The effects of relationship quality and switching barriers on customer loyalty

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ABSTRACT

Because the cost of attracting new customers is much higher than the cost of retaining old customers, keeping customers loyal has a crucial issue for service firms. This research explores how relationship quality and switching barriers influence customer loyalty. Relationship quality consists of two aspects: satisfaction and trust. Antecedents of satisfaction and trust are explored. To test the proposed research model, a survey research methodology was used. Paper survey was distributed to mobile phone users in Taiwan. A total of 311 valid questionnaires were returned. Structural equation modeling was used to test hypotheses. Satisfaction, trust, and switching barriers have positive effects on loyalty. In terms of antecedents, it was found that playfulness and service quality impact satisfaction while service quality and intimacy affect trust. From a managerial perspective, this research suggests that practitioners should not only keep improving service quality, but also provide playfulness to ensure customer satisfaction. Service providers should also build relationship quality and switching barriers to reduce the possibility of defection and enhance customer loyalty.

1. Introduction

Customer loyalty is not a new research question and prior research has studied an array of factors leading to customer loyalty, such as service quality, customer trust, satisfaction, and switching barriers. Retaining current customers is imperative for saturated service industries such as mobile telecommunications. Thus customer loyalty is an extremely important issue for mobile service providers. However, in mobile marketing consumer behavior research, excessive attention has been paid to initial adoption and acceptance while little has to post-purchase constructs, such as satisfaction and loyalty (Varnali & Toker, 2009). In this research, we focus on customer loyalty in mobile communications.

From the perspective of the customer, two aspects of service affect the decision to remain or defect: what makes a customer want to stay, and the tangible and intangible costs of switching to another provider. The first is a pull-in force, while the second is a push-back force. The pull-in force in the model is relationship quality, including satisfaction and trust. Satisfied and happy customers normally have no reason to leave. Customer trust is important in that customer privacy and data exchange security are issues with mobile telecommunication. The push-back force explored is switching barriers. Although prior research has investigated the effects of relationship quality on loyalty (e.g., Lin & Wang, 2006; Rauyruen & Miller, 2007) and that of switching barriers on loyalty (e.g., Hu & Hwang, 2006; Jones, Mothersbaugh, & Beatty, 2000), less often they are studied at the same time. Our approach is to examine their relative effects on customer loyalty.

Two-factor theory of customer satisfaction adapted from Frederick Herzberg’s two-factor theory of motivation into marketing research (Herzberg, 1968, 1987; Naumann & Jackson, 1999) is applied to help identify and theorize antecedent factors of relationship quality. Two categories of factors are identified in the two-factor theory, “hygiene” factors and “satisfiers”. Hygiene factors are those attributes that are expected by the customers as minimum requirements. Lack of hygiene factors will lead to dissatisfaction while having them will not necessary enhance customer satisfaction. Some general hygiene factors are credibility, delivery, and accuracy. On the other hand, satisfiers are those attributes that are little “extra,” such as courtesy and empathy. Service quality is a hygiene factor for both customer satisfaction and trust since it is the bare minimum and expected. Playfulness of services and intimacy with the provider are considered satisfiers that provide customers with something above normal expectations. This study investigates the relative strength of these factors as antecedents of satisfaction and trust, which has been rarely done in prior research. Furthermore, relationship quality research has mostly been done in business-to-business markets and products use contexts (Athanasopoulou, 2009). The current study uses data collected from
mobile communication users to expand our understanding of relationship quality in a consumer service setting.

2. Research framework

2.1. Customer loyalty

Loyalty has been defined as “a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future” (Oliver, 1999, p. 34). Customer loyalty has two meanings: long-term and the short-term loyalty (Jones & Sasser, 1995). Customers with long-term loyalty do not easily switch to other service providers, while customers with short-term loyalty defect more easily when offered a perceived better alternative.

This study focuses on long-term loyalty. It is beneficial for service providers to establish a relationship with customers that customers would like to retain. In Taiwan, the mobile service market is highly saturated and profit margins are stagnant. In this situation, it is better to retain existing customers than recruit new ones (Ahmad & Buttle, 2002; Fornell, 1992).

