIM is interesting. EV4	
Social value	MIM helps me to feel acceptable. SV1	
	MIM makes a good impression other people. SV2	
	Using MIM gives me a sense of belonging to others users. SV3	
	MIM improves the way I am perceived. SV4	
Monetary value	MIM is reasonable priced. MV1	
	The price of using MIM is economic. MV2	
	MIM offers the value for money. MV3	
	MIM is good for the current price level. MV4 (delete)	
Perceived service quality	MIM service provider always delivers excellent overall service. SQ1	<a href="#">Shin and Kim (2008)</a>
	The offerings of the service provider are of high quality. SQ2	
	The MIM service provider delivers superior service in every way. SQ3	
Trust	Based on my experience, I know this MIM service provider is honest. TR1	<a href="#">Gefen et al. (2003)</a>
	Based on my experience, I know this MIM service provider cares about customers. TR2	
	Based on my experience, I know this mobile instant message service provider is not opportunistic. TR3	
Switching cost	Switching to other MIM service would cause too many problems. SC1	<a href="#">Gefen (2002)</a>
	Switching to other MIM service would be too expensive. SC2	
	Switching to other MIM service would require too much learning. SC3	
Customer satisfaction	My choice to this MIM service is a wise one. CS1	<a href="#">Croinnet et al. (2000)</a>
	I think I did the right thing when I subscribed to this MIM service. CS2	
	Overall, my feeling to this MIM service is satisfactory. CS3	
Customer loyalty	I will continue to use this MIM if any. CL1	<a href="#">Lin and Wang (2006)</a>
	I will recommend others to use this MIM. CL2	
	Even if close friends recommended another MIM service, my preference for this MIM would not change. CL3	

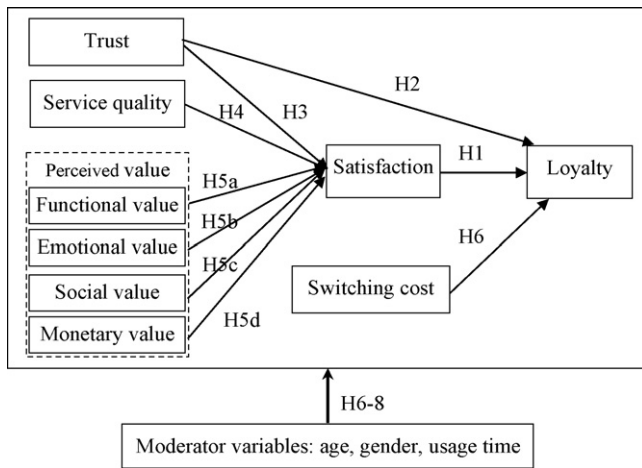


Fig. 1. A conceptual model of customer satisfaction and loyalty of MIM.

### 3.2. Data collection procedure

In the summer of 2008, we put the information about our research objective on the Campus BBS (Bulletin Board System) to invite respondents. We sent the final questionnaires to many ID email addresses. In the email, we declared that if the respondents were willing to finish this questionnaire, they would have a chance to win in lotteries. After 2 weeks, we collected 350 responses. We also collected data beside several mobile network operators' operating offices and asked people who came to conduct mobile phone based businesses to respond. The respondents who had not used MIM were not included in our survey. One week later, a total of 622 responses were gathered. After eliminating insincere and incom-

plete responses through data filtering, we got a total number of 541 usable responses.

The descriptive statistics of the sample are listed in Table 2. Of the 541 participants, 47.3% are males, 52.7% are females, and 256 are below 24 years old. Most of them are young people. Nearly 80% of the respondents have a bachelor's degree or higher education level. Among the 541 respondents, about half of them have used MIM for less than 1 year.

To investigate the moderating effects, we conducted sample segmentation based on gender, age, and usage time. We segmented the sample into two groups based on age below or not below 24 years old. Ha et al. (2007) defined old users as older than 25 years. Most of the MIM users are young people. In China, undergraduates and graduate students are often younger than 24 years. We can view them as young customers. People not below 24 often have jobs and have social experiences. Thus, we see them as old customers whose perception of MIM may be different from those who are younger. Then, we divided the sample into new customers and long-time usage customers. Respondents with less than 1 year of use are new customers.

We conducted independent-sample *t*-tests to compare the means of the same construct between respondents from campus BBS and volunteers from MNO's operating offices. The results indicate no significant differences between the groups; thus we can pool data from these two groups together.

## 4. Results

A structure equation model approach is used in this study. We conducted a confirmatory factor analysis to test the validity of the constructs, including item loading, construct reliability, and average variance extracted (AVE), as shown in Table 3. All the item loadings are greater than 0.5 on their expected factor and less

Table 3  
Item loadings and validities.

Constructs	Item	Standard loadings	AVE	CR	Cranbach alpha
Trust	TR1	0.86	0.746	0.898	0.804
	TR2	0.89			
	TR3	0.84			
Perceived service quality	SQ1	0.75	0.636	0.839	0.809
	SQ2	0.85			
	SQ3	0.79			
Functional value	FV1	0.75	0.563	0.794	0.802
	FV2	0.73			
	FV3	0.77			
Emotional value	EV1	0.84	0.685	0.897	0.822
	EV2	0.83			
	EV3	0.81			
	EV4	0.83			
Monetary value	MV1	0.72	0.578	0.805	0.867
	MV2	0.79			
	MV3	0.77			
Social value	SV1	0.78	0.645	0.879	0.837
	SV2	0.78			
	SV3	0.82			
	SV4	0.83			
Switching cost	SC1	0.77	0.648	0.846	0.842
	SC2	0.76			
	SC3	0.88			
Customer satisfaction	CS1	0.80	0.589	0.811	0.794
	CS2	0.72			
	CS3	0.78			
Customer loyalty	CL1	0.82	0.662	0.854	0.779
	CL2	0.78			
	CL3	0.84			

**Table 4**

Correlation coefficient matrix and roots of the AVEs (shown as diagonal elements).

