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EMPIRICAL STUDY OF ONLINE AUCTION SELLER SWITCHING: THE CASE OF YAHOO VS. RUTEN IN TAIWAN

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Abstract

Most online auction platform providers (OAPPs) agree that the majority of their profits comes from users, i.e., their buyers and sellers. The major concern of OAPPs is how to gain and lock in users in order to maintain and enhance a competitive edge. Customer switching is one of the primary problems of all companies, including OAPPs. This study focused on online auction sellers and attempted to understand their switching behavior. We developed an integrated model that consisted of OAPP strategies (anti-switching and anti-lock-in), value-based factors (platform qualities and switching costs), lock-in factors (network effects), and perceived values to explore the switching intentions of online auction sellers. The model was tested using a field study of 248 sellers from two online auction websites. The results show that OAPP strategies will affect switching costs which affect perceived value which, in turn, impacts a seller's switching behavior. Our findings indicate that value-based factors directly influence perceived value which could suitably explain a seller's decision to switch from one OAPP to another. The study suggests that OAPPs should develop strategies and leverage the network effect to avoid customer switching.

Keywords: Perceived Value, Lock-in Effect, Platform Qualities, Switching Costs, Network Effects

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1 INTRODUCTION

The online auction has become one of the more successful business models in this era of the internet economy (Kambil and van Heck 2002). Online auctions have created a new platform and new business opportunities for buyers and sellers to exchange products and services. Many companies have developed auction websites to attract internet users and increase profits. Revenue for online auction platform providers (OAPPs) comes from seller promotion fees, advertising, and financial contributions from sponsors, but the OAPP's major profit source is the transaction fees charged to sellers. The risk is that, in order to reduce costs, sellers may seek out and switch to another OAPP which charges lower transaction fees or is free of charge. How to lock in and retain sellers has become a critical task for OAPPs who wish to maintain their profits and competitive advantage.

All companies struggle with the problem of customer switching; OAPPs are no different. Two well-known examples are Yahoo!Kimo and Ruten-eBay, the online auction websites in Taiwan. Yahoo!Kimo started business in Taiwan in 1998. As the country's largest OAPP, Yahoo!Kimo has dominated the Taiwanese online auction market. Ruten-eBay is a relatively novice OAPP in comparison, having started up in 2006. Currently, these two OAPPs share 98% of the online auction market in Taiwan and are each other's toughest competitor. In 2006, Yahoo!Kimo announced that they would charge sellers a service fee of 3% of the transaction price. Many Yahoo!Kimo sellers complained about it and switched to Ruten-eBay. In order to attract sellers switching from Yahoo!Kimo, Ruten-eBay seized the moment and highlighted the fact that all transactions on their website were totally free. Yahoo!Kimo gradually lost the competitive advantage that it had gained as the forerunner in Taiwan. However, by implementing several other strategies, Yahoo!Kimo was able to hold on to more than half of Taiwan's online auction market.

Customer switching/loyalty behavior has gained considerable attention in recent years. Researchers have found that customers' intentions to switch to a competitor will increase when switching is perceived to provide more value than staying put, leading to a decline in loyalty (Anderson and Srinivasan 2003; Kim and Nemeth 2009). Anderson and Sullivan (1993) suggested that higher customer satisfaction can reduce the perceived benefits of switching, thereby increasing the likelihood that customers will intend to remain with their current supplier or provider. Li et al. (2007) compared the features of "stayers" and "switchers" in the context of e-commerce websites. Wieringa and Verhoef (2007) pointed out that cognitive, affective elements and switching costs play an important role in customer loyalty.

As a new business model, the online auction differs from traditional transactions and e-commerce platforms. A number of studies considered competition among sellers in an e-Commerce context. However, few studies have discussed how OAPPs struggle to entice sellers to stay, or persuade other OAPPs' sellers to join their platform. Despite the abundance of literature on online auctions, there is a surprising lack of research on seller retention/switching issues across online auction sites. Thus, the mechanisms that drive sellers to switch are unknown in an online auction context. Knowledge gaps still exist in our explanations of online auction sellers switching intentions regarding OAPPs.

In this study, we proposed a research framework to interpret the competition among OAPPs and examine their strategies for dealing with customer switching. In accordance with our research purposes, two research questions were proposed:

1. What factors influence online auction sellers to switch to a competing service provider?
2. How do OAPPs retain sellers on their platform?