2.2. Relationship quality

To create long-lasting customer relationships, relationship marketing, include marketing activities that attract, develop, maintain, and enhance customer relationships, has been utilized in a wide variety of industries (Berry, 1995). Customers care about the relationship as a whole and judge the relationship using past experience, expectations, predictions, goals, and desires (Crosby, Evans, & Cowles, 1990). Relationship quality has been positively linked to customer loyalty (Hennig-Thurau & Klee, 1997; Roberts, Varki, & Brodie, 2003). There is no unified definition of relationship quality (Rauyruen & Miller, 2007; Robie, Ryan, Schmieder, Parra, & Smith, 1998). Relationship quality has been conceptualized as a construct consisting of several components. These components include satisfaction (Crosby et al., 1990; Dwyer & Oh, 1987), trust (Dwyer & Oh, 1987; Hennig-Thurau & Klee, 1997), commitment (Hennig-Thurau & Klee, 1997), and overall quality (Hennig-Thurau & Klee, 1997) among others. In the prior studies, satisfaction, trust, and commitment are the most examined aspects of relationship quality (Athanasopoulou, 2009; Bejou, Wray, & Ingram, 1996; Crosby et al., 1990; De Canniere, De Pelsmacker, & Geuens, 2009; Lagace, Dahlstrom, & Gassenheimer, 1991; Rauyruen & Miller, 2007; Wray, Palmer, & Bejou, 1994). In this study, we propose that relationship quality consists of satisfaction and trust while commitment aspect belongs to customer loyalty in our conceptualization.

2.3. Satisfaction

Customer satisfaction is an overall attitude formed based on the experience after customers purchase a product or use a service (Fornell, 1992). It is a reflection of being content with such a product or a service. Satisfaction is the assessment of the experience of interacting with a service provider up to the present time, and is used by customers to predict future experience (Crosby et al., 1990). Satisfaction is a broad feeling, which is affected by service quality, product quality, price, and contextual and personal factors (Zeithaml & Bitner, 2000). Satisfaction is one of the antecedents of customer loyalty. In prior studies, satisfaction positively affects customer loyalty (de Ruyter & Wetzels, 2000; Deng, Lu, Wei, & Zhang, 2009; Dick & Basu, 1994). Although the reason that customers remain loyal may not always be satisfaction (Gerpott, Rams, & Schindler, 2001), it is safe to say that satisfied customers are more loyal. Thus, the following hypothesis is tested.

H1. Satisfaction has a positive effect on loyalty.

2.4. Trust

Trust has been studied extensively in literature. Trust has been defined as one party believing that the other party will fulfill his or her needs. In terms of services, trust is the belief held by a customer that the service provider will provide the service that meets customer needs (Anderson & Weitz, 1989). A more general definition of trust is that a party has confidence in the honesty and reliability of his partner (Morgan & Hunt, 1994). This definition can be applied in different contexts, including exchanges of goods and services. Doney and Cannon (1997) argue that trust consists of two aspects: perceived credibility and benevolence.

There are two levels of trust, according to Rauyruen and Miller (2007). At the first level, the customer trusts one particular sales representative while at the second level, the customer trusts the institution. In mobile data service, customer trust exists more at the second level. Customers trust the service provider as a whole because during the process of signing up for services, changing services, and customer support, it is possible that sales representatives are different. Further, many services can be obtained via the Web and there is often no need to interact with a real person at all. Thus customer trust in a mobile data service provider is less related to one particular sales representative.

Trust is an important mediating factor between customer behavior before and after purchasing a product. It can lead to long-term loyalty and strengthen the relationship between the two parties (Singh & Sirdeshmukh, 2000). As with loyalty, trust is a special psychological state that can only occur in certain relationships. When a customer trusts an organization, he or she has the confidence in service quality and product quality of the organization. Customers who trust an organization are more than likely to be loyal to the company (Carbarino & Johnson, 1999). It is also true in contexts of e-commerce (Liao, Palvia, & Lin, 2006) and e-Government (Lean, Zailani, Ramayah, & Fernando, 2009). It is found that trust leads to customer loyalty in Chinese mobile instant message users (Deng et al., 2009). Reichheld and Schefter (2000) point out that the precondition of customer loyalty is customer trust. In prior research, trust has been conceptualized as antecedent of satisfaction (e.g., Palvia, 2009). In this research we are interested in the direct effects of satisfaction and trust, as components of relationship quality, on customer loyalty. Thus, the following hypothesis is proposed.