	TRU	PSQ	FV	EV	MV	SV	SC	CS	CL
TRU	<b>0.863</b>								
PSQ	0.36	<b>0.797</b>							
FV	0.42	0.09	<b>0.750</b>						
EV	0.45	0.04	0.13	<b>0.828</b>					
MV	0.07	0.04	0.10	0.12	<b>0.760</b>				
SV	0.33	0.29	0.39	0.47	0.04	<b>0.803</b>			
SC	0.24	0.20	0.29	0.28	0.07	0.42	<b>0.805</b>		
CS	0.35	0.21	0.48	0.61	0.21	0.37	0.20	<b>0.767</b>	
CL	0.31	0.12	0.21	0.09	0.26	0.23	0.41	0.63	<b>0.813</b>

**Table 5**

Summary of fit indices.

Fit indices	$\chi^2/df$	RMSEA	GFI	AGFI	CFI	NFI	NNFI	IFI
Recommended value	<3	<0.08	>0.90	>0.80	>0.90	>0.90	>0.9	>0.90
Value in this study	2.63	0.055	0.87	0.85	0.97	0.95	0.97	0.97

than 0.4 on other factors; thus the construct validity is acceptable (Cheung, Chang, & Lai, 2000). AVE is used to measure the variance to the measurement error captured by the indicators. All the values of AVEs are greater than the cutoff value 0.5. Additionally, we measured the reliability of each construct using the composite reliability (CR) and Cronbach alpha. The results show that all constructs have higher scores than that of the acceptable level of CR and alpha 0.7. Every scale item is statistically significant at the significance level of 0.05. Thus, our data have good convergent validity.

We also calculated the square root of each factor's AVE and its correlation coefficients with other factors, and summarize the results in Table 4. The square root of each factor's AVE is larger than its corresponding correlation coefficients with other factors, showing good discriminant validity.

For the hypothetical SEM model, we used Lisrel 8.72 to test whether the empirical data conformed to the proposed model. The model includes 29 items describing 9 latent constructs: trust, perceived service quality, functional value, emotional value, monetary value, social value, switching cost, customer satisfaction, and customer loyalty. We examined the model fit of our research model, as shown in Table 5. The common criteria in the SEM were previously suggested by Hair et al. (1998). Although the value of GFI (0.87) is slightly less than the recommended value (0.90), all other fit indices are acceptable. Thus the results indicate adequate model fit between our research model and the empirical data.

To test the significance of each hypothesis path in the research model, Lisrel reports raw and standardized estimates for all specified paths, as well as standard errors and test statistics for each path. The result of the structure equation model is shown in Fig. 2. The effects of perceived social value and monetary value on satisfaction are not supported; however, other paths are significant at

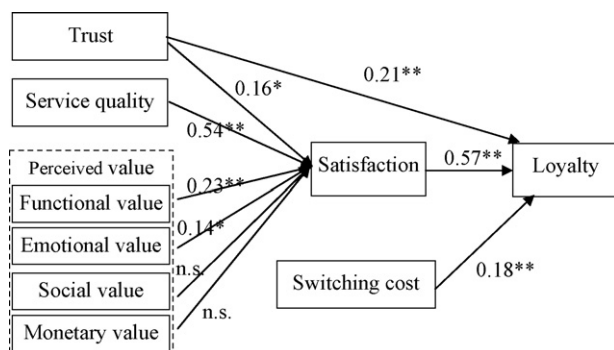
the 0.05 level. Variances in customer satisfaction and loyalty are 54% and 64%, respectively.

Among the factors shown in Table 6, trust, perceived service quality, functional value, and emotional value have positive effects on customer satisfaction; and trust, customer satisfaction, and switching cost significantly affect customer loyalty.

Next we tested the moderator effects of age, gender, and usage time. We categorized the sample into two groups to compare the coefficients of each member of a pair, respectively. Calculating *T* value for cross-multiply of moderator and dependent variable, we can find the significance of the moderating effects (Chin, 1988; Chin, Marcolin, & Newsted, 2003). The results of path coefficients comparisons are shown in Table 7.

The path coefficients from trust and emotional value to customer satisfaction for females are significantly larger than those for males (H7c and H7f). However, gender has no significant moderating effect on other paths. Age has a negative moderating effect on the relationship between emotional value and customer satisfaction (H8f). The influence of trust on customer satisfaction differs significantly between young users and old users (H8c). That is, the older the users, the more influence of trust on their perceived satisfaction of the MIM. Usage time has positive moderating effects on the relationship between service quality and customer loyalty (H9i). In other words, the longer usage time of MIM, the stronger is the effect of customer satisfaction on loyalty. There are no significant differences between new customers and long-time usage customers.

