

Cyber Migration: An Empirical Investigation on Factors that Affect Users' Switch Intentions in Social Networking Sites

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Abstract

In recent years, Social Networking Sites (SNSs) have increasingly gained popularity. With the existence of hundreds of such sites, it is not uncommon to have users switching between them. Thus retaining existing users and attracting new users is crucial to the success of an SNS. This paper frames the described phenomenon as a "cyber migration". We enlist and adapt the push-pull-mooring framework developed in migration literature to enhance the understanding of factors influencing the switching intentions of SNS users. A survey study was conducted which manifested dissatisfaction with member policy and peer influence as two central factors, alongside other findings. We recommend SNS practitioners to be more sensitive to users' reactions to the change in member policies. Meanwhile, how to utilize peer influences to maintain and develop membership deserves closer attention. The findings are believed to increase our understanding of an interesting Internet-enabled phenomenon, as well as making contributions to both research and practice.

1. Introduction

Since the development of Web 2.0 concepts in 2005, the Internet has entered a new chapter, which has seen the popularity of dynamic, user-driven, participatory sites. Alongside this development, social networking sites (SNSs) have prevailed and evolved examples such as MySpace and Facebook. A survey conducted by Pew Internet & American Life Project [36], and involving teenagers, suggests that in the US more than half of all the online youths use SNSs.

Multiple definitions and views of an SNS exist. McDowell [40] posits that it is a site where one is connected to new people through those one already knows. Vie [50] argues that online social networking sites must also provide privacy policies and tools for users to protect their personal privacy, which necessitates four particular features in order to distinguish an SNS from other computer-mediated

environments: the node-link structure, the personal profile, privacy policies and features, and personalization tools. Incorporating the historical development of SNSs, boyd and Ellison [6] define SNS as a web-based service that allows individuals to: (1) construct a public or semi-public profile within a bounded system; (2) articulate a list of other users with whom they share a connection; and (3) view and traverse their list of connections and those made by others within the system. Based on these viewpoints, we refer to an SNS as *an online location where a user can create and share a self-profile, seek and build relationships with other users, and connect to others via personal networks*.

To date, Internet users have many options when they intend to start an experience with an SNS, as hundreds of such sites with different features and target user groups are available [50]. Most SNSs help people to maintain pre-existing social networks, while others support connection among strangers based on shared interests. Sites like Xanga and MySpace emphasize on journaling activities; while Classmates.com and Xiaonei.com help former classmates to reunite; and Match.com and Jiayuan.com are particularly used to search for dating partners in certain regions. Furthermore, SNS sites can vary in the degree to which communication tools, including instant messaging, blogging and video/music sharing services, are provided to users.

While the total number of SNSs is increasing at a phenomenal rate, some SNSs have received less traffic or have even been terminated as a result of fierce competition. For example, Friendster.com, launched in 2002, has been receiving less traffic in the US since 2005 after encountering both technical and social difficulties [20]. SixDegrees, launched in 1997, was recognized as the very first SNS in the world; however, it failed to sustain its business and was terminated in 2000. In China, there was another similar instance with Zhanzuo.com, which successfully attracted considerable investment initially, but subsequently faced strong competition from a late-comer,

Xiaonei.com, which shared the same target user-group, i.e., university students. Some other SNSs like Google's Orkut and Microsoft's MSNSpace have been successful in certain geographic areas, but have failed in others [6]. It is evident that the primary business strategy for all SNS services is to attract potential users and at the same time to keep existing users.

The many new experiences brought about by SNSs have attracted increasing research attention. Some look at the primary function of SNSs on managing social networks [5, 18]. Others investigate the relationship between profile elements and the number of Facebook friends, suggesting that profile fields that reduce transaction costs and avoid false information are most likely to be associated with a larger number of friends [32]. Gross and Acquisti [21] examine privacy issues in SNSs and stress the potential threats to privacy contained in the students' personal information on Facebook. "Phishing" victims are found to be much more likely to give away information to faked "friends" on SNSs than to a stranger [28]. Dwyer et al. [16] state that trust and usage goals may affect what people are willing to share through a comparison between Facebook and MySpace users. Nevertheless, to our knowledge, little empirical research has been conducted on examining *factors that affect users' intentions to switch between SNS services*. Since user turnover has a huge impact on the success of an SNS, it is essential to understand which factors affect users' intention to switch from one SNS to another.

This study attempts to examine the motivating forces in switching SNS services. Since most users do not really remove their previous accounts when they decide to start a new one in another SNS, "switching" between social networking sites refers to *the action whereby users primarily participate in a new SNS instead of their previous site*. This in a way can be termed "migration in cyberspace". In the next sections we provide a review of relevant literature that is largely rooted in migration research, and present our research model and hypotheses. Then, we present a survey study administered to SNS participants. The data is analyzed, results are deliberated upon, and important implications are drawn. We conclude with a discussion on future research opportunities.