To answer the research questions, theories from psychology and the information economy were adopted in the framework. Researchers stated that switching intention is influenced by lock-in effects and switching costs (Shapiro and Varian 1999; Liebowitz 2002). We argued that lock-in effects and switching costs may not influence an individual customer's switching behavior. Instead, we suggested that switching intention would be led by the customer's overall assessment of the perceived benefits and costs. The network effect may also affect switching behavior, as it does in the IS and e-commerce

fields (Gallaughar and Wang 2002; Kauffman et al. 2000; Lee and Mendelson 2007; Lin and Bhattacharjee 2008). OAPP strategies to avoid customer switching (anti-switching) or facilitate switching (anti-lock-in) were discussed in our study as well.

Yahoo!Kimo and Ruten-eBay were the research targets for data collection and framework testing. The results confirmed our expectation that value-based factors would directly influence perceived value which could suitably explain sellers' switching behavior. In addition, OAPP strategies significantly affected the switching costs which affected the sellers' perceptions of value, eventually impacting their switching behavior.

This paper is organized into five sections, including this introduction. In the next section, a review of the literature on customer switching, lock-in and switch theory, and value-based constructs is presented to develop the theoretical foundations of this research. The hypotheses are also introduced in this section. The third section discusses the research methodology, describing how the proposed constructs were measured and data was gathered. The data analysis results are described in the fourth section. The fifth section provides a discussion of the findings. The implications for future research and practice are also provided.

2 THEORETICAL FOUNDATIONS AND HYPOTHESIS DEVELOPMENT

The concept of customer switching is associated with the likelihood of continuing an exchange relationship with a supplier (Weiss and Anderson 1992; Ping 1993; Morgan and Hunt 1994). A review of the marketing literature shows that research on customer switching behavior has been conducted for over a decade. Keaveney (1995) proposed and classified the factors affecting customer switching behavior: pricing, service failures, and attraction by competitors. Wieringa and Verhoef (2007) focused on the liberalizing service market and suggested that the cognitive and affective antecedents noted in prior loyalty literature can be applied along with switching costs to address the importance of inertia. Researchers have found a positive connection between switching behavior and variables such as switching costs, satisfaction, trust, and commitment to an exchange partner (Ping 1993; Weiss and Anderson 1992; De Ruyter et al. 1998; Nielson 1996; Jones et al. 2000; Sharma and Patterson 2000). Switching behaviors have also been studied in domains such as consumer purchasing (Klemperer 1995; Farrell and Saloner 1988; De Ruyter et al. 1998), organizational buying (Weiss and Anderson 1992; Ping 1993; Morgan and Hunt 1994; Nielson 1996), and non-contractual services (De Ruyter et al. 1998; Jones et al. 2000; Sharma and Patterson 2000; Burnham et al. 2003).

Studies on switching behavior within the information technology sector have increased in recent years. Keaveney and Parthasarathy (2001) investigated the behavior of customers switching between internet service providers, which aroused researchers' interest in switching behavior in the area of information technology. Chen and Hitt (2002) examined consumer switching behavior in the online brokerage industry, inferring the presence of switching costs from the probable choices of new and established clients. They measured the influences of customer characteristics and firm attributes on the switching and attrition patterns of online brokers. Li et al. (2007) examined customer switching from the perspective of buyer-customer relationships by comparing the differences between website "stayers and switchers." Researchers have also explored user switching behaviors in new technologies, such as mobile services and email services, were also explored (Kazakevitch et al. 2005; Ranganathan et al. 2006; Kim et al. 2006). Most of these studies investigated switching behavior's affecting factors from a single dimension. However, the process and mechanisms of customer switching are complex. Customers are not likely to decide to switch based solely on higher switching benefits or lower costs. They may discover and evaluate trade-offs between benefits and costs before switching. In this study, we argued that an overall assessment of benefits and costs, often called "perceived switching value," holds greater explanatory power than switching costs regarding customer switching behavior.

2.1 Perceived Switching Value and Customer Switching Intention

Perceived switching value refers to the net value which an individual perceives after evaluating the benefits and costs for switching. Both managers and marketing scientists have highlighted that customer value is key to understanding consumer behaviors such as repeat purchasing, brand loyalty and relationship commitment (Patterson and Spreng 1997). Perceived switching value involves the consumer's assessment of the ratio of perceived benefits to perceived costs (Zeithaml 1988). Perceived benefits can be considered as the customers' evaluation of a product. The benefits, including both cognitive and affective elements, are perceived by the customer as positive and profitable. In contrast, perceived costs (or sacrifices) are perceived by the consumer as negative. The perceived cost (or sacrifice) can be monetary or non-monetary. Generally, monetary costs are measured based on customers' perceptions of the actual price paid. Non-monetary costs include time, effort and other unsatisfactory expenditures made during the purchase and consumption of products or services.