Some researchers suggested that perceived service quality and customer value also have direct effects on customer loyalty (Lai, Griffin, & Babin, 2009). And we have found that trust positively affect customer loyalty. Thus, we conducted mediation effects of customer satisfaction between trust, perceived service quality,

**Fig. 2.** Results of the structure model analysis.**Table 6**

Results of hypotheses test.

Hypothesis	Path	Coefficients	S.E.	T value	Remarks
H1	CS-CL	0.57**	0.067	11.87	O
H2	TR-CL	0.21**	0.042	6.91	O
H3	TR-CS	0.16*	0.039	2.42	O
H4	SQ-CS	0.54**	0.026	7.37	O
H5a	FV-CS	0.23**	0.078	5.34	O
H5b	EV-CS	0.14*	0.045	2.26	O
H5c	SV-CS	0.09	0.059	1.31	X
H5d	MV-CS	0.03	0.037	0.78	X
H6	SC-CL	0.18**	0.064	3.43	O

O: support; X: not support.

\*  $p < 0.05$ .\*\*  $p < 0.01$ .

**Table 7**  
Results of moderating effects.

Path	H	Gender		T	Remarks	H	Age		T	Remarks	H	Usage time		T	Remarks
		Male	Female				Young	Old				New	Long		
CS-CL	H7a	0.56**	0.52**	0.612	X	H8a	0.57**	0.48**	-1.117	X	H9a	0.61**	0.46**	1.947	X
TR-CL	H7b	0.19**	0.23**	0.879	X	H8b	0.17**	0.25**	1.023	X	H9b	0.29**	0.16*	1.337	X
TR-CS	H7c	0.15*	0.36**	2.542*	O	H8c	0.14*	0.26**	1.982*	O	H9c	0.17**	0.14	0.992	X
SQ-CS	H7d	0.51**	0.55**	-0.549	X	H8d	0.64**	0.50**	1.687	X	H9d	0.55**	0.47*	1.131	X
FV-CS	H7e	0.31**	0.22**	-0.983	X	H8e	0.29**	0.21**	-1.101	X	H9e	0.25**	0.19**	0.894	X
EV-CS	H7f	0.33**	0.11	3.433**	O	H8f	0.28**	0.13	2.013*	O	H9f	0.30**	0.10	1.216	X
SV-CS	H7g	0.07	0.11	-0.877	X	H8g	0.08	0.10	0.344	X	H9g	0.10	0.05	0.635	X
MV-CS	H7h	0.01	0.08	0.921	X	H8h	0.10	0.02	1.012	X	H9h	0.09	0.01	0.532	X
SC-CL	H7i	0.16*	0.25**	1.332	X	H8i	0.25**	0.17**	1.107	X	H9i	0.13	0.30**	3.569**	O

O: support; X: not support; H: hypothesis.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

functional value, and emotional and customer loyalty based on the three-step method proposed by Baron and Kenney (1986). As Table 8 shows, all of the links between independent variable and moderator are significant so are the links between independent variable and dependent variable. Thus, the first and second conditions for mediating effect are satisfied. Further, the links between customer loyalty and both trust and customer satisfaction are significant, and the link of customer loyalty and trust is smaller than that of customer satisfaction and trust, as such, customer satisfaction partially mediates the effect of trust on customer loyalty. The same is for perceived service quality. In contrast, the coefficients of functional value and emotional value in the regression equation that contains two independent variables are not significant, which means that customer satisfaction fully mediates the effects of functional value and emotional value on customer loyalty.

## 5. Discussion

This study attempts to investigate the factors affecting customer satisfaction and loyalty of MIM in China. We studied the effects of trust, perceived service quality, and customer value on customer satisfaction, and also the effects of trust, customer satisfaction, and switching cost on customer loyalty. In addition, we focused on identifying moderating effects of gender and age. We believe that this research allows us to gain insights into China's MIM service marketing strategies. There are several findings as follows.

First, as we hypothesized, trust, service quality, and perceived value significantly affect customer satisfaction of MIM. Specifically, perceived service quality is found to have the greatest effect on customer satisfaction. This implies that Chinese MIM customer satisfaction will be most significantly influenced by the high service quality of providers. When users find an MIM service quality to be high, they will form a high degree of customer satisfaction toward the service. Trust and perceived value are also important determinants of customer satisfaction.

Second, trust, satisfaction, and switching cost positively influence customer loyalty of MIM. On the magnitude of significance, customer satisfaction has the greatest effect, and the path coefficient is 0.57. Trust has less effect than customer satisfaction for building customer loyalty, which confirms Ribbink, Van Riel Allard, Liljander, and Streukens' (2004) statement. The effects of switching cost (0.18) are smaller than the two above. The results mean that satisfaction is much related to customer loyalty; thus, increasing the degree of customer satisfaction through improved service quality and customer value is an effective tool to maintain customer loyalty. Furthermore, the effect of trust on customer loyalty is supported in our study. This result corroborates that of other studies (Lin et al., 2006). Switching cost has a significant effect on customer loyalty, which is in accord with prior customer loyalty antecedent research (Gefen, 2002). Our results imply that the higher the switching cost, the greater likelihood it will drive consumers to stay with their current provider, and encourage others to use the provider's service.

