Exploring determinants of industrial customers loyalty on service providers in the e-business environment – the perspective of relationship management

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Abstract:
It is getting a necessary strategy for firms to keep the old customer/partner and enhance his/her loyalty. The cost of attracting a new customer/partner is greater than of maintaining an existing customer/partner. The research stream of relationship management has been received substantial attention in both B2C and B2B environments. This phenomenon is also apparent in the area of application service providers which rent web-based application thru Internet. It is due to their service is comprised with modularized and standard components which are similar to commodities. This study considers psychological and economical factors simultaneously based on the perspective of relationship management, so as to enrich our understanding about determinants of loyalty formation. Results of data analysis from a questionnaire survey reveal several findings. Affective and continuous commitment and service quality is important to loyalty formation. Service quality positively influences trust, in turn, enhance affective commitment, as well. Switching barrier is the positively associated with continuous commitment. All of above coincides with literature. Yet, the positively moderating effect of switching barrier on relationship of service quality and loyalty is contrary to literature. Besides, the relative importance of affective and continuous commitment on loyalty varies from business types. Firms running air cargo business emphasize affective commitment, whereas firms running sea shipment business emphasize continuous commitment.

Key-Words: Service quality, Loyalty, Commitment, Trust, Switching barrier

1 Introduction
For pursuing more predictable source of revenues, keeping a long-term relationship with customers is getting an imperative strategy for application service providers, so as to pursue more predictable source of revenues. Crosby et al. [3] indicated that relationship quality the major determinants of continuing exchange between buyers and sellers in B2B environment. Relationship management is gradually received more attention. This trend is especially prominent in the area of application service providers. This market attracts lots of players because customers want to cut costs, reduce management complexity, and focus on core competence for firms [20]. However, the application service is delivered by modularized and standard components, similar to commodity. The competitive pressure pushes application service providers to seek for successive income streams. Grover et al. [6] indicated that “The business relationship between the outsourcing service receivers and the service providers in increasingly that of a partnership rather than merely that of customer and vendor.” Ma et al. [13] stated that the cost-effective feature of ASPs is not the sufficient condition for ensuring business success. There is a rising trend for empirically investigating relationship management of ASP targeted the important influence of relationship quality and service quality on long-term partnership, e.g., [13] [22].
Enhancing customers’ loyalty is central to relationship management. Loyal buyers in a relationship incline to pay more attention on long-term benefits and are devoted to cooperative actions beneficial to both partners than disloyal buyers [5] [15]. It is usually agreeable that the strong relationship between satisfaction and customer loyalty. However, a paradox that satisfied customers may defect and dissatisfied may remain loyal arouse many research interests. Researchers proposed that there are two fundamental methods to retain customers [8][11][18]. One is to improve customers’ satisfaction [11] and then inspire their true attitudinal and behavioral loyalty, so that customers do not be distracted by competitive offering [4]. The other is to increase switching barriers to deter customers form using other suppliers, such as switching cost and changing to alternatives as disincentives [8][11][18]. Yet the intricate relationship of satisfaction, switching barrier and loyalty is still a heated debate. Besides, the research stream in customer satisfaction/dissatisfaction of business-to-business (B2B) relationships is still lagging behind consumer marketing [22]. It is worth being devoted to figure out customer loyalty from its essence – sustaining long-term relationship with industrial customer. In this study, we attempt to answer three two research questions.

1. What are the effective strategies of customer loyalty in ASP environment, relational or transactional/economic tactics or both?
2. Is this strategy varies from industrial characteristics?
3. What antecedents should be considered when ASPs make these effective strategies?

2 Literature review and Hypotheses

We propose that both of psychological and economic considerations are important. We follow the perspective of relationship management to issue psychological consideration. We consider switching barrier as the primary economical factor.

