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PERCEIVED INTERACTIVITY: EXPLORING FACTORS AFFECTING MICRO-BLOGGING SERVICE SATISFACTION AND CONTINUANCE INTENTION

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Abstract

This research-in-process study aimed to explore the factors affecting users’ satisfaction and continuance intention of micro-blogging service. Based upon summarization of the features of micro-blogging service and literature review on interactivity, we proposed the conceptual research model. This study proposed that user satisfaction toward micro-blogging service was positively affected by perceived interactivity, which contained five dimensions: interoperability and ease of use in terms of user-system interaction characteristic, telepresence, intimacy and enjoyment in terms of user-user interaction characteristics. Users’ satisfaction and personal innovativeness further positively related to continuance intention of micro-blogging service, which was negatively affected by users’ privacy concern. The study then described the selection of scales used to measure these variables and the pilot study to ensure the reliability and validity of the final scale. Though pilot study results implied that most constructs retained high internal consistency, more revisions should be done to the final questionnaire. The expected contributions of this study were discussed at the end of the study.

Keywords: micro-blogging service, satisfaction, continuance intention, interactivity
1 INTRODUCTION

The success of Twitter accelerates the development of micro-blogging service. Twitter, the most famous micro-blogging service, plays a notable role in the 2008 U.S. presidential campaign. For example, Barack Obama, now the U.S. President, owns a Twitter account which is followed by more than 2.6 million fans. Micro-blogging, which is also called mini-blogs, or micro-blogs, get popular quite quickly these two years as a new application. It provides a communication channel for people to broadcast brief text (sometimes with photos) about things they are reading, thinking and experiencing in their daily life (McFedries 2007). Micro-blogging service users have the rights to choose the ones whose messages they want to “pull” or not, and they could also “push” their messages to those who choose to follow them.

Though as a relatively new application, micro-blogging service is considered to have great potential. Some researchers claimed that micro-blogging was suitable for OWOM (online word-of-mouth) marketing (Jansen et al. 2009), education (Huffaker 2004; Ebner and Schiefner 2008), the implementation of a formative evaluation of courses (Stieger and Burger 2009), and library (Murphy 2008; Aharony 2009). Moreover, for some SNS (social networking service), such as facebook, MySpace, micro-blogging service is widely used to provide real-time updates of social networks as a function of SNS. From the other aspect, however, there are also criticizes about micro-blogging service, such as useless, or too intimate (Wikipedia 2006).

As a relatively new online application, the future of micro-blogging is still questionable. Though there are a few research on use of weblog, insufficient attention are paid to the usage of micro-blogs which is a quite new phenomenon (Milstein et al. 2008; Zhao and Rosson 2009). Our study will empirically examine factors affecting current satisfaction and future use intention. We believe that the results would be referential for the micro-blogging service providers to improve their services quality and enhance competition advantages.

2 LITERATURE REVIEW

2.1 Micro-blogging service

Micro-blogging is defined as “a form of blogging that lets you write brief text updates (usually less than 200 characters) about your life on the go and send them to friends and interested observers via text messaging, instant messaging (IM), email or the web” (Wikipedia 2008). Micro-blogging provides a new communication channel complementary to other media, such as phone, IM (Zhao and Rosson 2009).

We compared micro-blogging with several other popular CMC Applications (e.g. IM, email, blog) and summarized the comparison in table 1. Among these CMC technologies, micro-blogging and blog belong to social media which is “media designed to be disseminated through social interaction, created using highly accessible and scalable publishing techniques”(Wikipedia 2008). Communication through micro-blogging and blog is public as most social media services are open to participation and feedback (Mayfield 2008). Otherwise, communication through IM and email are more private and for most of the time, on a one-to-one basis. The shortest message type of micro-blogging, usually limited to 140 characters per post, leads to higher use frequency than other CMC technologies. However, the same feature also limited the media capability of micro-blogging. The greatest difference between blogs and micro-blogging is that the later is much easier and faster than the former. Thus why normal blog is usually used to save knowledge, coherent statements and discourse, while micro-blogging is used to post updates, ideas or quick notifications (McFedries 2007; Ebner and Schiefner 2008).
Asynchronous Asynchronous Synchronous Asynchronous

Communication channel

many to many many to many One to one One to one

Public/private communication

Public Public Private Private

Formal/Informal communication

Informal Informal Formal Formal

Information storage

Server Server Client Server/Client

Use frequency (in most cases)

High Low High Mediate

Message type (in most cases)

Shortest (limited to 140 characters) Longer Shorter Longer

Media capability

Text, photos Text, pictures, medias Text, voice, documents Text, documents

<table>
<thead>
<tr>
<th>Features</th>
<th>Advantages/Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brevity</td>
<td>Advantages: • Easy to use • Reduce the sharing cost/effort • Make information more concise and more efficient to browse</td>
</tr>
<tr>
<td>Interoperability</td>
<td>Advantages: • Provide alternative accesses to update frequently and in real time • Make it more convenient to share interesting articles/medias/opinions from other websites • Make it easy and convenient for readers to browse others’ updates</td>
</tr>
<tr>
<td>Mobility</td>
<td>Advantages: • Ubiquitous • More convenient to update/get real-time information</td>
</tr>
</tbody>
</table>

Several researchers summarized the features of micro-blogging service. For example, Mayfield (2008) concluded that social media was characterized by five features, which are participation, openness, conversation, community and connectedness. Zhao and Rosson (2009) concluded that there were three technology features that made micro-blogs different from other CMC applications: brevity, mobility and pervasive access and broadcasting nature. In table 2, we summarized and described five specific features of micro-blogging service. Advantages and disadvantages resulted from each feature are also listed.
phone platform, which allow the users to use the service anywhere and anytime.