Third, among the four dimensions of perceived customer value, our findings show that functional value and emotional value have significant effect on customer satisfaction, while social value and monetary value are found to have no significant effects. It means that the two variables, functional value and emotional value, are important customer value factors for customer satisfaction. That's to say, when users' functional value and emotional value are satisfied, they will experience more satisfaction toward the services. MIM users perceive functional value more highly than other values mainly because MIM can be used anytime and anywhere, providing more convenience to users compared to IM. Social value and monetary value have direct effects on customer satisfaction, but



**Table 8**  
Results of mediating effects.

IV	M	DV	IV–DV	IV–M	(IV + M)–DV	
					IV	M
Trust	Satisfaction	Loyalty	0.209*	0.181**	0.098*	0.630**
Service quality	Satisfaction	Loyalty	0.457**	0.536**	0.131**	0.623**
Functional value	Satisfaction	Loyalty	0.234**	0.221**	–0.016	0.642**
Emotional value	Satisfaction	Loyalty	0.187**	0.239**	–0.005	0.647**

IV: independent variable; M: mediator; DV: dependent variable.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

the effects are not significant. The probable reason is that the vast majority of MIM users have desktop IM accounts, and the groups they often communicate with are familiar to some extent; thus, the perceptions of social value have no significant differences. On the other hand, the price of mobile instant message is very low. For example, using Fetion only costs network traffic, and many users perceive this price as acceptable. In this case, monetary value cannot significantly predict customer satisfaction.

Fourth, our results show that gender and age have significant moderating effects on the relationship between trust and customer satisfaction and on the relationship between emotional value and customer satisfaction. Trust is a more important factor for females in obtaining satisfaction with MIM. Earlier studies found that women have less trust in Internet shopping than men (Rodgers & Harris, 2003), and trust plays a more important role in a mobile environment than in the Internet (Cho, Kwon, & Lee, 2007). Female MIM users may have more psychological barriers to building customer trust than males have. Therefore, trust has more impact on building customer satisfaction for women than for men. User enjoyment and interesting experience are stronger drivers of satisfaction for males. This finding does not fit the claim that females are more influenced by emotion than men are (Rodgers & Harris, 2003). We might explain this effect by the fact that men are more engaged in studying information technology, and they can be more easily satisfied by finding and forwarding interesting jokes or pictures to others. In contrast, women may just use MIM for communication purposes. As customer satisfaction has mediating effects on the relationship between trust and customer and satisfaction, thus, gender will indirectly affect the relationship between trust and customer loyalty. The moderating effects of gender on other links are not supported, which implies that female and male's perceptions are not significantly different for other links in our study. Age also significantly moderates the effects of trust and emotional value on customer satisfaction. That is, the effect of trust on customer satisfaction is more significant for older users than younger ones. The probable reason lies in the fact that the younger generations are more willing to trust the available information or services (Rouibah, Khalil, & Hassanien, 2008). And they often indulge themselves in MIM to obtain fun experiences, while older people usually use MIM primarily to conduct business. Thus, the users' perceptions are different. Except H8c and H8f, other moderating hypotheses of age are insignificant. The main reason is that the majority of our sample's ages is below 40, and is somewhat not old enough. Thus, their perceptions of the influences of trust, satisfaction, and perceived switching cost on customer loyalty, and the impacts of service quality, functional value on customer satisfaction are not significantly different. The moderating effects testing results also show that the relationship between switching cost and customer loyalty is stronger for longer-time usage customers than new customers of MIM. It seems reasonable that the longer customers use MIM, the more they are familiar with the current service interface and function, as well as with their buddy list. Thus, the cost to learning a new service and to

fitting a new buddy interface will be higher. Other moderating effects of usage time are not significant. The probable reason is that when customers feel satisfied with MIM and building loyalty with it, they will continually use MIM. Thus, their usage time will not significantly change the relationship between trust, service quality, customer satisfaction. So do customer loyalty and its determinants.

Fifth, the mediating testing results show that customer satisfaction has significant mediation effects for relationships from trust, perceived quality, functional value and emotional value on loyalty. The former two are partially mediated and the latter two are fully mediated. Thus, trust and perceived service quality have both direct and indirect effects on customer loyalty, while the effects of functional value and emotional value on customer loyalty are indirect. Our results demonstrate that satisfaction has great mediating power between its determinants and customer loyalty, which is probably because that customers who feels highly satisfied with successful usage experiences may overemphasize the impact of the factors that are closely related to their satisfaction on loyalty (Lai et al., 2009). This result is consistent with previous studies' claim that customer satisfaction can significantly mediate the effects of other factors on customer loyalty (Caruana, 2002; Heung & Ngai, 2008).

## 6. Implications and limitations

### 6.1. Implications for research

Results of this study offer several implications for marketing researchers and mobile commerce researchers.

For marketing researchers, it empirically tested the significant effect of satisfaction on loyalty in MIM context, which enriches the research on the relationship between satisfaction and loyalty. We also studied the factors' impact on customer satisfaction and loyalty. To test the moderating effect, segmentation of the sample is used in our study. The results of this work demonstrate that age, gender, and usage time of MIM will modify the effect of several independent variables on the their related dependent variables, which will shed light on future research on marketing strategy of MIM.