H2. Trust has a positive effect on loyalty.

2.5. Switching barriers

Switching barriers are factors that make it difficult for a customer to change service providers (Jones et al., 2000). Even when customers are not satisfied with the current service provider, customers may still remain with the provider because of potential financial and social loss and/or psychological burden (Fornell, 1992). If relationship quality is a pull-in force, switching barriers are a push-back force. Switching barriers are defined as economic and psychological incontinences which consumers have to endure during switching to a new service provider (Kim, Park, & Jeong, 2004). Some of the factors that can increase switching barriers are search costs, transaction costs, learning costs, loss of loyal customer discounts, loss of established habits and relationships, and risk of the unknown (Fornell, 1992; Kuisma, Laukkonen, & Hiltunen, 2007). The positive impact of switching barriers on repurchase intention has been widely confirmed (Aron, 2006; Colgate & Lang, 2001; Hellier, Geursen, Carr, & Rickard, 2003; Jones et al., 2000; Rosenbaum, Massiah, & Jackson, 2006; Tsai, Huang, Jaw, & Chen, 2006). If switching barriers such as the troublesomeness of switching or loss of special treatment are high, customers are likely to
stay with the same service provider to avoid potential costs and losses, even if the customers are not satisfied (Jones et al., 2000; Lee, Lee, & Feick, 2001; Ping, 1993). In prior research of mobile services, switching barriers have been found to lead to customer retention and customer loyalty among Korean mobile users (Kim et al., 2004; Kim & Yoon, 2004). It would be useful to explore this relationship in other contexts, such as in Taiwan, which shares a number of similarities with Korean markets. Based on the literature, the following hypothesis is proposed.

H3. Switching barriers have a positive effect on loyalty.

2.7. Service quality

Service quality has resulted in the realization of the intangible, heterogeneous, and inseparable nature of the concept (Parasuraman, Zeithaml, & Berry, 1988). It is hard to measure it with the same measurement for product quality. Quite a few conceptualizations and measurements of service quality may be found in the literature. For example, it has been defined as consisting of two aspects: technical quality and functional quality (Gronroos, 1984). Service quality is also defined as the difference between customer expectations and the perception of service quality (Parasuraman, Zeithaml, & Berry, 1985). It is measured by five sub-constructs: reliability, responsiveness, assurance, empathy, and tangibility (Parasuraman et al., 1988). A third conceptualization of service quality includes interaction quality, physical environment quality, and outcome quality (Brady & Cronin, 2001). Interaction quality includes attitude, behavior, and expertise. Physical environment quality includes ambient conditions, design, and social factors. Outcome quality includes waiting time, tangibles, and valence.

Research into service quality in the mobile telecommunications industry extends the traditional definition of service quality and incorporates aspects particularly relevant to mobile services. For example, in a study of Turkish mobile services, it has been measured by coverage of calling area, value-added services, advertisement, services in campaigns, the suppliers’ services of the operator, vendor services, and customer support services (Aydin & Özer, 2005). These aspects are geared toward the service practice of GSM networks in Turkey. In another study of service quality of Korean telecommunication services, call quality, value-added quality, and customer support are the three sub-constructs of service quality (Kim et al., 2004). In an investigation of Canadian mobile services, service quality is defined as the difference between perceived expectations and perceived quality (Turel & Serenko, 2006). In this study, service quality is defined as the whole service quality perceived by customers after using the service. In contrast to playfulness, service quality is long thought to be very important to customer satisfaction and trust. It is also one of the often studied antecedents of relationship quality (Athanasopoulos, 2009). Service quality represents basic customer expectations, thus, a hygiene factor.

In a study of service quality in banking, hospitals, and photo development, service quality was found to have a positive effect on relationship quality, which includes satisfaction and trust (Hsieh & Huang, 2004). Herrmann, Huber, and Braunstein (2000) discovered that service quality is an important factor affecting customer satisfaction. In a study of Korean mobile services, improving service quality is found to positively affect customer satisfaction (Kim et al., 2004). Same is found for mobile instant message usage in China (Deng et al., 2009). Thus, the following hypothesis is proposed.