2.1 Commitment

The main thrust of relationship marketing is toward establishing and maintaining long-term successful relational exchange [15], that is, high level of customer loyalty. Commitment is central to the perspective of relationship marketing [15]. Commitment is a multi-dimension construct in the perspective of relationship marketing. Meyer and Allen [14] propose that commitment contain affective and continuous commitment. Affective commitment refers to the emotional attachment to a relationship. Continuous commitment derives from the cost associated with quitting or the profit associated with staying. Bendapudi and Berry [2] emphasize that the effective strategy for maintaining a long-term relationship with customers is to focus on either the desire for a continuous relationship based on a psychological perspective (affective commitment), or the dependency in relationships based on an economic perspective (continuous commitment). Thus, we propose:

**H1:** Affective commitment of application service provider is positively associated with Loyalty.

**H2:** Continuous commitment of application service provider is positively associated with Loyalty.

2.2 Relationship quality

Relationship quality is the core concept in relationship marketing and determines the probability of customers’ repurchase intention and continuous exchanges [3]. Crosby et al. [3] indicated that relationship quality is primarily comprised of trust and satisfaction. They further proposed that relationship quality had a significant influence on the customer’s anticipation of future commitment [3]. High relationship quality creates value, including increasing the benefit or decreasing the sacrifice and be viewed as critical factor for successful relationship [16]. It is obviously acceptable is that the influence of satisfaction on trust, in turn increase the level of commitment. Thus, we propose:

**H3:** Trust of application service provider is positively associated with affective commitment.

2.2.1 Satisfaction and Service Quality

Satisfaction with past experience assists customers in evaluating providers’ integrity, honesty, benevolence, reliability and competence. Accordingly, customers believe that providers do not take advantage of customers because of their short-term benefits. The greater the satisfaction with past experience, the greater the customer’s trust in service provider should be [2]. Service quality is represented as customer satisfaction for firms of which core business is providing services, rather than physical products. Zeithaml and Bitner [23] proposed that customers’ perception of service quality is the fundamental determinants of customer satisfaction. Service quality is defined as cumulative subjective evaluation of a specific service [17] or the personal perceived experience during the process of consumption [12]. Thus, we propose:

**H4:** Service quality of application service provider is positively associated with trust.
Furthermore, consumers with cumulative satisfied experience may remain loyal to the relationship, recommend the product/service, say positive remarks about the product/service, and pay more for the product/service [24]. Empirical studies show the positive association between satisfaction and loyalty, [10]. The relationship of service quality and loyalty is also supported in empirical studies [1]. Thus, we propose:

\( H_5: \text{Service quality of application service provider is positively associated with customer loyalty.} \)

### 2.3 Switching barrier

Social exchange theory indicates that individual expects to gain maximum benefits with minimum costs and weighs gains and losses anytime. Thibaut and Kelly [21] indicated that whether an individual retains a relationship depends on the comparison of current relationship, past experience and potential alternatives. It is possible that an individual highly satisfied with a certain subjects but would not like to commit to this relationship, vice versa. A satisfied customer might switch to another supplier to receive more qualified service/product or to just make a trial use without any potential loss. A dissatisfactory customer may stay with the same supplier because s/he has no better choice or would incur substantial loss when leaving [19]. Continuous commitment stems from an anticipation of high termination costs or high switching costs associated with quitting a given relationship [2]. Continuous commitment is economical-based dependence which results from a calculation of cost and benefit and perceived cost-benefit ratios of the service provider relative to competitors [2]. Empirical studies reveal that the higher the switching barrier, the more a customer is forced to remain with his or her existing carriers because of difficulty and costs [18]. Thus, we propose:

\( H_6: \text{Switching barrier of a firm in current relationship is positively associated with continuous commitment.} \)

A significant non-linear relationship between core-service satisfaction and customer loyalty without considering switching barrier is validated in literatures [8][9]. Jones et al.’s [8] research concludes that the influence of service satisfaction on customer loyalty varies by different levels of switching barriers. A dissatisfactory customer will still maintain current relationship because of high switching barriers. High switching barriers mitigate the influence of service quality with the core service by forcing customers to remain with their service providers, irrespective of the degree of core-service satisfaction [9]. On the contrary, the association of service quality and loyalty is less influenced by low switching barriers. Thus, we propose:

\( H_7: \text{The effect of service quality on loyalty is stronger for low switching barrier than for high switching barrier.} \)