For mobile commerce researchers, this study examines the factors' influence on customer satisfaction and loyalty of mobile instant messages, which is the first study conducted in China's mobile instant message context. The results of this study highlight the significant effect of trust, service quality, and customer values on customer satisfaction, which is overlooked in the previous studies in mobile instant messages. Furthermore, we demonstrate that younger male customers' emotional value has more effect on the formation of customer satisfaction. Thus mobile commerce researchers can realize that age and gender can modify some relationships. Trust is always an important determinant of customer behavior in electronic commerce and other mobile service research as mentioned earlier. Our results demonstrate trust's significant effect on both satisfaction and loyalty in the MIM context. Switching cost is found have more impact on the development of customer

loyalty for customers who have used MIM longer, which provides a richer understanding of the prediction of a customer's continual usage behavior of MIM.

### 6.2. Implications for practice

Our work has important implications for practice as well. One of the challenging tasks that MIM managers face is how to enhance customer satisfaction and loyalty. As suggested by our model, customer loyalty will develop if the formation of trust, customer satisfaction, and switching cost is well managed. Therefore, MIM service marketing strategies may be more fruitful through focusing on these psychological processes. Customer satisfaction is the greatest impact among these three factors. Thus, it is important for an MIM service provider to be a satisfying brand to increase customer loyalty. MIM service providers must be concerned about the quality of their service and highlight customer value. Particularly, they satisfy customers' value through providing good and reliable functions, giving a more pleasant interface.

Trust appears to be important for both customer satisfaction and loyalty formation, which implies that, in order to attract more current customers to repurchase MIM, the service providers must try to establish an impression that they are honest to their customers and care about customers' needs, which can then enhance the degree of customers' perceptions of trust. The research results indicate that perceived switching cost significantly affects customer loyalty. Accordingly, increasing switching cost is an important marketing tool to maintain customers. As mentioned earlier, switching cost is incurred by the customer's switching behavior involving three types of costs. Thus, to effectively increase switching costs, service providers should focus on the various types of costs that consumers perceive. Moreover, they can decrease the costs of staying with the current provider, increase the quality of the service to enhance the customers' bonds with them, and improve the customers' value of their service.

Younger and male people are more influenced by trust and emotional value, and switching cost has a greater influence on customers with long-time usage. Therefore, in order to meet the psychological demands of different types of customers, MIM service providers should exercise caution in improving pleasure and trust for younger women, and in enhancing the switching barrier for more experienced people.

### 6.3. Limitations

Even though the rigorous validation procedure allows us to develop a research model for exploring customer satisfaction and loyalty with MIM, this work has some limitations. First, we developed a research model to examine the factors influencing customer satisfaction and loyalty of MIM. It was tested in China, but since there may be differences between China and other countries, researchers should use some caution when citing the results.

Second, the mediating effects testing result show that customer satisfaction partially mediate the effect of perceived service quality on customer loyalty. But the structure equation model does not test the direct link between perceived service quality and customer loyalty. Since perceived service quality always related to customer satisfaction as mentioned earlier, and the coefficient of customer satisfaction and loyalty is as high as 0.57, as such we can believe that the effect of perceived service quality on customer loyalty is through the effect on customer satisfaction. Finally, our study tests the impact of several factors on customer satisfaction and loyalty, and the variance explained by the model is 54%. Thus, there are other important factors to consider. Accordingly, market practitioners should pay attention to factors other than those mentioned in our study.

## 7. Conclusions

This work studied the determinants of customer satisfaction and loyalty of MIM in China. Our research has the following contributions. First, we explore customers' perceptions of MIM in China, which is seldom concerned by other researchers yet. Thus, our research fills the gap in understanding this application, which is undergoing a process of rapid development. Second, we develop and validate a more comprehensive customer satisfaction and loyalty model in China's MIM context than previous studies (Chang & Chen, 2008; Kassim & Abdullah, 2008; Lin et al., 2006). It sheds some light on the nomological relationships among perceived value, perceived service quality, trust, customer satisfaction, switching cost, and customer loyalty. Third, besides testing the structure equation modeling of the proposed model, we examine the moderating effects of gender, age, and usage time on the relationship between each pair of links, which provides useful management insights for better segmentation marketing strategies to improve customer satisfaction and to strengthen customer loyalty of MIM in China.

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## References

- Albert, C. (2002). Service loyalty the effects of service quality and the mediating role of customer satisfaction. *European Journal of Marketing*, 36(7–8), 811–828.
- Anderson, E. W., Fornell, C., & Lehmann, D. R. (1994). Customer satisfaction, market share, and profitability: Findings from Sweden. *Journal of Marketing*, 58(3), 53–66.
- Au, N., Ngai, E. W. T., & Cheng, T. C. E. (2008). Extending the understanding of end user information systems satisfaction formation: An equitable needs fulfillment model approach. *MIS Quarterly*, 32(1), 43–66.
- Aydin, S., Özer, G., & Arasil, Ö. (2005). Customer loyalty and the effect of switching costs as a moderator variable: A case in the Turkish mobile phone market. *Marketing Intelligence & Planning*, 23(1), 89–103.
- Babakus, E., Bientstock, C., & Scotter, J. (2004). Linking perceived quality and customer satisfaction to store traffic and revenue growth. *Decision Sciences*, 35(4), 713–737.
- Barnes, S. J. (2002). The mobile commerce value chain: Analysis and future developments. *International Journal of Information Management*, 22(2), 91–108.
- Baron, R. M., & Kenney, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182.
- Bharati, P., & Berg, D. (2005). Service quality from the other side: Information systems management at Duquesne light. *International Journal of Information Management*, 25(4), 367–380.
- Brady, M., & Robertson, C. (2001). Searching for consensus on the antecedent role of service quality and satisfaction: An exploratory cross-national study. *Journal of Business Research*, 51(1), 53–60.
- Burnham, T. A., Frels, J. K., & Mahajan, V. (2003). Consumer switching costs: A typology, antecedents, and consequences. *Journal of the Academy of Marketing Science*, 31(2), 109–126.
- Caruana, A. (2002). Service loyalty: The effects of service quality and the mediating role of customer satisfaction. *European Journal of Marketing*, 37(7–8), 811–828.
- Chang, H. H., & Chen, S. W. (2008). The impact of customer interface quality, satisfaction and switching costs on e-loyalty: Internet experience as a moderator. *Computers in Human Behavior*, 24(6), 2927–2944.
- Cheung, W., Chang, M., & Lai, V. (2000). Prediction of Internet and world wide web usage at work: A test of an extended triandis model. *Decision Support Systems*, 30(1), 83–100.
- Chin, W. W. (1988). The partial least squares approach for structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295–336). Lawrence Erlbaum Associates.
- Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information Systems Research*, 14(2), 189–217.
- Chiou, J.-S. (2004). The antecedents of consumers' loyalty toward Internet service providers. *Information & Management*, 41(6), 685–695.