H5. Service quality has a positive effect on satisfaction.

Caceres and Paparoidamis (2007) indicate the increase in customer’s perceptions of service quality will influence aspects of relationship quality such as satisfaction and trust. It is also found that service quality has a significant effect on consumer trust towards a financial institution (Cho & Hu, 2009). In studying the 3C (computer, communication, and consumer electronic) retail industry in Taiwan, service quality has been shown to have a significant impact on trust (Jih, Lee, & Tsai, 2007). Thus, the following hypothesis is proposed.

H6. Service quality has a positive effect on trust.

2.8. Intimacy

Customer intimacy is recommended as one of the three value disciplines that are available to companies for delivering values to their customers. It requires companies understand their customers and meet their special needs (Treacy & Wiersema, 1993). From customer’s perspective, normally, it embodies care from the service provider, mutual confiding, and communication, and even a feeling of trust (Kellogg & Chase, 1995). Through interaction between service providers and customers, overtime, the feeling is strengthened and evolves into a long-term bond (Gwinner, Gremler, & Bitner, 1998). Intimate ties can be established during face-to-face contacts or in technology-mediated contexts (Froehle & Roth, 2004). Intimacy is a salient component of customer affection toward a service provider and affection towards staff transfers to customer–firm level (Yim, Tse, & Chan, 2008). In our study, we define intimacy as the perceived psychological closeness a cus-
Table 1
Measurement properties.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
<th>Loading</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loyalty</td>
<td>Cronbach's $\alpha = .75$, AVE = .61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>I intend to stay with the carrier.</td>
<td>0.76</td>
<td>13.47</td>
</tr>
<tr>
<td>2</td>
<td>I intend to recommend the carrier to others.</td>
<td>0.80</td>
<td>14.19</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>Cronbach's $\alpha = .90$, AVE = .74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>How satisfied are you with your mobile service provider?</td>
<td>0.85</td>
<td>18.21</td>
</tr>
<tr>
<td>2</td>
<td>How satisfied are you with the relationship with your mobile service provider?</td>
<td>0.85</td>
<td>18.19</td>
</tr>
<tr>
<td>3</td>
<td>Overall, I am satisfied with my mobile service provider.</td>
<td>0.88</td>
<td>19.11</td>
</tr>
<tr>
<td>Trust</td>
<td>Cronbach's $\alpha = .88$, AVE = .74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>My mobile service provider can be relied upon to keep promises.</td>
<td>0.89</td>
<td>19.37</td>
</tr>
<tr>
<td>2</td>
<td>My mobile service provider is trustworthy.</td>
<td>0.93</td>
<td>20.87</td>
</tr>
<tr>
<td>3</td>
<td>I have full confidence in my mobile service provider.</td>
<td>0.75</td>
<td>14.99</td>
</tr>
<tr>
<td>Switching barriers</td>
<td>Cronbach's $\alpha = .77$, AVE = .63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Switching to other providers will bring economic loss.</td>
<td>0.75</td>
<td>11.04</td>
</tr>
<tr>
<td>2</td>
<td>Switching to other provider will bring psychological burden.</td>
<td>0.83</td>
<td>11.85</td>
</tr>
<tr>
<td>Service quality</td>
<td>Cronbach's $\alpha = .89$, AVE = .68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Overall, I'd say the quality of my interaction with the provider's employees is excellent.</td>
<td>0.86</td>
<td>18.30</td>
</tr>
<tr>
<td>2</td>
<td>I would say that the quality of my interaction with the provider's employees is high.</td>
<td>0.84</td>
<td>17.91</td>
</tr>
<tr>
<td>3</td>
<td>I always have an excellent experience when I interact with my service provider.</td>
<td>0.80</td>
<td>16.42</td>
</tr>
<tr>
<td>4</td>
<td>I feel good about what my service provider provides to its customers.</td>
<td>0.79</td>
<td>16.23</td>
</tr>
<tr>
<td>Playfulness</td>
<td>Cronbach's $\alpha = .87$, AVE = .71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Using mobile services gives enjoyment to me.</td>
<td>0.84</td>
<td>17.49</td>
</tr>
<tr>
<td>2</td>
<td>Using mobile services is fun for me.</td>
<td>0.76</td>
<td>15.22</td>
</tr>
<tr>
<td>3</td>
<td>Using mobile services keeps me happy.</td>
<td>0.92</td>
<td>20.24</td>
</tr>
<tr>
<td>Intimacy</td>
<td>Cronbach's $\alpha = .80$, AVE = .57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>My mobile service provider cares for its customers.</td>
<td>0.77</td>
<td>14.88</td>
</tr>
<tr>
<td>2</td>
<td>I like to communicate with my mobile service provider.</td>
<td>0.75</td>
<td>14.47</td>
</tr>
<tr>
<td>3</td>
<td>I feel intimacy toward my mobile service provider.</td>
<td>0.75</td>
<td>14.45</td>
</tr>
</tbody>
</table>