Bolton and Drew (1991) suggested that perceived switching value is a richer measure of a customer's overall evaluation of a service than perceived service quality. Kim et al. (2007) and Wang and Wang (2009) also stated that perceived switching value was the customer's overall perception based on the weighing of the benefits gained and sacrifices needed to acquire and/or use a product or service. McDougall and Levesque (2000) proposed that perceived switching value contributes directly to customer satisfaction which, in turn, leads to future intentions. According to Parasuraman and Grewal (2000), perceived switching value is a function of both a "get" component (the benefits a buyer derives from a seller's offering) and a "give" component (the buyer's monetary and non-monetary costs incurred by acquiring the offering). The value will directly drive the intention to repurchase. Therefore, we proposed the following hypothesis.

Hypothesis 1: Perceived switching value is positively associated with customer switching intention.

2.2 Lock-in Theory and Perceived Switching Value

Lock-in theory (Shapiro and Varian 1999) stated that customers may be locked in to a specific product or vendor brand because of past investments. Types of lock-in include contractual commitments, search costs, loyalty programs, supplier specialization, the durability of the purchase, and brand-specific training, information and databases. Vendors designed these lock-in approaches to increase switching costs and barriers which, in turn, reduce customers' switching intentions. Lock-in theory explained customer switching behaviors based on two major factors: switching costs and the performance/quality (relative advantages) of competing products. Customers will make an overall assessment and decide whether to switch to another product or brand based on their evaluation of these two factors. Shapiro and Varian (1999) and Liebowitz (2002) mentioned that many a new products was unsuccessful in the marketplace because of these lock-in effects, despite the fact that the new product had better performance and excellent quality compared to the one that was already on the market. This was because customers may not purchase a new product if the switching cost is higher than the benefits they will get from switching.

Lock-in theory proposed the concepts of costs (negative) and benefits (positive) to explain how vendors retain their customers. Switching costs can be classified into three types: procedural, financial and relational. Procedural switching costs consist of economic risk, evaluation, setup and learning costs. They primarily involve the expenditure of time and effort (Burnham et al. 2003). Online auction customers have to take time and effort to learn how to use the features and functions offered by a new auction provider. They also need to setup a new account and re-build their reputation in the new auction website. In addition, they may fear that the new auction provider might not work as well as expected. Financial switching costs primarily involve the loss of financially quantifiable resources (Burnham et al. 2003). A seller will lose the benefits of being a long-time customer in the incumbent auction site if the switch is made to a new OAPP. Relational switching costs concerns the loss of personal and brand relationships. This type of switching cost primarily involves "psychological or

emotional discomfort due to the loss of identity and the breaking of bonds" (Burnham et al. 2003). Switchers will incur the cost of breaking the bond with other people and the brand name of the current auction provider. The costs above will reduce the value of switching as perceived by the customer. Therefore, we postulated the following.

Hypothesis 2: Switching costs (incurred by switching from the current OAPP to a new one) are negatively associated with customers' perceived switching value.

Perceived switching benefits have a positive effect on the assessment of perceived switching value. This concept is highly similar to the quality advantages proposed by lock-in theory (Shapiro and Varian 1999). Users will assess the quality of a product or service if they wish to adopt that product or service. They may switch to the new product or service if its quality is significantly better than that of the incumbent product. When users perceive the quality benefit to be high, the value of switching is also perceived to be high. This quality advantage plays a positive role in inducing users to switch.

The information system (IS) success model (DeLone and McLean 1992, 2003) was adopted by many scholars and practitioners in assessing the success of information system implementations. This model proposed three dimensions of IS quality: system quality, information quality and service quality. These three dimensions effectively capture the attributes that determine IS success. System quality corresponds to the technical level (in the case of the OAPP, the characteristics of the e-commerce system on the website which produces product information), while information quality relates to the semantic level (how successfully the intended meaning is conveyed using that product information on the website). The IS success model has recently been extended to include service quality to reflect the success of online peripheral support provided through a website (e.g., feedback, frequently asked questions, etc.) (Pitt et al. 1995; DeLone and McLean 2003). The online auction platform is a kind of information system. Accordingly, we postulated that the quality of the website would have a significant influence on the switchers' perception of the value of switching. Thus, we proposed the following.

Hypothesis 3: The OAPP's platform quality is positively associated with perceived switching value.