- Chiou, J.-S., & Droge, C. (2006). Service quality, trust, specific asset investment, and expertise: Direct and indirect effects in a satisfaction-loyalty framework. *Journal of the Academy of Marketing Science*, 34(4), 613–627.
- Cho, D.-Y., Kwon, H. J., & Lee, H.-Y. (2007). Analysis of trust in Internet and mobile commerce adoption. In *Proceedings of the 40th Hawaii international conference on system sciences*. Hawaii: IEEE.
- Choi, J., Seol, H., Lee, S., Cho, H., & Park, Y. (2008). Customer satisfaction factors of mobile commerce in Korea. *Internet Research*, 18(3), 313–335.
- Chong, E., Kennedy, R., Riquie, C., & Rungie, C. (1997). The difference between satisfaction and service quality. New and evolving paradigm: The emerging future of marketing. In *The American Marketing Association's 1997 special conference*.
- Clarke, K. (2001). What price on loyalty when a brand switch is just a click away? *Qualitative Market Research: An International Journal*, 4(3), 160–168.
- CNNIC. (2009). 23rd statistical survey report on the Internet development in China. From <http://www.cnnic.cn/uploadfiles/pdf/2009/1/13/92458.pdf>.
- Cronin, J., Brady, M., & Hult, G. (2000). Assessing the effects of quality, value, and customer satisfaction on behavior intentions in service environments. *Journal of Retailing*, 76(2), 193–218.
- Cronin, J., & Taylor, S. A. (1992). Measuring service quality: A reexamination and extension. *Journal of Marketing Research*, 56(July), 55–68.
- Dabholkar, P. A., & Bagozzi, R. P. (2002). An attitudinal model of technology-based self-service: Moderating effects of consumer traits and situational factors. *Journal of the Academy of Marketing Science*, 30(3), 184–201.
- Dabholkar, P., Shepherd, C., & Thorpe, D. (2000). A comprehensive framework for service quality: An investigation of critical conceptual and measurement issues through a longitudinal study. *Journal of Retailing*, 76(2), 139–173.
- Dick, A. S., & Basu, K. (1994). Customer loyalty: Toward an integrated conceptual framework. *Journal of the Academy of Marketing Science*, 22, 99–113.
- Donio, J., Massari, P., & Passiante, G. (2006). Customer satisfaction and loyalty in a digital environment: An empirical test. *Journal of Consumer Marketing*, 23(7), 445–457.
- Dube, L., & Maute, M. (1996). The antecedents of brand switching, brand loyalty and verbal responses to service failure. *Advances in Services Marketing and Management*, 5, 127–151.
- Eggert, A., & Ulaga, W. (2002). Customer perceived value: A substitute for satisfaction in business markets. *Journal of Business & Industrial Marketing*, 17(2–3), 107–118.
- Fornell, C. (1992). A national customer satisfaction barometer: The Swedish experience. *Journal of Marketing*, 56(1), 6–12.
- Fournier, S., & Mick, D. G. (1999). Rediscovering satisfaction. *Journal of Marketing*, 63, 5–23.
- Gefen, D. (2002). Customer loyalty in e-commerce. *Journal of the Association for Information Systems*, 3(1), 27–51.
- Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and tam in online shopping: An integrated model. *MIS Quarterly*, 27(1), 51–90.
- Gerpott, T. J., Rams, W., & Schindler, A. (2001). Customer retention, loyalty, and satisfaction in the German mobile cellular telecommunications market. *Telecommunications Policy*, 25(4), 249–269.
- Gibbs, C. (2008). SMS vs. MIM. *RCR Wireless News*, 27(13), 1–8.
- Ha, I., Yoon, Y., & Choi, M. (2007). Determinants of adoption of mobile games under mobile broadband wireless access environment. *Information & Management*, 44(3), 276–286.
- Heung, V. C. S., & Ngai, E. W. T. (2008). The mediating effects of perceived value and customer satisfaction on customer loyalty in the Chinese restaurant setting. *Journal of Quality Assurance in Hospitality & Tourism*, 9(2), 85–107.
- Hong, S.-J., & Tam, K. Y. (2006). Understanding the adoption of multipurpose information appliances: The case of mobile data services. *Information Systems Research*, 17(2), 162–179.
- iResearch. (2008a). *China IM research report in 2007–2008*. From [http://www.iresearch.com.cn/Consulting/instant\\_messenger/Free.asp?classid=8id=1175](http://www.iresearch.com.cn/Consulting/instant_messenger/Free.asp?classid=8id=1175).
- iResearch. (2008b). *China mobile netizen Internet phone acts research report*. From <http://down.iresearch.cn/Reports/Free/1184.html>.
- Johnson, M. D., & Fornell, C. (1991). A framework for comparing customer satisfaction across individuals and product categories. *Journal of Economic Psychology*, 12(2), 267–286.
- Jones, M. A., & Suh, J. (2000). Transaction-specific satisfaction and overall satisfaction: An empirical analysis. *Journal of Services Marketing*, 14(2), 147–159.
- Kassim, N. M., & Abdullah, N. A. (2008). Customer loyalty in e-commerce settings: An empirical study. *Electronic Markets*, 18(3), 275–290.
- Kemp, A. H. (2005). Getting what you paid for: Quality of service and wireless connection to the Internet. *International Journal of Information Management*, 25(2), 107–115.
- Kim, D. J., Ferrin, D. L., & Rao, H. R. (2009). Trust and satisfaction, two stepping stones for successful e-commerce relationships: A longitudinal exploration. *Information Systems Research*, 20(2), 237–257.
- Kim, M., Klinger, D., & Vale, B. (2003). Estimating switching costs: The case of banking. *Journal of Financial Intermediation*, 12(1), 25–56.
- Kim, M. K., Park, M. C., & Jeong, D. H. (2004). The effects of customer satisfaction and switching barrier on customer loyalty in Korean mobile telecommunication services. *Telecommunication Policy*, 28(2), 145–159.
- Klemperer, P. (1987). Markets with consumer switching costs. *The Quarterly Journal of Economics*, 102, 376–394.