2. Theoretical background

Due to the novelty of Internet-enabled social networking, literature directly related to SNS switching is less readily available. It is therefore essential to review pertinent literature from other disciplines. In sociology and anthropology, human migration typically involves "the movement of a person (a

migrant) between two places for a certain period of time" [7, p.34]. Humans are known to have migrated extensively throughout history and prehistory. Human geography research classifies migrants into voluntary migrants and refugees; while there are distinctions between temporary, permanent, international, and internal migration [27].

As the foundation for modern migration theories, the "Laws of Migration" was introduced by Ravenstein in the 1880s and based on studies carried out in the UK. After being modified several times, this model is regarded as the most important theoretical contribution in migration literature to date [27]. Based on the accumulative laws, the **Push-Pull-Mooring (PPM)** framework is regarded as a dominant paradigm in migration literature. In the PPM framework, the factors affecting migrants' decisions for moving from one geographic area to another can be categorized into push, pull and mooring factors. *Push* factors refer to the negative factors driving people away from the original place, while *pull* factors are positive factors attracting people to a destination [41]. In early migration research, Bogue [4] claim that push factors could include, for example, "decline in a natural resource or prices paid for it; loss of employment; oppressive treatment due to political, religious, or ethnic affiliations; lack of opportunities for personal development, employment, or marriage; and natural disasters such as floods, earthquakes, fire, or epidemics"[2, p.98]. Pull factors could include, for instance, "superior opportunities for employment, higher income, or education; preferable environment and living conditions; and opportunities for new activities, environment, or people" [2, p.98]. *Mooring* factors have been previously labeled as "intervening obstacles" by Longino [38]. They refer to all life-course, cultural and spatial issues that act to facilitate or hamper migration decisions [41]. The mooring factors can be viewed as a supplement to push and pull factors in this framework.

The PPM and migration theories have been applied to other contexts, such as in consumer behavior and marketing domains. As Clark and Knapp argued, "just as individuals shop for consumer goods, potential migrants compare the attributes of alternative locations and express those preferences by moving to the location that best satisfies them" [9, p.3]. In an empirical study, Bansal et al. [2] suggest that the PPM migration model performs better than an alternative model as a unifying, theoretical framework for understanding consumers' switching behavior with regard to service providers. They unified some of the most commonly studied predictors of service provider switching, including quality, satisfaction, value, trust, commitment, price perceptions, alternative

attractiveness, social influences, switching costs, prior switching behavior and variety-seeking tendencies. Then they fit these factors into the PPM migration framework [2]. Lui [39] conducted a similar study by applying the PPM framework to individuals' intention of switching IT service providers. A recent study by Zhang et al. [53] interprets three antecedents in terms of push, pull and mooring effects in their study on bloggers' intentions to switch blog services, which is closest to the context of SNS switching in our study. Their survey results indicate that satisfaction is the strongest factor affecting switching intentions, followed by attractive alternatives and switching costs.

In summary, it is evident that the PPM model can provide a useful tool to explain and predict consumers' switching behaviors, thereby assisting managers in mapping the competing forces that impact the movement of their customer base. Among others, the novel and unique features of SNSs are what distinguish our study from existing research concerning consumers' and bloggers' switch behavior. It is of both theoretical and practical interest to empirically examine factors affecting SNS users' switching intentions, utilizing the PPM migration framework. The results can be further compared with the findings with other contexts such as blogging sites, and even with switching predictors in an offline context.

3. Research model and hypotheses

In our research model, dissatisfaction, attraction and switching costs are identified as the push, pull and mooring factors respectively, which cause users' intention to switch SNS services. Furthermore, all the above three constructs are designed to be multidimensional so as to be specific and sense making in SNS contexts. Multidimensional constructs are widely used in organizational behavior research [17].

According to Law et al. [33], a construct is multidimensional when it refers to several distinct yet inter-related dimensions corresponding to a single theoretical concept. Multidimensional constructs can be categorized as *superordinate* and *aggregate* constructs based on the *direction of the relationship* between the construct and its dimensions [34]. Several dimensions are identified as subconstructs of PPM factors, namely dissatisfaction (dissatisfaction with technical quality, dissatisfaction with information quality, dissatisfaction with community support, and dissatisfaction with community support), attraction (attractiveness of alternatives and peer influence) and switching costs (setup cost and continuity cost). The relationship flows are all from the dimensions, i.e. the first-order constructs, to the second-order constructs. Therefore, all the three constructs are regarded as

aggregate multidimensional constructs in our research model (Figure 1).

