Twitter Users vs. Quitters: A Uses and Gratifications and Diffusion of Innovations approach in understanding the role of mobility in microblogging

Constantinos K. Coursaris
Telecommunication, Information Studies & Media
Michigan State University
East Lansing, USA
e-mail: coursari@msu.edu

Younghwa Yun
Telecommunication, Information Studies & Media
Michigan State University
East Lansing, USA
e-mail: younghwa@msu.edu

Jieun Sung
Telecommunication, Information Studies & Media
Michigan State University
East Lansing, USA
e-mail: Sungji1@msu.edu

***Abstract*— Twitter, the most popular microblogging service by the end of 2009, has gained much interest among Computer-Mediated Communication scholars and practitioners. As a new social medium, Twitter shows distinguished characteristics such as text-based posts of up to 140 characters delivered in real-time, and via multiple access modes including the Web, SMS, and mobile device applications. Interestingly, and in spite of an explosive growth in 2009, Twitter is also experiencing higher dropout rates compared to other social networking sites giving rise to the term *Twitter Quitter*.**

This study will examine which factors influence Twitter Quitters in their decision to discontinue Twitter's use through the use of perceived motivations and innovation related constructs. Uses and Gratifications (UG) and Diffusion of Innovation theory (IDT) are employed to frame the theoretical background. Also, this study will offer support for the effects of mobile device usage to access Twitter on self-reported motivations and perceived outcomes of using Twitter .

An online survey will be used to collect data from 300 undergraduate students at a large U.S. mid-western university. A Partial Least Squares (PLS)-based data analysis will be used to provide support for which constructs explain differences between Twitter users and Twitter quitters. Also, the influence of mobile device use on the continuance or discontinuance of Twitter will be examined. Implications for both theory and practice, as well as suggestions for further research will also be presented.

Keywords: Twitter, SNS, mobile, discontinuance, continuance, uses and gratifications, UG, diffusion of innovation, IDT, PLS.

I. INTRODUCTION

Social network sites (SNS) are becoming a dominant research topic in the area of computer-mediated communication in recent years. According to ComScore, a US marketing research company, Facebook, a leading SNS, received 95.5 million unique visitors in the U.S. alone [1], and has a growing audience that exceeded 300 million users worldwide in September, 2009 [2]. Facebook has already experienced huge popularity and explosive growth by focusing on community-based interaction, especially among college students and young people. Previous studies on Facebook and other SNS have focused on online identity and self-representation [3], privacy issues [4], and political participation [5]. In spite of the great volume of related prior research, Hargittai [6] directly pointed out that a significant antecedent question has been largely ignored: the difference between who is and who is not a SNS user [6]. She also believed that this research limitation was caused by such a small number of non-users that there was little variance present to explain the difference upon the adoption of the services.

One social medium that received tremendous attention in the second half of 2009 is Twitter. Twitter is a new social networking and micro-blogging service that enables its users to send and read messages. Users can describe their current status in short posts, up to 140 characters, distributed by instant messages, mobile phones, email or the Web [7]. Twitter, a comparably new service, launched in 2006 and has gained extensive notability and popularity worldwide. As of today, Facebook has over 300 million active users that launched in 2004 [1], while Twitter has 17 million registered users in the U.S. More importantly, Twitter shows a 3,000 percent user base growth from just one year ago [8]. Both Facebook and Twitter have similar intended uses; social purposes such as daily chatting and social surveillance, and information purposes such as news reporting and information sharing [7] . Even though Twitter has shown more possibilities as news with its characteristic of real-time updates, both sites share these basic intentions. Twitter came to be rapidly accepted as a remarkably useful reporting tool into public interest by showing its ability for distributing news such as the shooting at Virginia Tech in 2007.

Compared to regular blogging, Twitter fulfills a need for an even faster mode of communication via mobile communication devices, and regardless of the current location. By encouraging shorter posts, it lowers users' requirement of time and thought investment for content generation. The shorter time requirement also allows the frequency of updates for users [7]. The real-time update is one of the most attractive characteristics among Twitter users (commonly referred to as, 'tweeters'). According to a Pew Internet report on Twitter, 19% of all online adult uses Twitter or another service to share updates of their [9]. Therefore, there is still plenty of room for non-user research that could offer insight on factors related to Twitter's non-

use or discontinuance of use, two categories in which the remaining 81% of all online adults fall into.