- Krishnamurthi, L., & Raj, S. P. (1991). An empirical analysis of the relationship between brand loyalty and consumer price elasticity. *Marketing Science*, 10(2), 172–183.
- Lai, T. L. (2004). Service quality and perceived value's impact on satisfaction, intention and usage of short message service (SMS). *Information Systems Frontiers*, 6(4), 353–368.
- Lai, F., Griffin, M., & Babin, B. J. (2009). How quality, value, image, and satisfaction create loyalty at a Chinese telecom. *Journal of Business Research*, 62(10), 980–986.
- Lam, S. Y., Shankar, V., Erramilli, M. K., & Murthy, B. (2004). Customer value, satisfaction, loyalty, and switching costs: An illustration from a business-to-business service context. *Journal of Marketing Science*, 32(3), 293–311.
- Lee, T. (2005). The impact of perceptions of interactivity on customer trust and transactions in mobile commerce. *Journal of Electronic Commerce Research*, 6(3), 165–180.
- Lee, J., Lee, J., & Feick, L. (2001). The impact of switching costs on the customer satisfaction-loyalty link: Mobile phone service in France. *Journal of Service Marketing*, 15(1), 35–48.
- Lee, M. K. O., & Turban, E. (2001). A trust model for consumer Internet shopping. *International Journal of Electronic Commerce*, 6(1), 75–91.
- Liao, C., Palvia, P., & Chen, J.-L. (2009). Information technology adoption behavior life cycle: Toward a technology continuance theory (TCT). *International Journal of Information Management*, 29(4), 309–320.
- Lim, H., Widdows, R., & Park, J. (2006). M-loyalty: Winning strategies for mobile carriers. *Journal of Consumer Marketing*, 23(4), 208–218.
- Lin, H.-H., & Wang, Y.-S. (2006). An examination of the determinants of customer loyalty in mobile commerce contexts. *Information & Management*, 43(3), 271–282.
- Lu, Y., Deng, Z., & Wang, B. (2009). Exploring factors affecting Chinese consumers' usage of short message service for personal communication. *Information Systems Journal*, doi:10.1111/j.1365-2575.2008.00312.x.
- Lu, Y., Dong, Y., & Wang, B. (2007). The mobile business value chain in China: A case study. *International Journal of Electronic Business*, 5(5), 460–477.
- Luarn, P., & Lin, H.-H. (2003). A customer loyalty model for e-service context. *Journal of Electronic Commerce Research*, 4(4), 156–167.
- Mayer, R. C., & Davis, J. H. (1999). The effect of the performance appraisal system on trust for management: A field quasi-experiment. *Journal of Applied Psychology*, 84(1), 123–136.
- McKnight, D. H., & Chervany, N. L. (2002). What trust means in e-commerce customer relationships: An interdisciplinary conceptual typology. *International Journal of electronic commerce*, 6(2), 35–59.
- MIIT. (2008). *China telecommunications industry statistics report* (September of 2008). Retrieved November 12, 2008, from <http://www.miit.gov.cn/n11293472/n11295057/n11298508/11711487.html>.
- Mittal, V., Ross, W., & Baldasare, P. (1998). The asymmetric impact of negative and positive attribute-level performance on overall satisfaction and repurchase intentions. *Journal of Marketing*, 61(1), 33–47.
- Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58(3), 20–38.
- Nasir, S. (2005). The development, change, and transformation of management information systems (MIS): A content analysis of articles published in business and marketing journals. *International Journal of Information Management*, 25(5), 442–457.
- Nysveen, H., Pedersen, P. E., & Thorbjørnsen, H. (2005). Explaining intention to use mobile chat services: Moderating effects of gender. *Journal of Consumer Marketing*, 22(5), 247–256.
- Oliver, R. L. (1981). Measurement and evaluation of satisfaction processes in retail settings. *Journal of Retailing*, 57(3), 25–48.
- Oliver, R. L. (1999). Whence consumer loyalty? *Journal of Marketing*, 63(4), 33–44.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). Servqual: A multiple item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12–40.
- Reichheld, F. F., & Scheffer, P. (2000). E-loyalty: Your secret weapon on the web. *Harvard Business Review*, 78(4), 105–113.
- Ribbink, D., Van Riel Allard, C. R., Liljander, V., & Streukens, S. (2004). Comfort your online customer: Quality, trust, and loyalty on the Internet. *Managing Service Quality*, 14(6), 446–456.
- Rodgers, S., & Harris, M. A. (2003). Gender and e-commerce: An exploratory study. *Journal of Advertising Research*, 43(3), 322–329.
- Rouibah, K., Khalil, O. E. M., & Hassanien, A. E. (2008). *Emerging markets and e-commerce in developing economies*. Idea Group Inc.
- Sanchez-Franco, M. J., Ramos, A. F. V., & Velicia, F. A. M. (2009). The moderating effect of gender on relationship quality and loyalty toward Internet service providers. *Information & Management*, 46(3), 196–202.
- Semejin, J., Van Riel Allard, C. R., Van Birgelen, M. J. H., & Streukens, S. (2005). E-services and offline fulfillment: How e-loyalty is created. *Managing Service Quality*, 15(2), 182–195.
- Seo, D., Ranganathan, C., & Babad, Y. (2008). Two-level model of customer retention in the US mobile telecommunications service market. *Telecommunications Policy*, 32(3–4), 182–196.
- Sheth, J. N., Newman, B. I., & Gross, B. I. (1991). *Consumption values and market choice*. Cincinnati, OH: South Western Publishing.
- Shin, D.-H., & Kim, W.-Y. (2008). Forecasting customer switching intention in mobile service: An exploratory study of predictive factors in mobile number portability. *Technological Forecasting & Social Change*, 75(6), 854–874.
- Siau, K., & Shen, Z. (2003). Building customer trust in mobile commerce. *Communications of the ACM*, 46(4), 91–95.