2.2.1 Network Effect to Perceived Switching Value and Customer Switching

Network effect (a.k.a "network externality") refers to the situation where one party's economic behavior impacts another party's utility (Katz and Shapiro, 1985). A network effect exists when the utility that a user derives from consuming a product depends on the number of other agents who consume either the same brand of the product, or another brand which is compatible. The direct effects of network externalities have been extensively studied in economics, marketing, and organizational strategy for more than two decades. Farrell and Saloner (1986a, 1986b, 1988) stated that the positive effects of network externality include: (1) improvements in product quality, (2) the intensification of ongoing service, and (3) reduced usage cost. The greater number of customers using the same product, the more capital and time the product manufacturer will invest in quality and service improvements. The utilization cost for end users is also reduced. Thus, the network effect will increase the value of a product, increasing its power to retain current customers and attract new customers entering the market. In other words, the behavior of an end-consumer will directly impact the economic utility perceived by other end-consumers (Allen 1988; Brynjolfsson and Kemerer 1996; Au and Kauffman 2001; Lee et al. 2003a).

Industries in which network effects exist include information products, communication networks, and services on internet (Tseng et al. 2007). An online auction platform is a typical e-marketplace, similar to those for telecommunications, mass media and packaged computer software. The platform is also a kind of Web-based service as are electronic mail systems, bulletin board systems, online games and instant messaging services. Network effect may lead bigger perceived value than expected. Thus, we believe that the network effect which the switchers perceive can enhance the utility value of online auctions. The following hypothesis was posited.

Hypothesis 4: The OAPP's network effect is positively associated with perceived switching value.

Previous studies have confirmed the relationships between network externalities, user utility, competition, and the resulting market outcomes (Economides and Himmelberg 1995; Park 2004). If most customers expect certain products or services to become popular, a bandwagon effect will form, the virtuous cycle will begin, and customers' expectations will be confirmed. The network effect will be more significant if the user has a stronger expectations regarding product adoption (Shapiro and Varian 1999). High customer expectations regarding the network are vital to obtain the critical mass necessary to fuel explosive growth. Particularly, the network effect in an e-commerce (EC) environment is stronger than in traditional business because of the characteristics of convenience and fast propagation through the internet. In addition, users will be more accepting of online auctions because of the very low transaction costs. User expectations regarding a switch to a new OAPP will rise if the number of that OAPP's customers is increasing. Hence, this expectation leads to the following hypothesis.

Hypothesis 5: Network effect is positively associated with customer switching intention.

2.3 Anti-Switch and Anti-Lock-In Perspectives

Yahoo!Kimo customers switched to Ruten-eBay in order to avoid transaction charges. While they were in transition, sellers switching from Yahoo!Kimo maintained product information in both online auctions at the same time, posting product information in Ruten-eBay as well as in Yahoo!Kimo. In addition to product information, they provided contact information such as their address and phone number in the "About Me" section and on the introduction webpage which Yahoo!Kimo provided for customers to explain their transaction rules. Yahoo!Kimo customers who were moving to Ruten-eBay also guided buyers to visit their websites on their new OAPP. To prevent auction customers from switching to Ruten-eBay, Yahoo!Kimo drew up rules to increase sellers' switching costs. For example, Yahoo!Kimo announced that guiding buyers to other auction websites was not allowed. The sellers could not post their contact information on the product description and "About Me" web pages. Yahoo!Kimo sellers practicing such illegal behavior would be seriously punished. These policies which Yahoo!Kimo proposed to avoid customer switching were called "anti-switching" strategies in this study. We believe anti-switching strategies increased the switching costs for Yahoo!Kimo customers. Thus, the following hypothesis was posited.

Hypothesis 6: Anti-switching strategy is positively associated with customer switching costs.

To counter the lock-in effect imposed by Yahoo!Kimo, Ruten-eBay implemented several "anti-lock-in" strategies. For example, Ruten-eBay designed auction functions similar to those on Yahoo!Kimo in order to reduce the lock-in effect of brand-specific training. Ruten-eBay also developed a specific function called the "Ruten Immigration Office" which allowed Yahoo!Kimo customers to directly migrate their Yahoo!Kimo user ID and ratings to Ruten-eBay. Furthermore, buyers on Ruten-eBay could search the Yahoo!Kimo sellers on Ruten-eBay's website to check whether the sellers had switched to Ruten-eBay. When Yahoo!Kimo customers became aware that the tools Ruten-eBay provided were useful and convenient, they started to switch. The anti-lock-in strategies of Ruten-eBay had effectively decreased their switching costs. Accordingly, we proposed the following hypothesis.