### 2.4 Moderating effect of business types

Furthermore, this study would like to explore the influence of business types. The characteristics between sea shipment and air cargo are different, so we proposed that the relationship of commitment and loyalty will be distinct. The time pressure of processing customs service in the area of sea shipment is detailed is less urgent than in the area of air cargo. So, the value chain of sea shipment is fragmented. Each segment is in charge of a small piece of logistics. Business scale of each firm is small. In opposition, logistics by air cargo face great time pressure, so they are usually responsible for lots of tasks in one process. Business scales and sales volumes are usually large. Besides, the application and scope of charters between sea shipment and air cargo is different. Accordingly, this study tries to figure out which type of commitment, i.e. affective and continuous commitment is the main contributor to loyalty formation. Thus, we propose:

\( H_8: \text{The relationship of commitment and loyalty varies from business type, including sea shipment and air cargo.} \)

Consequently, our research model was proposed, as shown in Figure 1.

![Research model](image-url)

**Figure 1. Research model**

### 3 Research Design

#### 3.1 Customs service providers

The process of applying to customs for transiting goods in logistics industry is the chosen context in this study. There are two reasons. The first is that nearly all logistics companies outsource this process.
to application service providers in Taiwan. The customs service is the most mature ASPs environment in Taiwan. Shippers, customs brokers and logistics forwarders have to apply clearance and certificate process by connecting to a web systems hosted by a specific application service providers because of the policy of government. Customs clearance procedures is applied for export goods in the territory of our country, unloaded and temporarily stored in warehouse or container yard designated by customs authority to overseas by sea or air or import goods into the territory of our country. The certificate procedure is to inspect the declared transited goods and issues certificate documents and releasing notices. The second is that custom brokers and forwarders have to build up their service level of providing accurate, timely and diverse services for shippers, especially integrated and value-added services when they are facing fierce global competition from international logistics service integrators. Customs brokers and logistics forwarders will evaluate whether they will switch service suppliers for pursuing maximum benefit from application service providers. Accordingly, how to retain their customers for increasing revenue and keeping their competitive position is being a critical tactic for customs service providers. The relationship management is especially important for logistics application service providers.

3.2 Methodology
The instruments for all constructs are adapted from the literature and are revised to fit our research context. All items were anchored on seven-point Likert-type scales, from strong disagreement to strong agreement. In order to reduce the measurement error, we adopt a pretest to refine the measurement items in our questionnaire design. Collected data will be analyzed through SEM (Structural Equation Modeling) techniques. Preliminary interviews were conducted to thoroughly understand the context of collaboration between logistics industry and logistics information service providers. A package of questionnaires comprised of a cover letter which states the research objective, compliant questionnaire and a prepaid envelope were mailed to the managers who are responsible for customs transactions in customs brokers and logistics forwarders. In order to pursue the uniformity of responses, we asked respondents to choose a specific customer information service provider with whom they were currently involved.

Of the 1,845 questionnaires sent out, 17 could not be delivered. Questionnaires were mailed during a week from March 19, 2007. The time of data collection lasted for five weeks. During this period, two hundred and seventy six respondents were received with a 15.1% response rate. After scrutinizing returned questionnaires, 223 with completed and reasonable answers were used. The response rate of usable returns is 12.2%. Most respondents are from small corporations which have been operated for many years. Respondents come from sea shipment and air cargo. Some respondents run both of business. The characteristics of respondents fit with the profile of logistics industry related to customs service.

4 Data Analysis and Results
4.1 The measurement model
This study performs VisualPLS to examine measurement model. The formative construct of “switching barrier: are excluded in the measurement examination because reliability and validity of formative constructs are not tallied as suggested by Hulland [7]. We drop seven items with insignificant factor loadings and low factor loading as compared to the suggested 0.5 threshold. These items come from the constructs of “service quality,” “trust,” “affective commitment,” and “continuous commitment.” The values of composite reliability ranging from 0.81 to 0.97 and average extracted variances ranging from 0.60 to 0.73 are both above the threshold: 0.7 and 0.5 respectively, which indicates acceptable internal consistency and convergent validity, as shown in Table 1. Discriminant validity is also acceptable based on the result which the values of square root of average extracted variance of each construct are all larger than inter-construct correlations, as shown in Table 2. Briefly, the measurement model seems to be adequate based on the assessment of internal consistency, convergent validity and discriminant validity.”