- Sivadas, E., & Baker-Prewitt, J. L. (2000). An examination of the relationship between service quality, customer satisfaction, and store loyalty. *International Journal of Retail & Distribution Management*, 28(2), 73–82.
- Soteriou, A., & Chase, R. (1998). Linking the customer contact model to service quality. *Journal of Operations Management*, 16(4), 495–508.
- Sweeny, J. C., & Soutar, G. N. (2001). Consumers perceived value: The development of a multiple item scale. *Journal of Retailing*, 77(2), 203–220.
- TNS Global. (2008). *Instant messaging via mobile set to challenge the status quo of non-voice communication*. Retrieved January 30, 2009, from <http://www.tnsglobal.com/news/news-13B3916A7F4A40E694C47912EC09EB8A.aspx>.
- Tsoukatos, E., & Rand, G. K. (2006). Path analysis of perceived service quality, satisfaction and loyalty in Greek insurance. *Managing Service Quality*, 16(5), 501–519.
- Turel, O., & Serenko, A. (2006). Satisfaction with mobile services in Canada: An empirical investigation. *Telecommunications Policy*, 30(5–6), 314–331.
- Venkatesh, V., Brown, S. A., Maruping, L. M., & Bala, H. (2008). Predicting different conceptualizations of system use: The competing roles of behavioral intention, facilitating conditions, and behavioral expectation. *MIS Quarterly*, 32(3), 483–502.
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field study. *Management Science*, 45(2), 186–204.
- Walsh, G., Dinnie, K., & Wiedmann, K.-P. (2006). How do corporate reputation and customer satisfaction impact customer defection? A study of private energy customers in Germany. *Journal of Services Marketing*, 20(6), 412–420.
- Wang, Y.-S., & Liao, Y.-W. (2007). The conceptualization and measurement of m-commerce user satisfaction. *Computers in Human Behavior*, 23(1), 381–398.
- Wang, Y.-S., Lin, H.-H., & Luarn, P. (2006). Predicting consumer intention to use mobile service. *Information Systems Journal*, 16(2), 157–179.
- Woodruff, R. A. (1997). Customer value: The next source for competitive advantage. *Journal of the Academy of Marketing Science*, 25(2), 139–153.
- Xu, Y. (2003). Mobile data communications in China. *Communications of the ACM*, 46(12), 81–85.
- Yang, H.-E., Wu, C.-C., & Wang, K.-C. (2009). An empirical analysis of online game service satisfaction and loyalty. *Expert Systems with Applications*, 36(2), 1816–1825.
- Yi, Y. (1991). A critical review of consumer satisfaction. In V. A. Zeithaml (Ed.), *Review of marketing 1990* (pp. 68–123). Chicago, IL: American Marketing Association.
- Yoo, D. K., & Park, J. A. (2007). Perceived service quality: Analyzing relationships among employees, customers, and financial performance. *International Journal of Quality & Reliability Management*, 24(9), 908–926.
- Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing Research*, 60(2), 31–46.

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