Hypothesis 7: Anti-lock-in strategy is negatively associated with switching costs.

3 RESEARCH METHODOLOGY

In order to test the research model, we conducted a field survey to collect data from both competitors, Yahoo!Kimo and Ruten-eBay. In order to evaluate the nature of sellers' switching behavior, randomly selected online auction sellers were asked to fill out a questionnaire inquiring about their perceptions of the website quality, switching costs, network effects, perceived value, anti-lock-in and anti-switching strategies of the two sites. The first step of data collection was the development of measures for the constructs in the research hypotheses. An online survey instrument was then created and tested. Finally, the sampling of participants was conducted. An invitation letter was sent to the selected Taiwanese sellers on Yahoo!Kimo and Ruten-eBay. To fulfill our research purpose, the participants must have sold products and/or services on both of the online auction websites. The details of the data collection process are described below.

3.1 Measurement Development

Most of the instruments were adapted from previous research and modified to fit the context of this study. Two new variables, anti-lock-in (ALI) and anti-switching (ASW), were developed based on the literature review and empirical observations of real online auctions. The sources of instruments are listed in Table 1.

Construct	Type	Sub Construct	Type	Source adapted from
Anti-lock-in (ALI)	Reflective			Developed for this study
Anti-switching (ASW)	Reflective			Developed for this study
Platform Qualities (PQ)	Formative	1. System qualities (SYQ) 2. Information qualities (INQ) 3. Service qualities (SEQ)	Reflective Reflective Reflective	Kuan et al. 2008
Switching Cost (SWC)	Formative	1. Procedural Switching Costs (PSC) 2. Financial Switching Costs (FSC) 3. Relational Switching Costs (RSC)	Reflective Reflective Reflective	Burnham et al. 2003
Network Effect (NE)	Reflective	1. Network Size (NSZ) 2. Customer expectation (CEP)*		Strader et al. 2007 *Shapiro and Varian 1999 *(Developed from the guiding definition)
Perceived Switching Value (PSV)	Reflective			Kim et al. 2007 Wang and Wang 2009
Customer Switching Intention (CSI)	Reflective			Kim et al. 2006

Table 1. Sources of Measurement Constructs

Since Chinese is the language most commonly used in Taiwan, the questionnaire items were translated into Chinese to increase the response rate. A backward translation was employed to ensure consistency between the Chinese and original English versions of the instrument. Three professional translators independently translated the English questions into Chinese. The translated Chinese question sets were then reviewed by a professor to make sure the meanings of the Chinese questions were consistent with the original English questions. There was no serious discrepancy among these sets of questions, so they were integrated into a single Chinese questionnaire. This final set of Chinese questions was translated back into English by another professional translator in order to check the translation equivalence. Four translators collaborated on the comparison of the original English

questions with the back translated questions. Based on the discussion among the translators, a final set of questions was produced. Domain experts reviewed the instrument to ensure its validity and to identify any ambiguous items. The wording of certain items was modified based on suggestions from the domain experts.

All of the constructs were measured by at least three indicators, using 7-point Likert scales. The anchors for all items ranged from 1 (strongly disagree) to 7 (strongly agree). We conceptualized and measured relative advantage of website quality, switching cost, and network effect, respectively, thus setting the direction of causality from indicator to construct (i.e., formative). The remaining constructs (perceived value, customer switching intention, and anti-lock-in and anti-switching among the two OAPPs) operated as reflective indicators.

3.2 Survey Administration

A pilot test was conducted on 83 online sellers (45 females and 38 males) prior to collecting data for the field survey. Nine items were deleted because of low factor loadings, negative contribution to alpha, and/or low item-total correlation (Nunnally and Bernstein 1994). Exploratory factor analysis was performed to ensure discriminant validity. The results showed that all items in each construct were applicable (eigenvalue > 1). Overall, the pilot test results indicated that the instrument was suitable for the empirical study.

The sample data was collected from Yahoo!Kimo and Ruten-eBay customers in Taiwan. An invitation letter with an incentive message was sent to sellers on these two websites. We also searched auction seller blogs and sent invitation messages to likely participants in order to extend the sample size. To increase the response rate, we offered gifts and prize drawings for valid respondents who completed a valid questionnaire.

A total of 415 responses were received. After filtering, 248 valid responses (138 sellers from Yahoo!Kimo and 110 sellers from Ruten-eBay) were obtained, with no significant differences between early and late responders. Given that 1,000 surveys were sent out, the response rate is 24.8%. The distribution of online auction sellers was well represented in the collected samples.