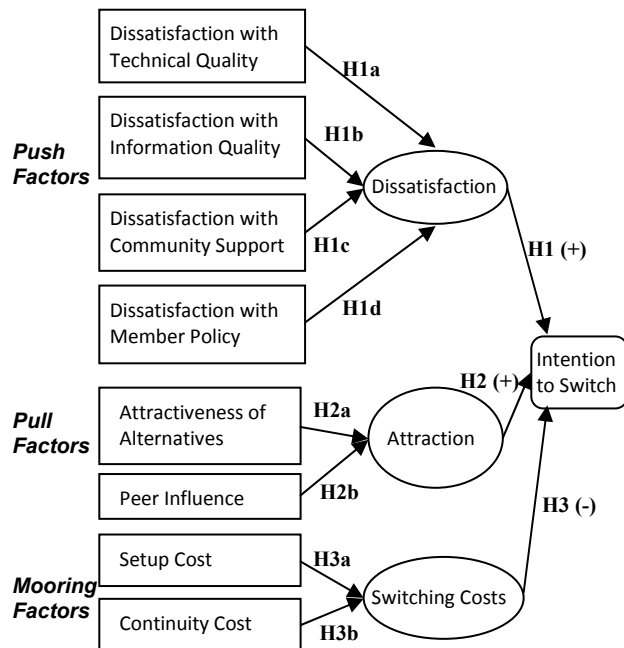


Figure 1. The research model

3.1 Push factors - dissatisfaction

Satisfaction is considered as an important concept in service repurchase/discontinuation research [10]. Oliver defined satisfaction as “the summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer’s prior feelings about the consumption experience” [43, p.27]. Satisfaction is often examined as an aggregate multidimensional construct in behavioral studies [17]. For example, overall job satisfaction is conceptualized as a composite of satisfaction with specific job facets, such as pay, promotions, supervision, coworkers, and the work itself [37, 49, 51]. Satisfaction with online services has been measured in terms of information quality, quality of user interface, perceived usefulness and ease of use, and perceived quality of online stores [8, 25].

Human migration research also confirms the push effects of satisfaction or dissatisfaction [13]. Bansal et al. [2] examine the negative influence of satisfaction on intention to switch service providers. Zhang et al. [53] also suggest that satisfaction is negatively associated with users' switching intentions in the blog services context. Since most people migrate due to their dissatisfaction with the original place, dissatisfaction as the opposing psychological state of satisfaction is posited to relate more closely with the intention to

switch. Therefore, we posit that users' **dissatisfaction** with diverse aspects of their current SNSs forms the push factor for the switching intentions of SNS users.

In our research model, users' dissatisfaction with SNS includes four dimensions: technical quality, information quality, community support, and member policy. System quality and information quality have been recognized as two significant concepts related to user satisfaction [48, 47]. In the model on IS success by DeLone and McLean's [14], system quality and information quality singularly and jointly influence both user satisfaction and use. System quality is used interchangeably with technical quality in most IS studies. The **technical quality** of an SNS relates to the quality of the site itself and is concerned with matters such as whether or not its technical infrastructures are designed well enough for users' navigation, application and maintenance, specifically. These include the speed of downloading, navigation structure, convenience of maintenance, richness of provided functions, etc. The **information quality** of an SNS relates to the characteristics of the information that the site produces. It is concerned with issues such as timeliness, reliability and the format as well as the amount of information provided by the site.

Community support and member policy are also influential for an SNS user. In this paper, **community support** is defined as the quality of support that an SNS provides to help users create or manage groups and communicate with their friends through this site. SNSs are differentiated from traditional blogging sites in terms of whether or not a website allows users to seek and build private networks with friends. The level of community support is likely to affect users' participation in an SNS. We posit that users' dissatisfaction with a site's community support would influence their intention to switch SNS services. **Member policy** refers to the regulations constituted by a site that all users should adhere to in this paper. There have been sufficient instances of users' leaving a site simply because they have not been satisfied with its restrictive member policies. For examples is, indie-rock bands once encouraged others to leave Friendster and switch to MySpace, because they were expelled from Friendster for failing to comply with profile regulations, while MySpace provided more flexible policies and a freer environment for bands [6]). Recognizing the importance of policy rules, Facebook is now no longer restricted to high school or university students only. In fact it can be accessed by all Internet users. In summary, we posit Hypotheses 1 and its corollaries H1a to H1d below:

H1: A user's dissatisfaction with his/her current SNS is positively associated with the intention to switch to another SNS provider.

H1a: A user's dissatisfaction with the technical quality of his/her current SNS is positively associated with the intention to switch to another SNS provider.

H1b: A user's dissatisfaction with the information quality of his/her current SNS is positively associated with the intention to switch to another SNS provider.