Contrary to its notable success, Twitter shows an interesting phenomenon. A study by Nielsen Online, a service of The Nielsen Company that delivers measurement and analysis of online and offline information and media, states that more than 60 percent of new U.S.-based Twitter users do not return one month later and are referred to as 'Twitter quitters' [11]. There are some arguments about the research methodology used in the study, because it used a tracking tool solely for the users' activities via the Twitter website, and did not consider the use of Twitter via mobile phones and other devices [11]. In spite of this argument, Twitter shows less loyalty by its users, including 79.79% with no homepage URL, 75.86% with no biography, 55.50% that are not following anyone and 52.71% with no followers [12]. From this critique, Twitter is an ideal subject to study the differences between users and non-users.

This study will explore: i) why and how people stop using Twitter; ii) why Twitter's audience shows less loyalty compared to other SNS' users; iii) contrast characteristics of users that tweet only via Twitter's website and those who do so via mobile devices; and iv) explore how user mobility acts as a motivator or otherwise factor in the use of Twitter for real-time, anywhere, information sharing and communication exchanges. There have been only a few related publications, because Twitter is still in its infancy. Only a few researchers examined why and how people use Twitter [13], tweeters' characteristics [14], users' motivation and satisfaction [15] and college students' Twitter use [16]. Consequently, this study will break new ground in a comprehensive study of Twitter users' characteristics and offering insights into what makes users quit based on their expected outcomes and personality types, as well as the role and influence of mobile devices in the use of Twitter and microblogging in general.

Twitter has been categorized into both microblogging and SNS, and is especially accepted as informal communication mainly with brief text updates [13]. Three groups of Internet users are more likely to join Twitter: i) SNS users; ii) Mobile Internet users; and iii) younger users under age 44 [9]. Johnson and Yang [15] investigated the motivation of Twitter users and found that social and information motives are significant factors. Lee's [16] similar study with college students was also consistent with Jonson and Yang's [15] study and they identified six motivations of using Twitter: entertainment, passing time, information providing, information seeking, professional and social interaction. This study will use Blumler and Katz's [17]. Uses and Gratification (herein, UG) as a theoretical framework identify characteristics of Twitter users and Twitter quitters. Additionally, this study will also look at different users from the perspective of Roger's [18] Diffusion of Innovations theory (herein, IDT), because the IDT constructs have provided influential insight on users and non-users in the adoption of new media.

II. THEORETICAL FRAMEWORK AND RESERCH QUESTIONS

A. *Uses and Gratifications Theory (UG)*

UG has been widely used in the study of new media technologies [19] and applied not only for traditional media but also relatively new media such as the Internet and online games [20]. UG has explained how social and psychological needs drive relatively active audiences to use different media to satisfy their needs [19]. Users purposely select media they consume to achieve their goals. Therefore, the UG can be understood from the perspective of individuals' behaviors based on specific motives and socio-psychological characteristics [21]. The focus of UG is on motives for media use and its determinants and expected outcomes from media-related behavior.

UG is an appropriate theoretical framework for research related to computer-mediated communication (CMC), and especially in the initial stage of new media [22]. Twitter is in its early stage, and although it is still testing its possibilities as a new type of social media, its brevity and interactivity have attracted a significant user base. Hence, studying Twitter presents an opportunity for significant value in both theory and practice. One of the objectives of this study is to identify the use motivations and needs that are likely to lead to Twitter's use discontinuance in the event they are not met.

1) Perceived Motivation (perceived needs)

Since the Internet has been popularized in everyday life, there has been extensive research employing UG in the context of the Internet [23], personal homepages [24], Electronic bulletin boards [26], ICQ instant messenger [27], and blogs [22].