4 DATA ANALYSES AND RESULTS

A proposed model with a multi-layer structure can be suitably assessed using a two-step approach which assesses the measurement model and the structural model (Gefen et al. 2000). We used covariance-based structural equation modeling (SEM) for the measurement model, and partial least squares (PLS) for the structural model. The data analysis tools were AMOS 6.0 for the measurement model, and PLS-Graph version 3.0 for the structural model. These statistical tools were considered complementary for data analysis. The research model was tested using partial least squares because of PLS's lower sample size requirement relative to other SEM techniques such as LISREL (Chin 1998). The PLS structural model was analyzed using the 200 bootstrapping method.

4.1 Measurement Model Assessment

To validate our measurement model, three types of reliability and validity were assessed: internal consistency, convergent validity, and discriminant validity. Internal consistency was evaluated using Cronbach's alpha, composite reliability, and average variance extracted (AVE) (Fornell and Larcker 1981). Cronbach's reliability coefficients were all higher than the minimum cut-off score of 0.70 (Nunnally and Bernstein 1994). All composite reliability coefficients were greater than 0.7, and all constructs had an AVE of at least 0.5, indicating adequate internal consistency (Fornell and Larcker 1981). Internal consistency values for all constructs were well in excess of the recommended

thresholds for Cronbach's alpha (>0.70 , as per Hair et al. 1998), composite reliability (> 0.70), and average variance extracted (AVE) (>0.50 , as per Fornell and Larcker 1981), thus supporting reliability. Table 2 summarizes the results of reliability testing.

Construct	Types of indicator	Mean	S.D	Alpha	Composite Reliability	AVE
Anti-lock-in (ALI)	Reflective	4.49	1.07	0.81	0.84	0.79
Anti-switching (ASW)	Reflective	4.37	0.97	0.84	0.86	0.82
Platform Qualities (PQ)	Formative	4.93	0.91	0.86	0.87	0.84
Switching Cost (SWC)	Formative	4.82	1.12	0.83	0.85	0.81
Network Effect (NE)	Reflective	4.73	0.95	0.81	0.83	0.80
Perceived Switching Value (PSV)	Reflective	5.67	0.89	0.88	0.90	0.83
Customer Switching Intention (CSI)	Reflective	5.54	0.86	0.91	0.92	0.85

Table 2. Descriptive Statistics and Reliability for Constructs (n=248)

Discriminant validity was evaluated by comparing the square root of AVE with the correlations between constructs. According to Fornell and Larcker (1981), constructs have adequate discriminant validity if the square root of the AVE for a construct is higher than the variance shared between the construct and other constructs in the model. All of the correlations between construct pairs were lower than the square root of the AVE for each particular construct.

Factor loading analysis was conducted to ensure convergent validity. According to Comrey (1973), factor loadings in excess of 0.70 can be considered to demonstrate excellent convergent validity. The loadings of all items were greater than 0.70 with an eigenvalue greater than 1.0, indicating acceptable convergent validity. In sum, both these results and the factor analyses confirmed that all constructs were empirically distinct.

Confirmatory factor analyses were performed using AMOS 6.0 to check the validity of the measurement model. The fit of the measurement model was estimated with various indices (see Table 3). The normalized chi-square (i.e., chi-square/d.f.) and the observed values for goodness-of-fit index, adjusted goodness-of-fit index, normalized fit index, non-normalized fit index, and comparative fit index were all within the recommended levels (Chau 1997, Hair et al. 1998), indicating a good model fit. The observed values of the root mean square residual and the root mean square error of approximation were well within the recommended cut-off values of 0.10 for root mean square residual and 0.08 for root mean square error of approximation for goodness of fit (Hair et al. 1998).

Fit statistic	Thresholds	Measurement Model Statistic
Chi-square/d.f.	<3	2.57
Goodness-of-fit index	≥ 0.90	0.92
Adjusted goodness-of-fit index	≥ 0.80	0.83
Normalized fit index	≥ 0.90	0.92
Non-normalized fit index	≥ 0.90	0.93
Comparative fit index	≥ 0.90	0.94
Root mean square residual	≤ 0.10	0.08
Root mean square error of approximation	≤ 0.08	0.68

Table 3. Fit Indices of the Measurement Model

We reanalyzed the measurement model based on the second-order constructs with the 7 dimensions. With the combined dimensions and the revised set of items noted above, we analyzed a final measurement model and found it exhibited statistics largely in line with recommended tolerance

levels (Table 3). The χ^2 test was significant as a result of the power provided by the sample size. The GFI was higher than the suggested threshold of 0.90, and other indices were acceptable given the number of constructs in the model.

4.2 Structural Model Assessment

The results showed that perceived switching value had a strong, positive and significant effect on customer switching intention ($\beta=0.24$, $p<0.01$). Thus, H1 was supported. Network effect had a positive and significant effect on customer switching intention ($\beta=0.17$, $p<0.01$). Thus, H5 was supported. These two variables predicted 56% of the variance in customer switching intention. Platform service qualities ($\beta=0.21$, $p<0.01$) and network effect ($\beta=0.15$, $p<0.01$) had positive and significant effects on perceived switching value. Thus, H2 and H3 were supported. Switching cost had a negative and significant effect on perceived switching value ($\beta= -0.23$, $p<0.01$). Thus, H4 was supported. These three constructs jointly explained 47% of the variance in perceived switching value. Finally, anti-switching had a positive and significant effect on switching cost ($\beta=0.11$, $p<0.05$). Thus, H6 was supported. In contrast, anti-lock-in had a negative and significant effect on switching costs ($\beta=-0.09$, $p<0.05$). Thus, H7 was supported. These "anti-" strategies predicted 39% of the variance in switching cost. The results of this research confirmed the influence of the OAPP competitive strategies which we had observed on the websites. Figure 1 and Table 4 summarize the results of hypothesis testing.

Relationships	R ²	Beta	Hypothesis
Perceived switching value → Customer Switching Intention	CSI=0.56	0.24**	H1 supported
Switching Cost → Perceived Switching Value	SWC=0.39	-0.23**	H2 supported
Platform quality → Perceived Switching Value		0.21**	H3 supported
Network effect → Perceived Switching Value	PSV=0.47	0.15**	H4 supported
Network effect → Customer Switching Intention		0.17**	H5 supported
Anti-switching → Switching Cost		0.11*	H6 supported
Anti-lock-In → Switching Cost		-0.09*	H7 supported

Notes: SWC (Switching Cost), PV (Perceived Switching Value), CSI (Customers Switching Intention), The significance: * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Table 4. Summary of the Structural Model Path Coefficients

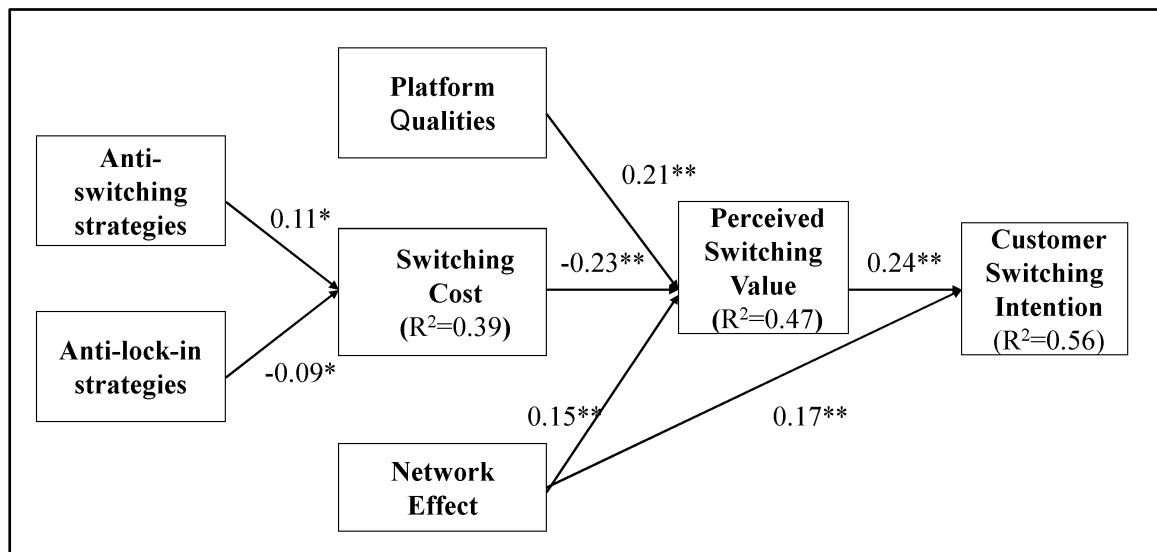


Figure 1. Result of PLS analysis of the research model

5 DISCUSSION AND CONCLUSION

5.1 Academic Implications

Based on the real case of Yahoo!Kimo vs. Ruten-eBay, this study developed an integrated research model to analyze the switching behavior of OAPP customers. Adding to the contributions of past studies in customer switching, the study makes several new contributions for academia. First, most previous research claimed that switching costs and switching benefits have direct effects on individual customer retention and loyalty (Aydin et al. 2005; Matos et al. 2009; Oyeniya and Abiodun 2010; Edward and Sahadev 2011). However, a decrease in switching costs without an increase in switching benefits may not induce users to switch. We argued that the customer's process for making a switching decision is the same as it is for any typical, rational decision. Switching behavior is affected by an overall assessment, (i.e., perceived switching value) not merely costs or benefits alone.