tomer has with the service provider. Companies want to establish this kind of rapport with their customers, and customers also want to develop and maintain a worthwhile and convenient connection with the company (Berry & Parasuraman, 1991; Soteriou & Chase, 1998; Turnbull & Wilson, 1989). Intimacy may share some similarities with empathy, a dimension of service quality. They are two different constructs in that empathy focuses more on individual care and attention (Soteriou & Chase, 1998). We consider intimacy a satisfier. Customers do not need to feel intimate with a service provider to find it trustworthy in terms of competence and benevolence. However, once a customer invests in and establishes a closer relationship with a service provider, the relationship can increase the trust the customer has in the company (Jones et al., 2000). Thus, the following hypothesis is tested.

**H7. Intimacy has a positive effect on trust.**

The research model is depicted in Fig. 1.

![Fig. 1. Research model.](image)

3. **Research methodology**

To test the proposed research model as shown in Fig. 1, a survey research methodology was used. In this section, details of survey design questionnaire distribution and procedures are reported.

3.1. **Questionnaire design**

Validated items from prior research were the basis for measures of the various constructs. To facilitate appropriate measurement, the items were translated into Chinese from the original English version. The common practice of consulting bilingual domain experts was used to ensure consistency in meaning, proper use of terminology in Chinese, and understandability of the survey. The measurement items used in this study are listed in Table 1.

Measures for service quality consisted of four items based on Brady and Cronin (2001) and Hsieh and Hiang (2004). A three-item scale adapted from Moon and Kim (2001) was used as the measure of playfulness. Measures for intimacy consisted of three items, which were adapted from Kim et al. (2004). Satisfaction was measured by a three-item scale based on Hsieh and Hiang (2004). The three items were formatted using 1 = very unsatisfied; 5 = very satisfied. Trust was measured by a three-item scale adapted from Hsieh and Hiang (2004). Both satisfaction and trust scales were based on measures of relationship quality (Crosby et al., 1990). The two-item scale for switching barriers and the two-item scale for loyalty were adapted from Kim et al. (2004). Except items related to satisfaction, the items were constructed using a 5-point Likert-Scale ranging from strongly disagree to strongly agree (1 = strongly disagree; 5 = strongly agree).

3.2. **Sampling and respondent profile**

Paper survey was distributed to mobile phone users. A convenient sample was used. Paper surveys were distributed on the campus of a major Taiwan university to students and their families.
A total of 440 questionnaires were distributed and 311 valid questionnaires were returned. The response rate was 70.68%. ANOVA of groups based on individual characteristics (gender, education level, age, and profession) found no differences in responses to key constructs (service quality, playfulness, intimacy, satisfaction, trust, switch barriers, and loyalty), except gender and education level on Trust. Table 2 shows the demographics of the respondents.