<table>
<thead>
<tr>
<th>Table 1. Reliability and Convergent Validity</th>
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<tbody>
<tr>
<td>Construct</td>
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<tr>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Service Quality</td>
</tr>
<tr>
<td>Trust</td>
</tr>
<tr>
<td>Switching Barrier</td>
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<tr>
<td>Affective Commitment</td>
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<tr>
<td>Continuous Commitment</td>
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<tr>
<td>Loyalty</td>
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</tbody>
</table>
Table 2. Covariance Matrix and Discriminant Validity (diagonal denotes square root of AVE of each construct)

<table>
<thead>
<tr>
<th></th>
<th>SQ</th>
<th>TR</th>
<th>B</th>
<th>AC</th>
<th>CC</th>
<th>LO</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ</td>
<td>0.802</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TR</td>
<td>0.747</td>
<td>0.794</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SB</td>
<td>0.041</td>
<td>0.127</td>
<td>0.783</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC</td>
<td>0.510</td>
<td>0.570</td>
<td>0.303</td>
<td>0.845</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td>0.010</td>
<td>0.081</td>
<td>0.396</td>
<td>0.098</td>
<td>0.771</td>
<td></td>
</tr>
<tr>
<td>LO</td>
<td>0.789</td>
<td>0.685</td>
<td>0.162</td>
<td>0.508</td>
<td>0.105</td>
<td>0.854</td>
</tr>
</tbody>
</table>

Note: LO: loyalty; AC: affective commitment; CC: continuous commitment; TR: trust; SQ: service quality; SB: switching barrier

4.2 Hypotheses testing

The SEM analysis using VisualPLS was employed to examine hypotheses. Two steps were conducted. First, main effects and the moderating effect of switching barriers were assessed by testing path coefficient, their significant level and explained variance (R2). Second, the effect of business type on the relationship of affective commitment, continuous commitment and loyalty was tested by comparative analysis of multi-group. We divided samples into two groups according business type, include sea shipment and air cargo and then compared the statistical significance of path coefficients of a group with different business type.

The result of structural model testing is shown in Figure 2. Except for the moderating effect of switching barrier on the relationship of service quality and loyalty, all hypothetical paths are statistically significant at the level of p < 0.05 and coincided with hypothetical direction, as shown in Table 3. The relationship among variables derived from the perspective of relationship management is statistical significant. Trust positively affects Affective Commitment. Service Quality positively affects Trust. Along the path of economical consideration, switching barrier significantly influence Continuous Commitment. Yet, the effect of affective commitment on loyalty is greater than of continuous commitment. Besides, switching barrier positively enhance the relationship of service quality and loyalty. This result is contrary to the result of empirical research and our hypothetical direction.

4.2.1 Moderating effect of business type

Samples were classified by business types. These two groups were examined by VisualPLS respectively. In the case of sea shipment, 166 of respondents were tested. The result reveals that continuous commitment is the major contributor to loyalty, instead of affective commitment, as shown in figure 3. On the contrary, in the case of air cargo, affective commitment is the major contributor to loyalty, as shown in figure 4. As a result, H8 is supported and indicated that the influences of psychological and economical consideration of loyalty varies from business types.

Figure 2. Parameters of structural model

Figure 3. Parameters of full model – Sea Shipment (n=166)

Figure 4. Parameters of full model – Sea Shipment (n=104)
Table 3. Summary of the research results

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: AC → LO (+)</td>
<td>Supported</td>
</tr>
<tr>
<td>H2: CC → LO (+)</td>
<td>Supported</td>
</tr>
<tr>
<td>H3: TR → AC (+)</td>
<td>Supported</td>
</tr>
<tr>
<td>H4: SQ → TR (+)</td>
<td>Supported</td>
</tr>
<tr>
<td>H5: SQ → LO (+)</td>
<td>Supported</td>
</tr>
<tr>
<td>H6: SB → CC (+)</td>
<td>Supported</td>
</tr>
<tr>
<td>H7: SQ × SB → LO (+)</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H8-1: CC → LO (+) Business Type: Sea Shipment</td>
<td></td>
</tr>
<tr>
<td>H8-2: AC → LO (+) Business Type: Air Cargo</td>
<td></td>
</tr>
</tbody>
</table>

LO: loyalty; AC: affective commitment; CC: continuous commitment; TR: trust; SQ: service quality; SB: switching barrier