H1c: A user's dissatisfaction with the community support of his/her current SNS is positively associated with the intention to switch to another SNS provider.

H1d: A user's dissatisfaction with the member policy of his/her current SNS is positively associated with the intention to switch to another SNS provider.

3.2 Pull factors - attraction

Besides users' dissatisfaction with their current SNSs, the **attraction** from external locations also influences their switching intentions. Kim et al. [31] and Zhang et al. [53] both demonstrated that users' intention to switch services is positively associated with their level of perception of the alternatives. Analogically, the **attractiveness of alternatives** in the SNS context can be sensed from "superior opportunities for employment, higher income, or education; preferable environment and living conditions" [2, p.98] in human migrations. It is conceivable that when the key aspect(s) of an alternative SNS (technical quality, information quality, community support, and/or member policy) is (are) perceived as being better, there is a higher tendency of an SNS user becoming a member of this site.

According to boyd and Ellison [6, p.217], "the symbiotic relationship between bands and fans" once helped MySpace to expand by attracting many users, including those from Friendster, their greatest competitor. As an element of subjective norms, **peer influence** has been treated as an important factor affecting behaviors such as the adoption of a new technology [26]. Nevertheless, little research attention has been paid on users' peer influence regarding service choice on switching behavior with regard to online services [39, 53]. We consider peer influence as an extrinsic factor that affects an SNS user's switching intentions. As most people use SNSs to manage or create relationships with friends, an alternative SNS can seem attractive because of their friends' preferences. The influence of peers can work through creating "opportunities for new activities, environment, or people" [2, p.98] for an SNS user. When one receives invitations by a large number of friends, he/she would be likely to switch to the referenced new site. Hypotheses 2 and its corollaries are thus posited:

H2: The attraction from alternative SNSs is positively associated with a user's intention to switch to an alternative SNS provider.

H2a: A user’s perception of the attractiveness of alternative SNSs is positively associated with an intention to switch to an alternative SNS provider.

H2b: A user’s peer influence regarding choice of SNS services is positively associated with an intention to switch to an alternative SNS provider.

3.3 Mooring factors - switching costs

Switching costs refers to the costs that users have to bear when they switch from the current service or product to another [15]. According to Jones et al. [30], continuity costs, learning costs and sunk costs are positively related to repurchase intention. Zhang et al. [53] point out that in migration literature, migrants may not move to another place due to the effects of some constraints or contextual factors, even when they are under strong push and pull influences [35].

Users have to spend additional time and effort when signing up new SNS accounts and building a new profile (**setup cost**). Furthermore, users may need to exert considerable effort in order to stay on the current website (**continuity cost**). At the same time users have built up certain connections with friends on their current SNS. If they would intend to switch to another SNS, they would have to notify their friends about the movement and spend time building a new network in a new SNS. These switching costs might alleviate users’ intentions to switch to another SNS service. In our model, SNS users’ perception of switching costs is identified as the mooring factor. Hypotheses 3 and its corollaries are stated as follows:

H3: The costs of switching to another SNS service are negatively associated with a user’s intention to switch to another SNS provider.

H3a: The setup cost of switching to another SNS service is negatively associated with a user’s intention to switch to another SNS provider.

H3b: The continuity cost of switching to another SNS service is negatively associated with a user’s intention to switch to another SNS provider.

4. Research methodology

A survey study was conducted to validate the research model. We next present instrument development as well as data collection procedures.

4.1 Instrument development

In the development of the survey instrument, we paid careful attention to the theoretical and empirical distinctions between *formative* and *reflective* indicators in measurement model. A reflective indicator reflects

an unmeasured latent construct that is deemed to exist before it is measured, and is invoked to account for the observed variances and covariances. A formative indicator is used to form a superordinate construct where the individual indicators are weighted according to their relative importance in forming the construct [33]. Jarvis et al. [29] summarize the decision rules for determining whether a construct is formative or reflective from three dimensions: the direction of causality from construct to measure implied by its conceptual definition, the interchangeability of the indicators/items, covariation among the indicators, and the nomological net of the construct indicators. In relation to the definitions of each construct and subconstruct of our model, the two latent variables (Dissatisfaction and Attraction) are measured by formative first-order and formative second-order specification; the other latent variable (Switching Costs) is measured by reflective first-order and formative second-order specification based on the classification by Jarvis et al. [29].