### Table 2
Demographics of respondents.

<table>
<thead>
<tr>
<th>Demographic variables</th>
<th>Category</th>
<th>Sample</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>157</td>
<td>50.5</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>154</td>
<td>49.5</td>
</tr>
<tr>
<td>Education Level</td>
<td>High school and below</td>
<td>97</td>
<td>31.2</td>
</tr>
<tr>
<td></td>
<td>College and associate degree</td>
<td>175</td>
<td>56.3</td>
</tr>
<tr>
<td></td>
<td>Graduate school and above</td>
<td>39</td>
<td>12.5</td>
</tr>
<tr>
<td>Age</td>
<td>≤ 25</td>
<td>118</td>
<td>37.9</td>
</tr>
<tr>
<td></td>
<td>26–35</td>
<td>136</td>
<td>43.7</td>
</tr>
<tr>
<td></td>
<td>36–45</td>
<td>35</td>
<td>11.3</td>
</tr>
<tr>
<td></td>
<td>≥ 46</td>
<td>22</td>
<td>7.1</td>
</tr>
<tr>
<td>Profession</td>
<td>Student</td>
<td>106</td>
<td>34.1</td>
</tr>
<tr>
<td></td>
<td>Services and finance</td>
<td>75</td>
<td>24.1</td>
</tr>
<tr>
<td></td>
<td>Manufacture and IT industry</td>
<td>66</td>
<td>21.2</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>64</td>
<td>20.6</td>
</tr>
</tbody>
</table>

### 4. Data analysis and results

This research followed a two-stage approach to data analysis (Anderson & Gerbing, 1988). First the construct validity of the measurement model was assessed using confirmatory factor analysis (CFA); then the proposed theoretical model (Fig. 1) and research hypotheses were tested by structural equation analysis. Both phases used the LISREL 8.54 program.

#### 4.1. Measurement model

When testing the validity of the measurement model, the Chi-square statistic was significant. The ratio of \( \chi^2/df = 1.97 \) (\( \chi^2 = 293.51, df = 149 \)). Further, the Goodness-of-Fit Index (GFI) was .91, Adjusted Goodness-of-Fit Index (AGFI) was .88, Normed-Fit Index (NFI) was .98, Nonnormed-Fit Index (NNFI) was .98, Comparative-Fit Index (CFI) was .99, and the Root Mean Square Error of Approximation (RMSEA) was .056. All were in acceptable ranges, indicating a reasonable fit.

The next step was to examine the measures of the four aspects: individual reliability, construct reliability, convergent validity, and discriminant validity. The individual reliability of each item was evaluated by examining the loadings with their respective constructs. Following recommendations (Hair, Anderson, Tatham, & Black, 1998), a factor loading was considered significant when greater than .50. All items in the measurement model had loadings above .50 as shown in Table 1. To examine the construct reliability, this research used Cronbach’s \( \alpha \). For all constructs in the measurement model, each Cronbach’s \( \alpha \) is above .70. Thus, all constructs in the measurement model had adequate reliability.

To assure convergent validity, all factor loadings of items should be significant (their t-values should exceed 1.96) and the value of average variance extracted (AVE) should exceed .50 (Fornell & Larcker, 1981). A value of AVE exceeding .50 demonstrates that more than 50% of the variance of the construct is due to its indicators. In this study, the t-values ranged from 11.04 to 20.87, significant at the \( p < .001 \) level as shown in Table 1. The AVE of all constructs exceeded .50, indicating constructs had acceptable convergent validity overall.

Table 3 shows intercorrelations and share variances among constructs. The cells on the diagonal are constructs’ \( \alpha \) (in italic). The cells on the bottom left corner are intercorrelations while the cells on the upper right corner (in bold) are shared variances. The values of AVE are listed too. As evidence of discriminant validity, all the intercorrelations are smaller than reliability Cronbach’s \( \alpha \) (Campbell & Fiske, 1959). In addition, the explained variance (i.e., AVE) of constructs in the measurement model exceeds all combinations of shared variances of corresponding constructs (Straub, 1989). Discriminant validity of measures was also assessed by examining the confidence interval around correlation (±two standard errors) of two constructs. The confidence interval should not include 1.0, indicating the two constructs are not the same (Anderson & Gerbing, 1988). In our study, confidence intervals around correlations of paired constructs range from .13 to .70. Results of the three tests support the discriminant validity of the studied model.

#### 4.2. Structural model

Maximum-likelihood-estimation procedures were used to examine the hypothesized relationships in the research model. Based on the model performance statistics (\( \chi^2/df = 320.36, df = 157, \chi^2/df = 2.04, GFI = .91, AGFI = .87, CFI = .99, NFI = .97, NNFI = .98, \) RMSEA = .058), it can be concluded that the hypothesized model had a reasonable fit. The next step involved testing the specified paths for hypotheses. The path coefficients and t-values are reported in Table 4. All proposed paths were significant. Therefore, all hypotheses were supported. In this research, the total model explained 48% of the variance in customer loyalty. Playfulness and service quality accounted for 61% of the variance in satisfaction. Service quality and intimacy accounted for 53% of the variance in trust.