5 Discussions and Implications

Findings in this study enrich our understating of relationship management in customs service setting and highlight the importance of relationship management during the process of loyalty formation. Usually, the research stream of customer loyalty emphasizes economical factors and satisfaction, such as switching barrier rather than psychological factors. Yet, trust and affective commitment are primary antecedents of loyalty formation in our research setting. Along a psychological path, delivering good service quality not only enhances trust, but also directly improves the probability of loyalty. Along an economical path, setting up switching barriers raises the level of continuous commitment and influence the association of service quality and loyalty. The most important is the critical role of service quality in the service industry. Service quality not only directly affects loyalty maintenance, but also influences customer loyalty mediated through trust and affective commitment. Moreover, relationship among affective commitment, continuous commitment and loyalty is subtly distinct by business types.

5.1 Academic Implication

Some academic implications are drawn based on research results. First, constructs derived from relationship management which are usually used in individual-level research are appropriate for firm-level studies as well, such as trust and commitment, except for continuous commitment. The explained variance of some endogenous variables in the models of main effect and moderating effect of relationship strength is acceptable, such as loyalty (68%), affective commitment (28%~40%), and trust (50%~58%). Although the influence of service quality is prominent, the effects of affective commitment and continuous commitment should also be noticed, especially in the contexts of different business types. It is possibly due to the intention of maintaining long-term relationship at present and gradual appearance of these constructs in firm-level literatures. Second, results reveal the important influence of psychological factors derived from relationship management on loyalty to ASPs. It responds to the argument that social interaction and affective influence are also important in industrial area. Third, path coefficients of continuous commitment and loyalty are significant, but small numbers. Switching barrier significantly affects continuous commitment, but the explained variance is low. The reason may be that other significant factors exist but be neglected, such as setup cost in initial phases or operating cost during the development process. Fourth, the influence of switching barrier on loyalty includes main and moderating effects. But, the result is opposite to literatures, e.g. Jones et al. [8]. Our finding reveals that switching barrier heightens the relationship of service quality and loyalty. In the case of high switching barrier, increasing a bit of service quality could improve customer loyalty a lot. Customers are getting more sensitive about service quality when they perceive more difficulties of switching service providers. It is deserved to be investigated in the future. Finally, the major contributor of loyalty varied from business types. Business scale and time pressure of air cargo is large and they can not afford any time delay in the process of logistics. So, they hope to make long-term relationships with worthy trusted partners and do not switch partners arbitrarily. Accordingly, firms running business with air cargo emphasize affective commitment. On the contrary, firms in the area of sea shipment are small business scale and face little time pressure. So, they have to pursue cost efficiency for survival. Accordingly, firms running business with sea shipment emphasize continuous commitment.

5.2 Practical Implication

Analysis results lead to practical implications for ASPs, who hope to retain customers based on the empirical result of this study. We hereby propose some suggestions. First, the determinants of affective commitment include service quality and trust. Service quality both directly and indirectly affects loyalty. The indirect influence of service quality on loyalty is mediated by trust and affective commitment. Te determination of continuous commitment is switching barrier. Thus, manager should be devoted to cultivation of service quality and establishment of switching barriers, so as to
enhance industrial customers’ affective and continuous commitment, which are the critical determinants of loyalty formation. Second, industrial long-term relationship should be cultivated by considering both relational and economic factors simultaneously. Furthermore, it is interesting that the effect of affective commitment is much greater than continuous commitment. Firms should pay more attention on affective commitment when they are managing a long-term relationship, such as increasing service quality level or building up trusting belief of customer. Third, the moderating role of switching barrier should be noticed. It is not enough for firms to build up switching barrier. Service quality is central to relationship management. Finally, the main method of enhancing customer loyalty depends on business type. Empirical result demonstrates that continuous commitment is primary determinates for maintaining customer loyalty in the case of sea shipment business, whereas affective commitment is dominant determinants in the case of air cargo business. Hence, ASPs must give different incentives to firms based on firms’ business types. For firms running air cargo, cultivating affective trust and commitment could maintain and improve customer loyalty. These firms would like to keep long-term relationship with ASPs who can tough their feelings. For firms running sea shipment, ASPs could build up switching barrier to prevent customers from changing service providers easily.

References:


