Effects of Switching Costs on Loyalty to Social Network Sites: Resource Based Approach

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Abstract

This paper examines user's loyalty to social network sites (SNS) from switching costs (SC) incurred by both technology and social factors. We propose a research model specifying that the perceived values of resources of the factors affect the SC and the SC determine user's loyalty. Empirical results show that technology variables of ease of use and privacy controllability, and social variables such as network size, usefulness of SNS activities, and awareness of network status have significant effect on SC. In particular, ease of use is negatively associated with SC. Since it is shown that in overall the impact of social factors is stronger than that of technology factors, we can interpret that technological superiority itself does not lead to the success of SNS. Contributions of this paper are: 1) application of SC in SNS research from the resource based perspective, which can be used for developing strategies of sustainable SNS, and 2) provision of different perspective toward the variable of ease of use, which has been considered an important factor of technology acceptance.

Key words : Social Network Site, Switching Cost, Loyalty, Resource Based Approach

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1. Introduction

A social network site (SNS) is a socio-technological system which makes users online social activities dynamic through the mediation of technology and it became a significant social phenomenon. For a SNS to be sustainable, the site can pursue strategies of either enhancing user satisfaction to attract new customers or locking-in of the existing users. According to the American Customer Satisfaction Index (ACSI) [2], among the social media web sites such as Wikipedia, YouTube, Facebook, and MySpace, the ACSI index of Facebook, which has a huge bo.e. of users, is ranked very low.

We are interested in the seemingly contradictory phenomena: If customer satisfaction solely determines the degree of customers sticking to an IS (Information Systems), then dissatisfied customers may not use the system any more. However, Facebook example implies that it is not always the case.

The technology side of a SNS provides its members a platform through which they interact and communicate each other. If the technological platform does not appeal to its users, in terms of supporting socializing functions, interface design, or privacy protection, then the SNS might not be welcomed by its users from the perspective of TAM (Technology Acceptance Model).

Recent research on IS draws attention to accommodation of social aspects beyond organizational settings. Considering the social embeddedness of technology, new research attempt to shed light on the social aspects of social computing technology which embrace technology, user community, and their social activities. For example Yoo [33] proposed a framework on the acceptance of technology in daily lives of people. Vannoy and Palvia [32] considered the technology acceptance from the social influence perspective. Cheung et al. [11] adopted a social identity model to examine the intention to participate in a SNS. Popularity of ordinary users on online communities and active online networking activities calls for IS research to go beyond just technology acceptance to strategic approach for embracing user's social computing.

Previous research on the success factors for attracting members of a SNS swayed to either technical or social aspects. We believe that we need an integrative view, combining the technical and social aspects to develop strategies to attract new members and lock-in existing members for a sustainable growth. Our underlying assumptions are; If users feel difficult to switch out to an alternative SNS provider for technical reasons, they will tend to stick to the current technology system. And if they are socially bonded to a SNS, they will be more resistant both to move to another SNS and to build a new social network there.

The main objectives of the paper can be summarized as follows:

1. Proposition of a framework for embracing technology environment for a unified analysis of a SNS.
2. Identification of antecedents of switching costs.
3. Effect of switching costs on loyalty

The structure of this paper is the following: Theoretical background of our unified perspective of SNS and related literature of switching costs and user's loyalty are provided in section 2. In section 3, we propose our research model and the hypotheses, followed by the research methods and analysis in section 4. In section 5 we interpret the major findings of the research. Concluding remarks and possible future research are discussed in section 6.

2. Theoretical Background

2.1 Social Network Sites

Among the existing SNSs, Facebook continues to expand to foreign countries [21]. Factors leading to the success of Facebook might be multi-faceted, including managerial capability, technical innovation, deployment strategy such as timing and phase of introduction, or technical superiority [22].

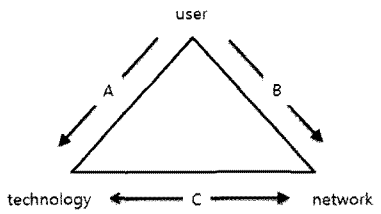
Other than the pure connections and communications among network members, the commercial potential of SNS emerges from diverse applications: Amazon's reliance on Facebook, polling, and recommendations, link exchanges among users threatening search engine sites like Google [21], and of course target marketing. Since the applications depend on user's profile and communication data, privacy issues in a SNS are growing [1][8][18]. Especially this is the case for SNS companies that try to introduce effective business models driven by huge databases left by users.

To counter the privacy problem, a new SNS platform, called Diaspora [17], has been proposed recently. Diaspora attempts to build a distributed and autonomous control of user's personal data so that privacy protection is guaranteed, contrasted with the centralized data management by Facebook and most other SNSs. Personal data are designed to reside in an individual server or "seed".

2.2 From technology acceptance to technology embracement in SNS

A SNS may be viewed as a system of three components and the interaction among them: Users, technology platform, and network community as in [Figure 1].

We can view the intersection of users and IS technology from the standpoint of "acceptance" or "embracement". By acceptance we mean that we willingly take the IS since the IS itself is judged to be acceptable. On the other hand, we embrace an IS because the IS is required to fulfill certain goals or objectives. In the extreme, an embraced IS may not always be an IS which is willingly accepted in the technology sense. One example is that there exists a social pressure, sometime social consensus, for teenagers to participate in an online social network for a new mode of online social presence [32].



[Figure 1] User embracement of IS

Under this distinction, an embraced IS may exhibit unattractive features such as difficulty of system usage. However, the difficulty can build up the switching barrier against other alternatives. In a SNS environment, the embracement is determined by the three forces such as technology artifacts, users, and social network as in [Figure 1].

Interaction (A) between user and technology is visible to the user through technology interface, which allows the user to evaluate the technology. In TAM [13] and extended TAM [14], the acceptance of a technology system is determined by this relationship.

Relationship (B) is a social interaction between the user. This relationship is the key to generate value of a social network. Based on the relationship (B), social influence perspective evaluates socio-technology system acceptance. For related research, see Cheung et al. [11] that identified variables such as subjective norm and social identity that strongly influence intention to use a SNS. Also Song et al. [30] figured out that subjective norms, social identity, and tendency to social comparison affect behavioral intention to use

a specific online community service.

The relationship between technology and networking (C), however, is hidden from the user's point of view. For example the extent and the delivery of news feeds among users of a SNS are supported by the underlying network and database technologies.

As indicated in the conceptual model of multi-faceted nature in [Figure 1], a SNS needs to be considered from the relationships (A), (B), and (C). If a user judges that the SNS is not satisfactory in terms of relationship (A), the SNS may not be accepted by the TAM perspective. However, even in that SNS setting, a user with a holistic view of a SNS might embrace it if the other relationships are strong enough to offset the weakness of relationship (A).

2.3 Switching costs

Switching behavior is influenced by switching costs, and the costs are defined as any perceived disutility a customer would experience from switching service providers [10]. Also Porter [28] defined the costs as a one time opportunity cost which arises from changing from the incumbent product or service to another. The costs may come from the required learning of how to adapt to the new one or the uncertainty of whether a switched service would be successfully utilized in intended ways.

A main focus of customer relationship management program is to build up a higher switching barrier [4]. Switching barrier may be derived from different judgemental states such as user's affection to the service, inherent inertia of users, or slavery to the current service. Regardless of the sources of the switching barrier, if the barrier is higher, then a user may be more loyal to the current service.

We have many successful cases of erecting switching barriers: SAP in ERP (Enterprise Resources Planning) market has provided higher switching costs since the database and business process are tightly integrated. So changing to a new ERP system may involve costs in terms of learning, implementing new system, and so on. Another example of lock-in of customers by Amazon is the tight coupling of its eBook reader Kindle with digital format of Kindle Books [26]. On the other hand, iPhones and iPads by Apple, BlackBerrys and Android phones can read Kindle Books as well as other digital book format. In this way once Amazon sells Kindle to its customers, those customers can be locked-in by the Amazon digital books.

As mentioned, switching costs are incurred when a customer switches from one system or product to another. The costs include time, money, or efforts. If the costs are high, it leads to higher loyalty. As components of switching costs, Burnham et al. [6] identified three costs such as procedural, relational, and financial. Among the three types of costs, since there are no financial costs involved in the context of a SNS, the remaining two costs are only relevant. Also they figured out that system specificity, user investment or customization on the system, and knowledge of alternative systems are significant antecedents of switching costs.

Chen and Hitt [10] identified factors affecting switching in online trading companies. The major factors include web site usage, change in usage, quality, product breadth, transaction cost, personalization, and ease of use.

2.4 Loyalty

Customer loyalty is the similar concept as the degree of willingness to stay with the current product, service, or system. Srinivasan et al. [31] determined the antecedents and consequences of

customer loyalty in B2C environment. The antecedents of e-loyalty can be categorized in terms of the three components described in Figure 1: Contact interactivity, convenience, choice, and character can be grouped under technology characteristics. Customization, care, and cultivation can be thought as intersection effects of technology and user. Also the concept of online community can be considered as network through which the exchange of opinions and information about the offered products and services is facilitated. But [31] did not take into account the networking process in their model.

3. The model and hypotheses

3.1 Basis of research model

We investigate switching costs as a strategy to keep a SNS company sustainable. Based on previous research, we propose a model incorporating the sources of switching costs and the relationship between switching costs and loyalty.

In specific, we use a resource based view [27] for a SNS to have competitive advantages against its competitors to figure out the sources of switching costs. The sources, technological resources and networking resources, are derived from the technology embracement framework in section 2.2. For networking resources, we considered the concepts from the reinforcing model of network size, network activity, and net gain or loss [7]. For the technological resources, we relied on the variables identified in [10]. A detailed components of our research model along with expected relationships is provided in section 3.3.

3.2 Hypotheses

We view the antecedents of switching costs in a SNS from resource based perspective and we divide our discussions into two: technology-related and network-related resources.

3.2.1 Lock in through technological resources

Technological prowess in terms of interface design and functionality of an IS has been demonstrated as significant factors to system acceptance by users, especially in TAM [13] or IS success [15] models. In the framework by DeLone et al. [15], the factors include ease of use, functionality, reliability, flexibility, data quality, portability, integration, and importance. To utilize any IS, users need to invest time and effort to learn the IS. If they abandon the current IS, they should relearn a new IS, which makes the previous investment useless. Therefore, individual user's investment becomes a barrier for switching.

Ease of use has been extensively used in technology adoption and satisfaction. When a user perceives that an IS is easy to use, there is low sunk cost of learning, and thus lower switching costs involved [10]. They showed that if an online brokerage system is perceived to be easier for the users to fulfill required transactions, the switching and attrition rates were higher.

Regarding the diversity of applications to support the main function of an IS, Chen et al. [10] showed that the extent of online brokerage products in e-trading is directly related with switching costs. From this, we can conjecture that inventive applications provided by a SNS is a factor leading to user's adherence to the incumbent service provider.

From the previous results, we choose factors such as ease of use and breadth of functionality to capture the characteristics of technology competitiveness provided by a SNS provider and the amount of user's investment in the SNS. Based on these previous findings, we establish the

following hypotheses:

H1: Ease of use is negatively related with user's switching cost.

H2: Breadth of functionality of a SNS is positively related with user's switching costs.

Privacy issues in a SNS are recurrent subjects in mass media and research and deemed to be significant to the perceived safety in SNS activities. Also as indicated in the Diaspora case, the new SNS attempts to draw its future users, especially those with high privacy concerns, from other SNSs. Smith et al. [29] extensively examined the nomological structure of privacy concerns in organizational settings. They figure out four privacy concern constructs such as excessive personal data collection, unauthorized secondary usage of personal data, improper access to personal data by unauthorized personnel, and errors in personal data, made deliberately or accidentally.

It is also shown that privacy concerns affect future behavioral intentions such as refusal to provide certain kinds of private information, taking appropriate actions to complain the practices [29], and customer loyalty in e-commerce [24][25]. Also refer to [1][8] to see how private data controllability affects user's trust on a SNS.

Mostly, privacy concerns come from the uncertainty of how a user's personal data are treated by a SNS company or unauthorized third persons. When the SNS company provides a clear set of technical controls to its users and the users perceive that their privacy level of their personal data in SNS is under their control, the uncertainty should be abated. If that is the case, users might safely stick to the current SNS. Thus, we incorporate privacy controllability in our model to deal with privacy concerns as a SNS company's technical resource.

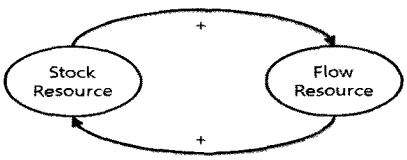
Based on these arguments, the following hypothesis is derived:

H3: The level of user's perceived privacy controllability in a SNS is positively related with switching costs.

3.2.2 Lock in through network resources

As indicated in Butler [7], network resources can be grouped into two: stock and flow resources. These resources are created by users, by the help of technological system. Stock resource refers to the potential availability of resources in a SNS. Flow resource means the capability of actually engaging online social activities, which Butler denotes as 'benefit creation process'. Based on the implications in [7], the two resources reinforce each other as in [Figure 2].

The level of stock resource in terms of network members or the contents available in a SNS directly influences the flow activities, and vice versa.



[Figure 2] Resource reinforcing model

3.2.2.1 Stock network resources

Each member of a network possesses information, knowledge, or fun resource. Network size is a measure of the magnitude of resource potentiality [7]. Based on the online community of listservs (e-mail based social structure), Butler [7] pointed out that the size of online social community is an important factor for explaining the membership retention and acquisition since the size determines the availability of stock resources.

Berry et al [4] suggested that a telephone company should pay attention to call patterns. If a customer's call is distributed more to many callees, the customer will be more prone to inertia due to the inconvenience to notify all the callees about the

telephone number change. Even though Berry et al. [4] takes into account the customer's call network, the network does not possess any resources embedded in as in a SNS. On the other hand,

These results and the findings in [7], that the net effect of membership size of an online community on member retention is shown to be positive, lead to the following hypothesis:

H4: User's network size is positively related with switching costs.

Another type of stock resource is investment in network. Lock-in effect comes from the investment, in terms of time and effort, for building the current network. A reasonable conjecture is that the more investment in network, the more likely the user sticks to the current network. For example, suppose that an email account holder has kept many important email messages in the current mail server. Then the holder may find himself difficult to sort out important messages out of a long list of messages exchanged, and to transfer them to another email account at different email service providers. Similarly, if a person has many entries in his profile and home page with many news feeds and photos, it is not easy to ignore all the history built up with their friends and move to another SNS. Based on the observations, we have the following hypothesis:

H5: Perceived value of personal and communication data stored in SNS is positively related with switching costs.

3.2.2.2 Flow network resources

Network activities contribute to both increase stock resource [7] and help keep the recency of the network resource, enhancing the utility of network resources. In [7], the number of changes in discussion subjects was used to measure network activity. In a SNS, if a user visits his SNS frequently and thus updates the status of his network, he is considered to be active in networking. Here, we use the perceived degree of awareness of one's SNS as a proxy for the degree of network activity.

H6: The degree of user's awareness of network status of one's SNS is directly related to switching costs.

Since usefulness is widely used as an important factor explaining IS acceptance [13][14], we include the following hypothesis:

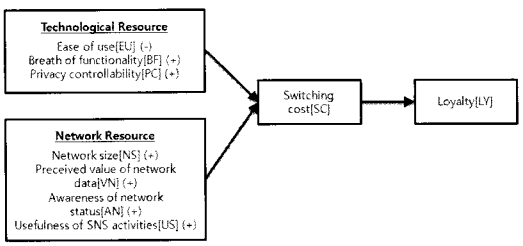
H7: Usefulness of SNS activities affects positively on switching costs.

The major sources of user loyalty come from the repeated usage and favorable recommendations to other people [12][23]. And switching costs are shown to have a much stronger explanation power on customer retention than satisfaction in telephone and credit card companies [6]. Along these findings, we have the following hypothesis:

H8: Switching costs are directly related with user loyalty.

3.3 Research framework with hypothesized causality

Based on the hypotheses in section 3.2, our research model along with the directions of relationships are shown in [Figure 3].



[Figure 3] Research model

4. Method and analysis

4.1 Sample

We conducted surveys held at three universities located in the central region of Korea during October and November, 2010. The surveys were conducted during regular lectures in classrooms. A sample of 382 has been collected. Of these, 19 questionnaires were deleted for this analysis because of omitted responses or answers with conspicuous patterns which reveal randomness in selecting choices. A summary statistics of the users in the sample is in <Table 1>.

<Table 1> Description of the sample

Category		Frequency	Percent(%)
Gender	Male	203	55.9
	Female	160	44.1
Age	Younger than 20 years	115	31.7
	20-24 years	197	54.3
	25-29 years	50	13.8
	Older than 30 years	1	0.3
Number of SNSs participated in	1	204	56.2
	2	102	28.1
	3	29	8.0
	4	19	5.2
	More than 5	9	2.5
Total		363	100.0

4.2 Survey instruments

We borrowed instruments of the above constructs from previous literature as much as we could since their construct validity has been established. However, we developed our own scales for awareness of network status and perceived value of network data, based on the reasons leading to hypothesis 5 and 6, respectively.

Note that network size is a quantitative variable. The variable is identified by multiplying the nominal number of friends enrolled in one's SNS by the ratio of friends who are perceived to be actively engaged in the SNS. For all other constructs, the instruments are measured by a Likert type scale where 1=strongly disagree and 7=strongly agree.

4.3 Data Analysis

For the data analysis we used a widely used Structural Equation Modeling technique (Amos 5.0). We performed the two-step analytical procedures: the assessment of measurement model and then structural model [3].

The result of measurement model test for each construct is shown in Table 2. The goodness of fit indices such as GFI=0.908, AGFI=0.862, RMSEA=0.049, NFI=0.917, CFI=0.958 satisfies the recommended criteria, indicating that the measurement model is significantly meaningful. In addition, since the factor loading for the constructs is statistically significant at 95% confidence interval ($t \geq 2$, $p \leq 0.05$), we can claim that the validities of convergence and discrimination among the constructs are confirmed. In order to test whether each instrument can represent its construct, the values of CR (Composite Reliability) and AVE (Average Variance Extracted) were examined. Since CR and AVE exceed the recommended value of 0.7 and 0.5, respectively, we can conclude that the instruments represent their constructs well [20].

<Table 2> Measurement model test

Construct	Instrument	Estimate	M.E.	t value	CR	AVE
EU	EU1	.754	.793	12.042	0.863	0.772
	EU2	.810	.555	11.509		
	EU3	.905	.284	8.181		
	EU4	.933	.204	6.164		
BF	BF1	.825	.400	6.184	0.754	0.514
	BF2	.729	.518	9.441		
	BF3	.520	.484	12.574		
PC	PC1	.845	.589	10.354	0.855	0.664
	PC2	.915	.323	6.863		
	PC3	.866	.253	9.330		
VN	VN1	.798	.548	9.422	0.813	0.593
	VN2	.718	.421	11.259		
	VN3	.890	.363	5.684		
AN	AN1	.835	.527	6.819	0.844	0.577
	AN2	.750	.415	10.176		
	AN3	.759	.405	10.224		

	AN4	.660	.318	10.571		
US	US1	.882	.383	6.009	0.801	0.573
	US2	.839	.478	8.900		
	US3	.793	.712	8.653		
SC	SC1	.892	.461	7.391	0.876	0.599
	SC2	.935	.300	9.637		
	SC3	.676	.259	10.525		
	SC4	.558	.438	10.191		
	SC5	.546	.377	10.032		
LY	LY1	.799	.494	8.924	0.895	0.589
	LY2	.782	.536	9.346		
	LY3	.740	.514	10.299		
	LY4	.768	.342	9.436		
	LY5	.692	.283	8.935		
	LY6	.831	.318	11.062		
X^2=552.978, df-291, X^2/df=1.900, GFI=0.908, AGFI=0.862, RMESA=0.049, NFI-0.917, CFI-0.958						

For the test of discriminant validity among the factors, we performed a correlation analysis using the Pearson's correlation coefficients. The result shows that the signs of the relationship among the constructs confirm those specified in the hypotheses. Note that discriminant validity is confirmed because the square roots of AVE exceed the correlation coefficients of the pairs of constructs.

Based on the measurement model tests, we need to test the structural model to understand the relationships among the constructs. We first checked the goodness of fit for the structural equation model in Table 3.

Since all the measures indicated in Table 3 satisfy the recommended thresholds, we can claim that the explanatory power and goodness of fit for our proposed model are well supported.

<Table 3> Goodness of fit test for structure model

Fit	Absolute fit			
	x^2(df)	x^2/df	GFI	RMESA
Recommended criteria	-	≤3.0	≥0.9	≤0.08
Result	510.119 (305)	1.673	0.916	0.043

Fit	Incremental fit			Parsimonious fit	
	AGFI	NFI	CFI	PGFI	PNFI
Recommended criteria	≥0.8	≥0.9	≥0.9	≥0.6	≥0.6
Result	0.873	0.925	0.968	0.679	0.643

From the results of goodness of fit tests, causality of the research model is provided in Table 4. T-tests were used to determine the acceptance of testing path coefficients at α=0.05.

<Table 4> Test of path coefficients

Hypothesis	Hypothesized Paths			Direction	Standardized Path Coefficient	t value	Result
H1	EU	→	SC	-	-0.092	2.120*	Accept
H2	BF	→	SC	+	0.019	0.317	Reject
H3	PC	→	SC	+	0.163	3.786**	Accept
H4	NS	→	SC	+	0.080	2.081*	Accept
H5	VN	→	SC	+	0.046	1.034	Reject
H7	AN	→	SC	+	0.092	2.451*	Accept
H8	US	→	SC	+	0.206	2.899**	Accept
H9	SC	→	LY	+	0.684	11.799**	Accept

Note: *. P<0.05, **. P<0.01

5. Interpretations

It has been well established that ease of use (EU) promotes the acceptance of new technology. However, the construct negatively influences switching cost (SC), meaning that the easier to use an IS is, the lower the switching barrier is. Thus we need to apply the role of ease of use differently from 'acceptance' situation to 'embracement' situation. If a technology is embraced, the effect of ease of use becomes less important in the long run.

System functionality has been extensively studied in task-technology fit [16][19]. However, in the SNS environment users do not pursue specific productivity related tasks, but are interested in connections and communications for fun. Thus based on the result we believe that diversity of technological functions in a SNS environment is not so important as those in work-related systems.

The third technology-related variable, privacy controllability (PC) strongly affects SC. Users of SNS want to control the level of privacy for themselves, not entrusting their SNS company for the appropriation of their profile or communication data. Therefore the more a user perceives to

control his data, the higher the level of the user's trust of the SNS company is. Among the technology related antecedents of SC, the path coefficient of privacy controllability is the highest and statistically most significant.

For network related variables, awareness of network status (AN) affects SC positively as hypothesized. However, value of networking data (VN) does not explain SC. Since AN is related with network flow resource, the result implies that users value the networking process itself, especially looking forward to recency of their network. On the other hand, even though users generate much communication data, they find that VN, network stock resource, is not important for switching decisions.

With the different findings of PC and VN, a further study is required to clarify the seemingly contradictory results. That is, if users do not value their personal and communication data stored in a SNS much, why are they serious about the privacy controllability? A plausible reason might be that they think the data are short and haphazard gossips and expression of daily activities. Thus, they do not seem to value the data not so significantly, compared with other detailed and subject oriented communication data like e-mail messages. But they still worry about the possible privacy problems.

Usefulness of SNS activity (US) explains SC the most among the proposed antecedent constructs of SC. The effect of network size on SC is positive and statistically significant. This variable is important since it can play a role as a link to a virtuous cycle. That is, network size -> switching costs -> Loyalty (through favorable word of mouth or active invitation of friends into one's SNS) -> network size, and so on. Finally, switching costs positively affects user loyalty toward a SNS, as expected.

6. Conclusion and comments

Because technology resource itself does not provide sustainable capability because of the ease of replication from competitors [9], network resource capability should be stressed. In practical sense, to enhance the dynamic nature of network resource capability, technology needs to nudge users in seamless ways so that environment and SNS networks are linked smoothly.

Since technology is gradually embedded in our daily lives and many IT applications can be characterized as experiential [32][33], we believe our findings are applicable to other applications too.

Readers need to consider this research as exploratory. Even though some of the constructs, newly developed here, passed statistical tests, further research is required to obtain strong reliability and validity. Another note is that as in many other research, we used a sample of students, which may not represent the population faithfully.

Possible future research would be to examine the reasons of the contradictory findings: a significant effect of privacy controllability (PC) on SC and insignificant effect of value of networking data (VN) on SC as noted in section 5.

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