Table 1. Summary of constructs

Variables	No. of indicators	References
Dissatisfaction		
with Technical Quality (TQ)	4	Self developed
with Information Quality (IQ)	4	Self developed
with Community Support (CS)	3	Self developed
with Member Policy (MP)	3	Self developed
Attraction		
Attractiveness of Alternatives (AA)	4	Self developed
Peer Influence (PI)	4	Self developed
Switching Costs		
Setup Cost (SC)	3	Kim et al. [31]
Continuity Cost (CC)	3	Kim et al. [31]
Intention to Switch (IS)	3	Kim et al. [31]

Table 1 presents the final elements of the survey questionnaire including a total of 9 variables and 31 measurement items (see the Appendix for the complete instrument). Items measuring Dissatisfaction with Technical Quality, Information Quality, Community Support, Member Policy, and Attraction from Attractiveness of Alternatives and Peer Influence were developed by the authors. For these formative first-order subconstructs, index construction was carried out and items were fixed after a careful expert-sorting process. In order to assess the quality of formative indicators, we follow the suggestions of Diamantopoulos and Winklhofer [12] by adding a global item to each subconstruct of the latent variable Dissatisfaction. The four global items were not included in the measurement model, but served as external criteria for summarizing the essence of the construct that the index purported to measure. Items

measuring the two reflective first-order subconstructs **Setup Cost** and **Continuity Cost** and the dependent variable **Intention to Switch** were adapted from [31]. Responses were measured on a 7-point Likert scale (see the Appendix for scaling labels). To enhance content validity, questionnaires were distributed to a small group of IS researchers for feedback. Minor changes were made to the text after this exercise.

4.2 Data collection procedure

A web-based questionnaire was posted for data collection in April 2008. The URL of this online questionnaire was distributed through email. A “snowball” sampling method [42, pp. 222-223] was used. It is important to highlight that only people with at least one SNS account were considered valid respondents for the study. The definition of an SNS and a list of SNSs were also presented in the survey instructions. Small gifts and lucky draw prizes were offered to the participants as incentives. Follow-up emails were sent to non-respondents after five days.

A total of 170 valid responses was collected. Based on the sampling method, the majority of the respondents were students in universities located in China and Singapore. Most of the respondents had had experience with SNSs for more than one year, and had used SNSs frequently. While MySpace dominates the social networking world in the US [36], respondents in this survey appear to have a higher variety of choices. MSNSpace, Facebook, and Xiaonei.com were ranked as the three top-visited SNSs among our survey respondents. Details of the demographics are presented in Table 2.

Table 2. Demographics of the respondents

Gender	Male: 61 (35.88%) Female: 109 (64.12%)
Age	Below 18: 0 (0%) 19 – 24: 136 (80%) 25 – 35: 32 (18.82%) Above 36: 2 (1.12%)
SNS Experience	Less than half a year: 8 (4.7%) Half a year to 1 year: 17 (10%) 1 year to 2 years: 64 (37.65%) 3 years to 4 years: 51 (30%) More than 4 years: 30 (17.65%)
Frequency of Using SNS	Every day: 59 (34.71%) Every 2 – 3 days: 44 (25.88%) Every 4 – 7 days: 29 (17.06%) Every 8 – 14 days or more: 38 (22.35%)
Number of SNS Accounts	1: 28 (16.47%) 2: 59 (34.71%) 3: 44 (25.88%) 4 or more: 39 (22.94%)

Primary SNS	MSNSpace: 67 (39.41%) Facebook: 41 (24.12%) Xiaonei.com: 39 (22.94%) MySpace: 6 (3.53%) QZone: 5 (2.94%) Friendster: 1 (0.59%) Other: 11 (6.47%)
First Alternative SNS	Facebook: 43 (25.29%) MSNSpace: 29 (17.06%) Xiaonei.com: 23 (13.53%) Friendster: 16 (9.41%) Qzone: 9 (5.29%) MySpace: 6 (3.53%) Other: 44 (25.89%)

5. Data analysis

SmartPLS 2.0.M3 [46] was used for data analysis. The software was considered to fit the nature of our survey study, as it allows for measuring of the latent multidimensional variables by repeated indicators [52], and seeks to maximize the variance explained in constructs, thus making it “closer to data, more exploratory, and more data analytic” [3]. The descriptive statistics are presented in Table 3.

5.1 Measurement model

We validated the measurement model as the first step in structural equation modeling [1]. Based on the PLS output, the **reliability and convergent validity** of the three *reflective* constructs (SC, CC and IS) were considered satisfactory based on the following criteria: Cronbach’s alpha for all factors (>0.70) [22]; composite reliability for all factors (0.70) [22]; average variance extracted (AVE) (>0.50) [19]; factor loadings (>0.50, good; >0.70, excellent) [23] (see Table 3 and Table 4). **Discriminant validity** was assured as the inter-construct correlation was less than the square root of AVE [19].

Table 3. Descriptive statistics and factor correlation

	Mean	S.D.	IS	SC	CC
IS	2.62	1.25	0.89		
TQ	3.20	0.99			
IQ	3.27	0.93			
CS	3.06	0.96			
MP	3.07	1.02			
PA	3.67	1.13			
PI	3.83	1.13			
SC	4.45	1.34	-0.06	0.79	
CC	4.81	1.30	-0.09	0.50	0.89

Note: Diagonal elements are the roots of average variance extracted (only for reflective constructs).

Table 4. The convergent validity

Constructs	Items	Standard loading	Item count	AVE	Composite factor reliability	Alpha
Setup Cost (SC)	SC1	0.751	3	0.628	0.835	0.701
	SC2	0.822				
	SC3	0.803				
Continuity Cost (CC)	CC1	0.836	3	0.694	0.872	0.780
	CC2	0.849				
	CC3	0.813				
Intention to Switch (IS)	IS1	0.895	3	0.794	0.920	0.870
	IS2	0.890				
	IS3	0.888				

We assessed validity associated with the *formative* constructs using the criteria of Diamantopoulos and Winklhofer [12], i.e., content specification, indicator specification, indicator collinearity and external validity. In our instrument development, **content specification** and **indicator specification** of the six formative first-order constructs were fully considered during the instrument design. **Multicollinearity** among the items was assessed first, as high levels of multicollinearity in a formative measure can be problematic in that the influence of each indicator on the latent construct cannot be distinctly determined [25, 11]. Diamantopoulos and Winklhofer [12] suggest the common cut-off criterion of variance inflation factor (VIF) is 10. Since the maximum VIF in this study was below 2, multicollinearity problems were not expected. To assess the **external validity** of all the first-order formative indicators associated with Dissatisfaction, we added one global item for each of the Dissatisfaction subconstructs in the questionnaire. Our analysis suggests that all the four groups of formative indicators are significantly correlated with their respective global items ($p < 0.05$ or smaller), thus validating their external validity (However, due to the constraints of both time and resources, we did not set global items for the other two constructs nor conduct further validation such as estimating a “multiple indicators and multiple causes” (MIMIC) model [24]). The validity of the measurement model was confirmed and all the indicators were retained.

5.2 Structural model

The predictive validity was assessed by examining the R square and the structural paths. The results suggest that our model explains a 27.6 percent variance, which is regarded as being moderately satisfactory. The results of the data analysis and the hypotheses testing are presented in Figure 2.

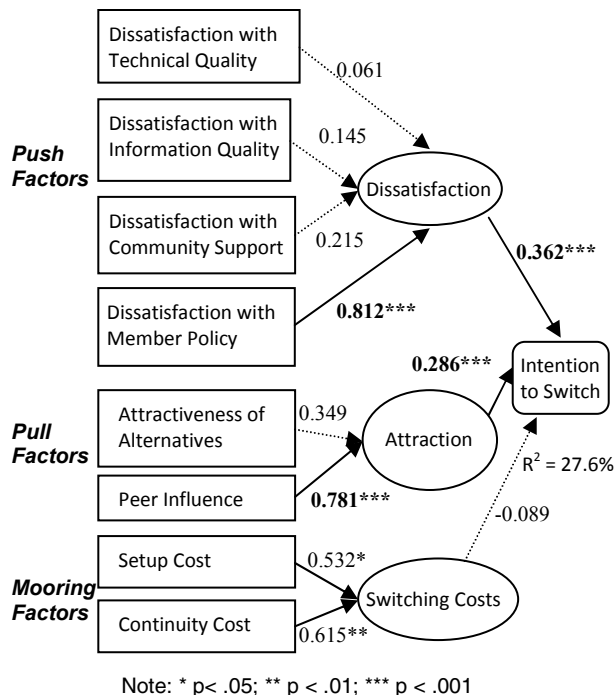


Figure 2. Results of PLS analysis

It can be seen that H1, H1d, H2, H2b are strongly supported at the $p < .001$ level of significance. However, other hypotheses are not supported. The results suggest that the push factor Dissatisfaction with current SNS, and the pull factor Attraction from alternative SNSs, both play important positive roles in users’ decisions regarding SNS switching. However, the mooring factor, Switching Costs, is negatively associated with Intention to Switch, but its impact is limited. Of all the corollaries, Dissatisfaction with Member Policy and Peer Influence on SNS services are most prominent factors affecting a user’s intention to switch to another SNS service. Other factors are not shown to have significant impact on users’ switching intentions.

6. Discussion and implications

This study explores factors affecting users’ intentions to switch their SNS services based on the PPM framework. The results of data analysis indicate that two out of the three second-order constructs, i.e. the push factor Dissatisfaction and the pull factor Attraction, significantly influence users’ intentions to switch SNSs; while switching costs, as a mooring factor, does not appear to be an important predictor. Among the four corollaries of Dissatisfaction, only dissatisfaction with SNS member policy exhibits a strong influence on users’ intentions to switch to other services. Peer influence is also shown to be a strong factor affecting SNS users’ switching decisions.

The findings are generally in line with our observations on the development of SNSs. In fact, SNS providers employ member policies to restrict user registration, manifesting their management target and operational directions. Recently, SNS users appear to be particularly sensitive and critical towards member policy. The most representative examples can be found in the comparison of Friendster and MySpace [6]. In 2003, Friendster changed its member policy and started to restrict the activities of its most passionate users by inhibiting the viewing of the profiles of people who were more than four degrees away (friends-of-friends-of-friends-of-friends), which consequently influenced users' evaluations of the site. In order to view more profiles, some users began adding first-degree friends aggressively, resulting in the collecting of fake profiles. Friendster was so outraged by the "fakesters" that it banned fake user profiles and eliminated some relevant features. This action caused some users to feel that the site's policy-makers were not concerned about users' interests. In contrast, MySpace often adjusts its member policies based on the opinions of most users. For instance, the policy restricting participation by minors was changed after MySpace perceived an emerging trend, i.e., that teenagers were beginning to sign up and encourage their friends to join its site [6].

While SNS providers are paying closer attention to the technical aspects of SNS sites, their member policy may significantly influence users' perceptions towards the technical quality, information quality and community support of individual sites. This might be a possible direction for future investigation of why users' dissatisfaction towards the technical quality, information quality, and community support of a site, is not significantly associated with their intentions to switch SNS as indicated in our current study. Since the target users of SNSs are becoming more diverse, it is meaningful to properly classify SNSs based on their user groups before evaluating the information quality and users' demands for information on a specific SNS.

The significant role played by peer influence is consistent with the primary function of SNSs. An SNS is a place for users to seek, build up, and maintain relationships with friends, as well as to extend their social networks through friends' contacts. As Quan-Haase suggested, students are very active users of online communication tools and young people maintain social contacts with both friends and relatives mainly through online interactions [44]. This can be one possible explanation of the importance of peer influence on SNS switching as well. We can make an analogy with traditional human migration. When a user is invited by many friends to move to another SNS, it becomes simple for the user to consider joining the referenced site. Switching costs, however, is not shown

to be a strong predictor of users' switching intentions. With the rapid development of web-based technologies, it has become less troublesome for an SNS user to switch over to another site and maintain profile information, as well as to inform friends about the change of site. Some SNSs are even offering comprehensive "moving services" to users who intend to move in from another SNS, thus considerably reducing switching costs. In addition, as we pointed out in the introduction section, most users do not delete their original SNS accounts even if they have switched to a new site. Links to all their previous SNS profile pages can be easily listed in the new site's profile page, which also mitigates the issue of switching costs.

Our study is among one of the first that empirically investigates a new Internet-enabled phenomenon, "migration in cyberspace", by focusing on users' switching intentions among SNS services. It seeks to examine if the PPM-based migration theory can explain the switching behavior of SNS users. The findings suggest that "cyber migration" displays both analogical as well as distinct patterns in comparison with traditional geographic migration. The similarities lie in the dominating role of member policy: when people are dissatisfied with the policy of an original place/primary SNS, they are more likely to migrate/switch to another place/other SNSs. In addition, in geographic migration, the choice of relatives and friends is an important force motivating people to consider moving to another place. Peer influence, as a form of virtual community [45], is also an important predictor in the switching intentions of SNS users, since both traditional migration and cyber migration demand that migrants keep close relationships with their acquaintances. Remarkably, switching costs is no longer a significant concern in cyber migration as compared to traditional geographic migration. This is attributable to the advancement of information and communication technology. Financial and emotional costs are important mooring factors in geographic migration; while in cyber migration, the moving costs can be minimized when more tools are developed to decrease costs for a user to switch to a new SNS. For practitioners, this research highlights most noteworthy factors for retaining their registered users and to minimize user turnover. SNS providers ought to pay greater attention to users' evaluations of their member policy as well as the effects of peer influence in sustaining the growth of their user base.

The findings of the study have their limitations. First, since this study only focused on young students in universities located in Singapore and China, caution must be exercised when generalizing these findings to SNS users in other regional, age or occupational groups. Second, although using multidimensional

constructs contributes to the breadth and comprehensiveness of our measurement model, precision and clarity had to be sacrificed to some degree. The use of multidimensional constructs and the associated validity issues remain a challenge in contemporary survey research. Third, it must be recognized that the application and validation processes of formative measurement model needs further exploration, both theoretically and empirically.

7. Concluding remarks

This paper presents an empirical study that investigates factors affecting users' intentions to switch SNS services, as an endeavor to advance existing understanding on how push, pull and mooring factors could shape users' switching intentions. Our findings suggest that a user's dissatisfaction with his/her current SNS site in terms of member policy, as well as peer influence on SNS choice, has a huge impact on that user's intention to switch to another SNS services.