The UG approach has focused on the understanding of users' motivations and associated behaviors. In a related study by Jung, Youn, and McClung [24] on Cyworld, a Korean-based SNS, the medium's users were described as "active gratification seekers". As a related social medium, Twitter's users may also be classified as "active gratification seekers", but the motives, needs, desires, and/or outcomes pursued are to this day unknown. Hence, this study attempts to answer the following research question:

RQ1: How do motivations (perceived needs) influence Twitter Users and Quitters respectively, and are there particular needs that are more likely to lead to Twitter discontinuance if they go unmet?

B. *Diffusion of Innovations Theory (Innovation Diffusion Theory: IDT)*

IDT explains how an innovation or new idea propagates in a social system over time. The foci of the theory are on the knowledge, attitude change, and decision making process that affects the adoption of an innovation. Related literature also suggests that a person's probability of

adoption is influenced by several characteristics of the given technology [28]. However, IDT is limited in that it focuses on the initial adoption of an innovation while overlooking its potential rejection, discontinuance, or reinvention [18]. This is in line with Hargittai's argument [6] that the differences between who is and who is not a SNS user have been ignored, and consequently presents an opportunity for an important research stream.

Previous research on IDT at the individual level of adoption in CMC has mainly focused on 1) the personal innovativeness (how much does personal innovativeness affect the adoption of an innovation), 2) perceived characteristics of an innovation (how the adopters and non-adopters perceive an innovation and the services it provides) and 3) perceived popularity of an innovation (how an innovation is adopted in social systems) [20]; [29]. In applying IDT to Twitter, this study will adopt the above three constructs and will also include demographic variables and items regarding new media adoption.

C. Personal innovativeness

Rogers [18] defined *innovativeness* as '*the degree to which an individual or other unit of adoption is relatively earlier in adopting an innovation than other members of a social system*' (p. 22). Also, highly innovative individuals are active information seekers. They are able to handle high levels of uncertainty and are expected to develop more positive beliefs about the target technology, even with the same exposure to different types of media [30].

Innovativeness, or individual's readiness to adopt an innovation, has been accepted as an extremely relevant for explaining the adoption of new products [31]. Hurt and colleagues also understand the innovativeness as an individual's willingness to change, and Joseph and Vyas [32] introduced this variable with individuals' intellectual, perceptual and attitudinal characteristics [32].

Moreover, innovativeness has made a theoretical distinction between inherent innovativeness and actualized innovativeness [33]. Inherent innovativeness is an individual's need for innovativeness, but the actualized form refers to the ownership of other new media, which is affected by inherent innovativeness [34]. Empirical studies have proven that this inherent innovativeness was a strong predictor for adopting new media and technologies [35].

D. Perceived characteristics of an innovation

Rogers [18] proposed a number of factors as important in determining the rate of adoption of an innovation. Five of these are selected as the independent variables in this study, as prior research has found them to be the most reliable and overall strongest predictors of an innovation's adoption rate [18]; they are: *relative advantage, compatibility, complexity, triability, and observability.*

1) Relative Advantage

Relative Advantage is the degree to which an innovation is perceived as better than the idea it supersedes [18]. The degree of relative advantage is often described by economic profitability, low initial cost, social prestige, time and effort, satisfaction (decreasing an uneasiness or discomfort), and immediacy of reward. According to Pontin [36] the relative ease of being connected through the use of a one-to-many application, an inherent characteristic of Twitter, is a key strength of this communication platform. Twitter users can send status updates to "Friends" and "Followers." Users can send a message to people they know well or even to others they may not be familiar with [36]. For example, celebrities send messages to their friends and followers, even though they may not know their followers' personal information. Also, users can send messages to Twitter's "public timeline," which is an electronic pinup board showcasing a constant stream of users' postings [37].

2) Compatibility

Compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters [18]. According to Rogers [18], the more compatible an innovation is, the more uncertainty is decreased. If an innovation is not compatible with the existing values of potential adopters, such as their socio-cultural values or beliefs, it could be refused by them. Also, the innovation's compatibility with previously introduced ideas can either accelerate or decelerate its adoption process. Twitter, which has both a web- and mobile-based platform, makes it possible to connect people anytime and anywhere, and enable them to interchange their status and opinions. The use of this communication technology is as varied as the people, who rely on it to stay 'connected.' Also, by combining the idea behind services such as instant messaging (IM) and short messaging service (SMS), Twitter introduces a new concept beyond its blog-like web-based functionality. Essentially Twitter enables its users to a free SMS service delivered on the web, through IM applications (e.g. MSN Messenger, Yahoo!), or via a mobile application on the handset (e.g. Tweetdeck, Tweetie). Hence, it could be argued that Twitter is compatible with its users' existing values, beliefs, and their daily life.

3) Complexity

Complexity is the degree to which an innovation is perceived as difficult to understand and use [18]. Therefore, the complexity of an innovation negatively affects to the adopters and it is a barrier to the rate of adoption. Twitter's attraction appears to be its simple and clear user interface and its message length is limited to be 140-characters or less that allows users to send brief messages in an instant. The simple user interface and low complexity of use may positively relate to the adoption of Twitter.

4) Trialability

Trialability is the degree to which an innovation may be experimented on a limited basis [18]. Trialability allows individuals to do a ‘‘try and buy’’(p258): if trialing the innovative idea, practice, or product seems to satisfy individuals’ needs, then they are likely to adopt it; if not, they will probably reject the innovation. Therefore, when an innovation is designed to be easily tried by the potential adopters, they can find out the innovation’s value proposition and how it may work for them. Also, the personal process of trying of an innovation can dismiss uncertainty [18].

5) Observability

Observability is the degree to which the results of an innovation are visible to others [18]. When an adopter can see the result of an innovation easily, that experience is positively related with the innovation’s adoption. Twitter has received extensive media coverage as a result of its adoption by many celebrities, politicians, and even U.S. President Barack Obama. Then presidential candidate Obama integrated Twitter in his political marketing campaign during the 2008 pre-election period in order to inform American citizens and prospective voters of his positions and share information with his followers [38]. Through media promotions and coverage, many potential adopters have already been exposed to Twitter.

E. Perceived popularity of an innovation

One of the main elements of IDT is the consideration of social systems and mass media as a source of information. Rogers [18] has suggested that perceived social norms and adoption may be caused not only by actual needs, but also by pressure. Also, perceived popularity may also be referred to as the motives of users to adopt an innovation known as network externalities [39]. The reason why network externalities are particularly important is because current SNS depend highly on the number of people using them [40]. Katz & Shapiro [41] proposed that network externalities occur when ‘the utility that a user derives from consumption of [a] good increases with the number of other agents consuming the good’[41]. Based on the working definition [42], network externalities are understood as the increased utility of a communication medium as a result of an increasing user base. These considerations set up a second research question for this study:

RQ2: How and to what extent do the various innovation constructs influence Twitter Quitters?

III. RESEARCH DESIGN AND METHODS

The literature review and the emerging hypotheses give rise to our proposed research model shown in Figure 1.