Second, through field interviews and observation, this study identified two opposing strategies. Incumbent Yahoo!Kimo developed an anti-switching strategy to avert customer loss while newcomer Ruten-eBay designed an anti-lock-in strategy to decrease the switching costs for Yahoo!Kimo customers. The results showed that these two strategies significantly affected customers' switching costs. These new constructs can provide direction for researchers engaging in customer switching research.

Finally, most previous researchers tested their models by comparing current websites with other similar websites (Chen and Hitt 2000). This study used a real, historical case as its research objective, something few other studies have done. The results have better validity and are more reliable since the data came from a field survey.

5.2 Practical Implications

In addition to the implications for academia, this study also provided useful suggestions for OAPP practitioners. First, for an incumbent such as Yahoo!Kimo, switching cost is an important factor in the prevention of customer switching. The results indicated that the anti-switching strategy developed by the incumbent OAPP to prevent customer loss did, indeed, affect customers' perceptions of the

switching costs. Therefore, OAPPs should develop strategies to increase customers' procedural, financial and relational switching costs in order to retain their customers. Besides providing a credit-scoring system to cumulate user's credibility, OAPPs should offer more incentive programs and reward user loyalty in an effort to lock in current customers.

Second, newcomers such as Ruten-eBay should perform anti-lock-in strategies to effectively decrease the costs customers incur when switching. This can offset and possibly overcome the incumbent's lock-in strategy. Newcomers should clearly show how they differ from the incumbent and highlight their service's advantages so that incumbent customers will be willing to switch despite the inconvenience and the tangible and intangible costs involved. On the other hand, newer OAPPs can increase their advantage by making improvements in several key areas. System quality should be high enough to provide ease of use, flexibility, ease of interaction, etc.; and page layouts should be readable and consistent. The information on the site should be up-to-date, sufficient, accurate, and useful in assisting sellers to sell their products. Service quality should be sufficient to ensure that seller-to-customer contact is easy and feedback is provided. High quality service would include a privacy policy, personalization, better FAQ and search functionality, etc.

Third, increasing switching cost is not enough to retain customers for incumbents, the reverse is also true for newcomers. According to the findings, lock-in and anti-lock-in strategies can significantly influence customers' switching costs. However, the switching costs did not directly incur customers' switching. The results show that the switching value which clearly mediates the influence of switching costs on customer switching intention. Thus, besides switching costs and the strategies, OAPP managers should pay more effort to increase the switching value which customers perceive.

Finally, OAPPs should leverage the network effect. To increase opportunities for selling products or services, most sellers will set up their business on the platform which serves the most buyers. OAPPs can give customers the expectation that their platform will constantly expand the number of buyers and the amounts of the transactions. Business growth strategies include brand promotion in media channels, cooperative alliances with manufacturers, or continuous investment in development and innovation. OAPPs should show a higher commitment to platform growth in order to enhance customer confidence.

5.3 Limitations and Future Research

Though this study draws meaningful intellectual and practical implications, a few limitations should be considered when applying the findings. First, this study adopted local OAPPs as its survey sites. The two auction sites, Yahoo!Kimo and Ruten-eBay, were well-known in Taiwan. Most of customers were Taiwanese with a few customers from other countries. Consequently, we cannot resolutely conclude that our findings can be globalized to outside OAPPs such as eBay in the USA. Future research may further investigate global OAPPs based on the concepts provided by this study.

Second, user switching is a complex combination of behavior and process that is influenced by factors from diverse perspectives. This study focused only on lock-in and perceived switching value from the perspectives of economics and psychology. Some reported social factors such as e-word of mouth, satisfaction, trust and risk may affect the switching behaviors of OAPP users. Researchers may integrate sociological variables to determine which dimension is the dominant driver of customer switching behavior.

Finally, this research included two new concepts, anti-lock-in and anti-switching, to examine the strategies created by the OAPPs to retain current customers or attract new ones. We evolved these concepts over several months of field observations and analysis. Though we have carefully explained the definitions and developed measurement items based on an intensive review of the literature, further exploration of these new constructs is necessary to ensure their validity.

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