As SNS is still a very new concept in present-day life as well as in research communities, there are virtually many interesting and meaningful issues for future research. First and foremost, we intend to further examine factors associated with member policy which was found to be most important with regard to the switching intentions of SNS users. Second, future research can empirically validate the research model in samples from different demographic groups, as users' SNS preferences may differ in other geographical and occupational contexts. Third, a more rigorous measurement model utilizing multidimensional constructs and formative indicators for SNS-related perceptions should be developed. Future studies may also incorporate other pertinent theories besides the PPM framework so as to provide more in-depth explanations of users' switching intentions, which collectively advance our understanding of the interesting phenomenon of IT-age migration in today's cyberspace.

8. References

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Appendix. The Survey Instrument

Dissatisfaction with Technical Quality

The speed of downloading web pages and other files from this site is slow. (TQ1) [Strongly disagree to Strongly agree]
 It is difficult to understand the navigation structure of the site. (TQ2) [Strongly disagree to Strongly agree]
 To what extent do you think it is inconvenient to maintain your profile pages on this site? (TQ3) [Very Convenient to Very inconvenient]
 To what extent do you think the functions provided by this site are limited? (TQ4) [Very rich to Very limited]
 To what extent are you dissatisfied with the technical quality of this site? (TQ5) **(Global Item 1)** [Very satisfied to Very dissatisfied]

Dissatisfaction with Information Quality

The site does not provide enough information that I need. (IQ1) [Strongly disagree to Strongly agree]
 I do not find the information updated timely by this site. (IQ2) [Strongly disagree to Strongly agree]
 How do you feel about the reliability of information of this site? (IQ3) [Very reliable to Very unreliable]
 How do you feel about the organization of information of this site? (IQ4) [Very clear to Very unclear]
 To what extent are you dissatisfied with the information quality of this site? (IQ5) **(Global Item 2)** [Very satisfied to Very dissatisfied]

Dissatisfaction with Community Support

This site provides poor community support. (CS1) [Strongly disagree to Strongly agree]
 To what extent do you think it is inconvenient to create or manage a group on this site? (CS2) [Very convenient to Very inconvenient]
 I cannot communicate with my friends effectively through this site. (CS3) [Strongly disagree to Strongly agree]
 To what extent are you dissatisfied with the community support of this site? (CS4) **(Global Item 3)** [Very satisfied to Very dissatisfied]

Dissatisfaction with Member Policy

How many member policy items of this site do you think are unreasonable? (MP1) [None to All]
 To what extent do you feel restrictive about the member policy? (MP2) [Very little extent to Very great extent]
 I would have a lot of complaints about the member policy. (MP3) [Strongly disagree to Strongly agree]
 To what extent are you dissatisfied with the member policy of this site? (MP4) **(Global Item 4)** [Very satisfied to Very dissatisfied]

Alternative Attractiveness

I am confident that this alternative site offers much better technical quality. (AA1) [Strongly disagree to Strongly agree]
 I am confident that this alternative site offers much better information quality. (AA2) [Strongly disagree to Strongly agree]

I am confident that this alternative site offers much better community support. (AA3) [Strongly disagree to Strongly agree]

I am confident that this alternative site offers much better member policy. (AA4) [Strongly disagree to Strongly agree]

Peer Influence

To what extent did your friends recommend the alternative site to you? (PI1) [Very little extent to Very great extent]
 How many of your friends have moved to the alternative site from your current site? (PI2) [None to All]
 My friends have sent me invitations from the alternative site. (PI3) [Strongly disagree to Strongly agree]
 My friends are dissatisfied with my current site. (PI4) [Strongly disagree to Strongly agree]

Setup Cost

Signing up for a new SNS service is inconvenient. (SS1) [Strongly disagree to Strongly agree]
 Building a new profile in an SNS service takes up too much time and effort. (SS2) [Strongly disagree to Strongly agree]
 Entering required information to join a new SNS service is annoying. (SS3) [Strongly disagree to Strongly agree]

Continuity Cost

It takes too much time and effort to notify my friends about my movement to a new SNS service. (CC1) [Strongly disagree to Strongly agree]
 I may lose contact with some friends if I move from my current SNS service to another one. (CC2) [Strongly disagree to Strongly agree]
 It is difficult to build a new network of friends in a new SNS. (CC3) [Strongly disagree to Strongly agree]

Intention to Switch

I am considering switching from my current SNS service soon. (IS1) [Strongly disagree to Strongly agree]
 The likelihood of me switching to another SNS service is high. (IS2) [Strongly disagree to Strongly agree]
 I am determined to switch to another SNS service. (IS3) [Strongly disagree to Strongly agree]