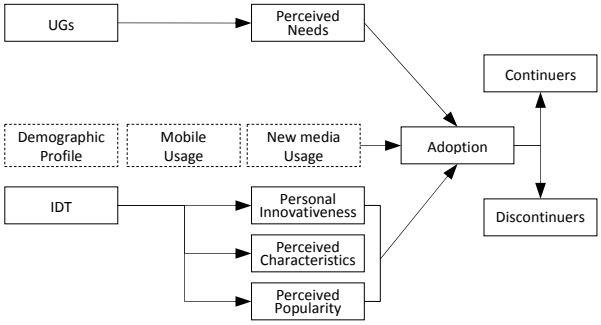

Figure 1. A research model for Twitter users and Twitter Quitters

A survey of college students will be conducted at a large U.S.-based mid-western university. A random sample of 1,000 students will be contacted by email requesting their participation in this study. A draw for two prizes ($50 Best Buy gift cards) will be used as the participation incentive. The expected response rate based on prior use of this method is 25 percent. The methods used to analyze the data will combine Partial Least Squares for the test of both the structural and measurement models, while SPSS will be used to run ANOVA tests and post-hoc tests for comparison by groups. The user group-level analysis will be performed to identify differences between current users, non-users, and the various types of discontinuers. Discontinuers have been characterized as falling into one of a small number of categories according to a recent study from which our measurement instrument was adapted. Our analysis emphasis is placed on discontinuers (or inactive users), operationally defined as Twitter account holders who have not used Twitter in the last month, also known as Twitter Quitters. Also at the group-level analysis, this study will compare user perceptions between those who access Twitter via the Web, on their mobile device, or both; this analysis will be performed to explore which characteristics are amplified in the case of mobile users and whether any positive effects on adoption, continuance, and discontinuance emerge. Also, it will examine how and to what extent mobile device use influences mobile Twitter users and to what extent personal innovativeness and new media ownership can affect decisions to either continue or stop using Twitter. Given the limited length of a work-in-progress submission, the measurement instrument could not be included in this manuscript, but all constructs and corresponding variables are shown in Table 1 below.

TABLE 1. CONSTRUCTS AND VARIABLES USED IN THIS TWITTER STUDY

Constructs	Variables
Control Demographics	Gender Age

Twitter Use	Time period of using Twitter Frequency of Twitter use Twitter access (PC vs. mobile vs. both)
Perceived needs	Entertainment Information Social Interaction Self-Expression Pass Time Professional Advancement New and cool trend
Personal innovativeness	Personal innovativeness
Perceived characteristics	Relative advantage Compatibility Complexity Triability Observability
Perceived popularity	Perceived popularity
New media ownership	New media ownership

The six most commonly applied constructs related to perceived needs derived from Papacharissi's [25] study of personal homepages are: information, passing time, entertainment, self-expression, professional advancement and communication with family and friends [25]; [43]. Papacharissi and Mendelson [43] combined interpersonal (social interaction), media (entertainment, information and pass time), newer media (coolness factor/novelty of technology, self-expression), and professional advancement motives to construct seven a priori motive categories when studying the adoption of Facebook. In our study, items were adapted to fit the context of Twitter. In addition to motivation, questionnaire items for personal innovativeness, perceived characteristics and perceived popularity from previous studies were adapted to fit the context of this study. In addition, Reagan [44] found that the use of other similar technologies and corresponding user attitudes were important predictors for the adoption of new technologies. Several studies have shown that inherent innovativeness and media ownership were significant predictors for an adoption of innovation, especially in the adoption of telecommunication technologies [45]. Therefore, this study will include the measurement of new media ownership too.

IV. Discussion

This study will offer support for the differentiating factors between adopters, non-adopters, and discontinuers of Twitter based on UG and IDT. Twitter has been popularized at a high speed, but a dichotomous behavior post-adoption has emerged. The main implications of this study are in the following areas. First, studying discontinuers is essential for diffusion research, because related literature has focused on the adoption process and overlooked an equally important discontinuance phenomenon. Second, this study will offer initial evidence for the importance of the mobile channel on the adoption of Twitter (and microblogging in general), and how such access can reduce the rate of discontinuance. Last but not least, this study will offer initial patterns of discontinuers' personal characteristics. In summary, studying discontinuers of Twitter can offer critical insight in areas previously unaddressed.

Given the length limitations of a submitted research-in-progress paper, implications for theory and practice, as well as the measurement instrument to be used in this study will be provided during the presentation.

References

[1] Rao, L. (2009). As Facebook Nears 100M U.S. Visitors, Twitter Falls Further Behind In The Rear-View Mirror. Retrieved November 27, 2009, from http://www.techcrunch.com/2009/10/13/as-facebook-nears-100m-u-s-visitors-twitter-falls-further-behind-in-the-rear-view-mirror/

[2] Zuckerberg, M. (2009). 300 Million and on, Facebook blog Retrieved Feb, 24, 2010, from http://blog.facebook.com/blog.php?post=136782277130

[3] Boyd, D., & Heer, J. (2006). *Profiles as conversation: networked identity performance on Friendster.* Paper presented at the Thirty-Ninth Hawai'i International Conference on System Sciences, Los Alamitos.