The researchers further tested which direct antecedent construct had a greatest influence on Loyalty. Three models, one in which \( \beta_{12} \) and \( \beta_{13} \) were constrained to be equal, one in which \( \beta_{12} \) and \( \gamma_{14} \) were constrained to be equal, and one in which \( \beta_{13} \) and \( \gamma_{14} \) were constrained to be equal, were compared to the unconstrained model in which the paths were estimated freely. The results showed that there existed a significant difference between \( \beta_{12} (=.42) \) and \( \gamma_{14} (=.21) \) (\( \chi^2_{\text{diff}} = 3.84, df = 1, p < .05 \)). There were no difference

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**Table 3**

<table>
<thead>
<tr>
<th>Scale analysis results.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loyalty</td>
</tr>
<tr>
<td>Loyalty</td>
</tr>
<tr>
<td>Satisfaction</td>
</tr>
<tr>
<td>Trust</td>
</tr>
<tr>
<td>Switching barrier</td>
</tr>
<tr>
<td>Playfulness</td>
</tr>
<tr>
<td>Service quality</td>
</tr>
<tr>
<td>Intimacy</td>
</tr>
</tbody>
</table>

Intercorrelations are included in the lower triangle of the matrix. Shared variances in % are included in the upper triangle of the matrix. The construct reliability estimates are underlined and positioned on the diagonal.
between $\beta_{12} = .42$ and $\beta_{13} = .26$ ($\chi^2_{\text{diff}} = 2.86, df = 1, p > .05$) and between $\beta_{13} = .26$ and $\gamma_{14} = .21$ ($\chi^2_{\text{diff}} = .06, df = 1, p > .05$).

To test which antecedent (“hygiene” factor or “satisfier”) had a statistically greater influence on satisfaction and trust, similar comparisons were conducted between constrained models (with equated path coefficients) and the unconstrained model (the paths were estimated freely). If the $\chi^2$ statistic of the unconstrained model differs significantly from that of a constrained model, then one factor has a greater influence on the dependent construct than the other factor. In the case of satisfaction, the results showed that there was no significant difference between the influence of playfulness and service quality ($\chi^2_{\text{diff}} = .01, df = 1, p > .05$) although $\gamma_{21} = .38$ and $\gamma_{22} = .47$. In regard to trust, there was no significant difference between service quality ($\gamma_{32} = .27$) and intimacy ($\gamma_{33} = .52$) ($\chi^2_{\text{diff}} = 2.87, df = 1, p > .05$).

5. Discussion

In this research, a model that investigates the effects of relationship quality and switching barriers on customer loyalty is tested in the context of mobile telecommunication services. Both relational qualities, including satisfaction and trust, and switching barriers have significant effects on customer loyalty. In terms of antecedents, it is found that playfulness and service quality impact satisfaction while service quality and intimacy affect trust.

5.1. Implications for research

Customers stay with a service provider because they want to and/or they have to. In this research, we took an integrated approach to examine both aspects by include a pull-in force (relationship quality) and a push-back force (switching barrier). Good relationship quality makes customers want to stay with the current service provider while switching barriers make customers feel that they have to stay. When both are presented in a model, both have demonstrated significant effects on customer loyalty. However, satisfaction component of relationship quality has a stronger effect than switching barrier. This integrated approach shows that neither should be left out in order to have a more complete picture of drivers to customer loyalty. More importantly, this approach gives us the opportunity to investigate relative effects among factors. The relative effects may be more revealing and useful. In our study, relationship quality, especially satisfaction, is more critical to customer loyalty in mobile service industry. This approach provides a complete and detailed way to study factors relevant and of interest to marketing scholars. In prior research that includes both pull-in and push-back aspects, the relative effects of the two are not tested statistically. For example, trust, satisfaction, and switching costs are found to impact customer loyalty in Chinese instant message users (Deng et al., 2009) and satisfaction and switching barriers are found to impact loyalty among Korean mobile users (Kim et al., 2004). Neither tests the relative strength of the relationships. Although absolute values of path coefficients can be informative, a statistical test of difference would be more conclusive.