[4] Hodge, M. J. (2006). Fourth Amendment and Privacy Issues on the New Internet: Facebook. com and Myspace. com, The. *Southern Illinois University Law Journal, 31*, 95-123.

[5] Gueorguieva, V. (2008). Voters, MySpace, and YouTube: The Impact of Alternative Communication Channels on the 2006 Election Cycle and Beyond. *Social Science Computer Review, 26*(3), 288-300.

[6] Hargittai, E. (2008). Whose space? Differences among users and non-users of social network sites. *Journal of Computer-Mediated Communication, 13*(1), 276-297.

[7] Java, A., Song, X., Finin, T., & Tseng, B. (2007). *Why we twitter: understanding microblogging usage and communities.* Paper presented at the 9th WEBKDD and 1st SNA-KDD Workshop, San Jose, CA, USA.

[8] PRWeb. (2009). Social Networking and Business - Can Facebook and Twitter Help a Startup Company Succeed? [Electronic Version]. Retrieved June 1 from http://www.prweb.com/printer/2481934.htm.

[9] Lenhart, A., & Fox, S. (2009). Twitter and status updating; Pew Internet and American Life Project. Retrieved Nov. 29, 2009, from http://www.pewinternet.org/Reports/2009/Twitter-and-status-updating.aspx

[10] Martin, D. (2009). Twitter Quitters Post Roadblock to Long-Term Growth. Retrieved Nov.29, 2009, from http://blog.nielsen.com/nielsenwire/online_mobile/twitter-quitters-post-roadblock-to-long-term-growth/

[11] Liedtke, M. (2009, May, 04 2009). Twitter quitters found to outnumber tweeters. *SF Gate*, from http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2009/05/03/BU0T17DCGM.DTL

[12] HubSpot. (2009). State of the Twittersphere. Retrieved Nov. 29, 2009, from http://blog.hubspot.com/Portals/249/sotwitter09.pdf

[13] Zhao, D., & Rosson, M. B. (2009). *How and why people Twitter: the role that micro-blogging plays in informal communication at work.* Paper presented at the ACM 2009 international conference on Supporting group work, Sanibel Island, Florida.

[14] Krishnamurthy, B., Gill, P., & Arlitt, M. (2008). *A few chirps about twitter.* Paper presented at the ACM SIGCOMM first workshop on Online social networks, Seattle, WA, USA.

[15] Johnson, P., & Yang, S. (2009). *Uses and Gratifications of Twitter: An Examination of User Motives and Satisfaction of Twitter Use.* Paper presented at the the annual meeting of the Association for Education in Journalism and Mass Communication, Boston, MA.

[16] Lee, M. (2009). Motivation for Twitter Usage, Unpublished Work.

[17] Blumler, J. G., & Katz, E. (1974). The uses of mass communications: Current perspectives on gratifications research: Sage Publications (CA).

[18] Rogers, E. M. (2003). *Diffusion of Innovations*. Glencoe: Free Press.

[19] Rubin, A. M., & Bantz, C. R. (1987). Utility of videocassette recorders. *American Behavioral Scientist, 30*(5), 471-485.

[20] Chang, B. H., Lee, S. E., & Kim, B. S. (2006). Exploring factors affecting the adoption and continuance of online games among college students in South Korea: Integrating uses and gratification and diffusion of innovation approaches. *New Media & Society, 8*(2), 295-319.

[21] Trammell, K. D., Tarkowski, A., Hofmokl, J., & Sapp, A. M. (2006). Rzeczpospolita blog? [Republic of Blog]: Examining Polish bloggers through content analysis. *Journal of Computer-Mediated Communication, 11*(3), 702-722.

[22] Li, D. (2005). Why do you blog: a uses-and-gratifications inquiry into bloggers' motivations. Unpublished Masters Thesis. Marquette University. http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2009/05/03/BU0T17DCGM.DTL

[23] Stafford, T. F., & Gonier, D. (2004). What Americans like about being online. *Communications of the ACM, 47*(11), 107-112.