At the level of antecedents of relationship quality, the principle of two-factor theory was applied. According to the two-factor theory of satisfying customers (Naumann & Jackson, 1999), attributes of products or services are classified into two categories—hygiene factors and satisfiers. Since hygiene factors are a must for businesses to maintain relationship quality while satisfiers are “extra” feel-good features, hygiene factors should have had a stronger effect on customer satisfaction and trust. In our model, service quality can be thought as a hygiene factor while playfulness is a satisfier for customer satisfaction. For trust, service quality is a hygiene factor while intimacy is a satisfier. Service quality is chosen as the baseline for comparison because it represents the basic customer requirement and it is a universal concept across different services and technologies. Compared to service quality, playfulness and intimacy are as strong as factors to customer satisfaction and trust. This finding has profound implications to practitioners, which are discussed below. To research, the two-factor theory is a useful lens to systematically study factors related to customer satisfaction and other constructs of interest. For example, in online retailing, businesses strive for customer satisfaction and continued use of their website. In this situation, what are hygiene factors and what are satisfiers? Quite a few factors are linked to online customer satisfaction, such as system quality, media richness, and usability. Among them, we may think a reliability and security are a must and a taste-full design and multimedia may be a satisfier. Relative impacts of these factors can be studied using an approach similar to ours. On the other hand, the finding that playfulness and intimacy are as important seems to suggest that the two ceased to be just something extra that is nice to have and, to some degree, became hygiene factors in mobile services. Although the finding does not call the two-factor theory into question, it at least suggests that the line between hygiene factors and satisfiers is not as clear as originally thought to be. Future research is needed to study the dynamics of hygiene factors and satisfiers in both similar and different contexts.

5.2. Implications for practice

The findings indicate that both pull-in (relationship quality in the model) and push-back (switching barriers in the model) are important when companies are trying to keep customers. Companies should look into methods that enhance customer satisfaction, build customer trust, and make switching harder. On the other hand, satisfaction has a stronger effect than switching barriers. In mobile telecommunication industries, it becomes harder to erect switching barriers because of fierce competition and regulatory policies. Among these methods, investments aiming to build relationship quality, especially improving customer satisfaction, may be superior strategies.

Service quality is found to be an important factor to both satisfaction and trust in this study, which is in consistent with prior research (Aydin & Úzer, 2005; Hsieh & Hiang, 2004; Zeithaml &
5.3 Limitations and future research

The major limitation of this study is the potential for common source biases (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003), which is a normal concern for studies using one questionnaire. Although all the variables were obtained from self-reports, in some situations self-reports might be the only viable source to assess the respondents’ internal states, such as attitudes and perceptions (Spector, 2006). Other methodological concerns include measures for highly correlated constructs although they showed adequate discriminant validity. Better item and survey design will be utilized in future.

In the current study, users with 3G services were not separated from regular 2G users. It is possible that the needs of the two groups of users may be different given their different technologies. In the future, comparison of the two groups will enable a better understanding of consumer behavior in mobile services. Furthermore, the integrated model with both pull-in and push-back forces can be applied to contexts with other characteristics to study the relative strength of both drivers. This study reported an interesting observation that both hygiene factors and satisfiers are important. More studies can explore this phenomenon in depth.

6. Conclusion

This study investigates the factors leading to customer loyalty in mobile telecommunication services. It showcases a more integrative approach with two opposite forces to loyalty and two classes of antecedents of satisfaction and trust. Findings suggest both pull-in and push-back forces are useful techniques that companies can implement to retain customers. Pull-in forces, such as relationship quality (customer satisfaction and trust), focus on long-term customer relationships, while push-back forces are akin to short-term tactics, such as switching barriers.

Taiwan’s highly saturated telecommunications market is a challenge for its mobile services firms. Mere provision of basic services is insufficient. Companies need to maintain a high level of service quality and strive to excel in supplying added value to their customers. For example, in this study, intimacy and playfulness are two satisfiers which the customers strongly value when they make decisions about their mobile service provider.

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