[24] Jung, T., Youn, H., & McClung, S. (2007). Motivations and Self-Presentation Strategies on Korean-Based" Cyworld" Weblog Format Personal Homepages. *CyberPsychology & Behavior, 10*(1), 24-31.

[25] Papacharissi, Z. (2002). The self online: The utility of personal home pages. *Journal of Broadcasting & Electronic Media, 46*(3), 346-368.

[26] James, M. L., Wotring, C. E., & Forrest, E. J. (1995). An exploratory study of the perceived benefits of electronic bulletin board use and their impact on other communication activities. *Journal of Broadcasting & Electronic Media, 39*(1), 30-50

[27] Leung, L. (2001). College student motives for chatting on ICQ. *New Media & Society, 3*(4), 483.

[28] Bennett, J., & Bennett, L. (2003). A review of factors that influence the diffusion of innovation when structuring a faculty training program. *The Internet and Higher Education, 6*(1), 53-63.

[29] Zhu, J. J. H., & He, Z. (2002). Perceived characteristics, perceived needs, and perceived popularity: Adoption and use of the Internet in China.Communication Research, 29(4), 466-495.

[30] Lu, Y., Zhou, T., & Wang, B. (2009). Exploring Chinese users?acceptance of instant messaging using the theory of planned behavior, the technology acceptance model, and the flow theory. *Computers in Human Behavior, 25*(1), 29-39.

[31] Agarwal, R., & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information systems research, 9*(2), 204-215.

[32] Joseph, B., & Vyas, S. J. (1984). Concurrent validity of a measure of innovative cognitive style. *Journal of the Academy of Marketing Science, 12*(1), 159-175.

[33] Flavell, J. H. (1977). *Cognitive Development*. Englewood Cliffs, NJ: Prentice-Hall.

[34] Lin, C. A. (1998). Exploring Personal Computer Adoption Dynamics. *Journal of Broadcasting & Electronic Media, 42*(1), 95-112.

[35] Kang, M. H. (2002). Digital cable: Exploring factors associated with early adoption. *Journal of Media Economics, 15*(3), 193-207.

[36] Pontin, J. (2007). From many tweets, one loud voice on the Internet, New York Times Online Retrieved Dec, 03, 2009, from http://www.nytimes.com/2007/04/22/business/yourmoney/22stream.html?ex=1334894400&en=462b986d21aa1897&ei=5088

[37] Codel, E. (2006). LunchMeet: Twitter is the Obvious Choice. Retrieved Dec, 03, 2009, from http://www.podtech.net/home/1607/lunchmeet-twitter-is-theobvious-choice

[38] Diaz, S. (2007, June, 9). Life, in little chirps; introducing Twitter, a web experience in the mass appeal of mundane details. *The Washington Post.*

[39] Dickinger, A., Arami, M., & Meyer, D. (2008). The role of perceived enjoyment and social norm in the adoption of technology with network externalities. *European Journal of Information Systems, 17*(1), 4-11.

[40] Nysveen, H., Pedersen, P. E., & Thorbjornsen, H. (2005). Explaining intention to use mobile chat services: moderating effects of gender. *Journal of Consumer Marketing, 22*(5), 247-256.

[41] Katz, M. L., & Shapiro, C. (1985). Network externalities, competition, and compatibility. *The American economic review*, 424-440.

[42] Strader, T. J., Ramaswami, S. N., & Houle, P. A. (2007). Perceived network externalities and communication technology acceptance. *European Journal of Information Systems, 16*(1), 54-65.

[43] Papacharissi, Z., & Mendelson, A. (2008). Friends, Networks and Zombies: The Social Utility of Facebook; Unpublished paper.

[44] Reagan, J. (1987). Classifying Adopters and Nonadopters of Four Technologies Using Political Activity, Media Use and Demographic Variables. *Telematics and Informatics, 4*(1), 3-16.

[45] Dutton, W. H., Rogers, E. M., & Jun, S. H. (1987). Diffusion and Social Impacts of Personal Computers. *Communication Research, 14*(2), 219-250.