<table>
<thead>
<tr>
<th>Broadcasting</th>
<th>Advantages:</th>
</tr>
</thead>
</table>
| This feature refers to the public feature of micro-blogging. One’s posts would be “pushed” to those who choose to follow him. | • Arouse more attention  
• Acquire help from potential browsers |

<table>
<thead>
<tr>
<th>Disadvantages:</th>
</tr>
</thead>
</table>
| • Produce spam  
• More privacy and security concerns |

<table>
<thead>
<tr>
<th>Autonomy</th>
<th>Advantages:</th>
</tr>
</thead>
</table>
| This feature refers to the freedom of users to choose “who” they would like to “follow” or not. | • Less concerns about bother others when post  
• Less spam for individuals |

<table>
<thead>
<tr>
<th>Disadvantages:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Missing interesting/important information from those “unfollows”</td>
</tr>
</tbody>
</table>

Table 2. Specific Features of Micro-blogging Service

2.2 Interactivity

Interactivity is a vital concept in computer-mediated communication (CMC) as it is usually considered as an advantage of CMC medium (Rafaeli and Sudweeks 1997). However, this concept is also meaningful and containing many aspects, thus there are several different definitions in previous research (Rafaeli and Sudweeks 1997; Ha and James 1998). These researches define interactive from three different levels: interactivity as a feature of technology, as a process of message exchange and as a user’s perception after using a technology or going through a process (McMillan and Hwang 2002). In this study, we adopted the third level which focused on the interactivity perception resulted from communication through CMC technologies. Perceived interactivity was defined as “the extent to which users perceive their experience as a simulation of interpersonal interaction and sense they are in the presence of a social other” (Thorson and Rodgers 2006). Interactivity was found to be an important antecedent of users’ satisfaction (Rafaeli 1989). Research on web users’ online experience also revealed that satisfaction was positively related to interactivity (Kierzkowski et al. 1996; Yeh and Li 2009).

Interactivity is also multidimensional (Ha and James 1998; Burgoon et al. 2000). Based upon these studies, McMillan (2002) subdivided the concept into three types: human-to-human, human-to-document, and human-to-system interactions. In this study, we examined interactivity from two dimensions: user-to-user dimension which focused on the interpersonal communication perspective and the responsiveness to the content posted by user (user-to-document); user-to-system dimension emphasized the technology characteristics. On the basis of previous studies and the features of micro-blogging, we proposed that there were five dimensions of interactivity would positively affect users’ satisfaction, including interoperability, enjoyment, intimacy, ease of use and telepresence. Among these dimensions, enjoyment, intimacy and telepresence focus user-to-user interaction, and interoperability and ease of use focus on user-to-system interaction.

3 RESEARCH MODEL

Based upon the summary of micro-blogging features, we proposed our research model in figure 1. We proposed that users’ satisfaction toward micro-blogging service was positively affected by perceived interactivity which contained five dimensions: interoperability, ease of use, telepresence, enjoyment and intimacy. Then satisfaction and personal innovativeness were positively related to
continuance intention of micro-blogging service, while privacy concern was negatively related to the continuance intention. Details of the hypotheses will be discussed in the following sections.

Figure 1. Research Model

3.1 Satisfaction towards micro-blogging service

Satisfaction refers to individual’s evaluation and affective response to the overall experience of a service or product (Oliver 1980). Individuals evaluates the actual performance of a product or service, and then compares to the expectation. Positive feeling (satisfaction) occurs when actual performance is better than expectation, and reversely, negative feeling (dissatisfaction) occurs. Expectation Confirmation Theory posited that satisfaction with a product or service had positive effects on future intention (Oliver 1980). Lots of empirical research had also proved the important effects of satisfaction on continuance intention. For example, satisfaction was an important antecedent of continuance intention of electronic commerce service (Bhattacherjee 2001), web-based learning (Chiu et al. 2007), and e-service (Liao et al. 2007). Thus we proposed that:

H1: Users’ satisfaction positively affects micro-blogging service continuance intention.

3.2 Perceived interactivity of micro-blogging

Perceived interoperability refers to users’ perception that to what extent a technology is compatible with other technologies. As table 2 presents, lots of micro-blogging services are compatible with IM, mobile devices or other tools based on application program interface (API), thus users could use micro-blogging service in different ways. For example, users of Twitter could send posts through Gtalk (IM), mobile phones, or twhirl (client application) (Jansen et al. 2009). These pervasive accesses allow users of micro-blogging share things anywhere and anytime, no matter they are browsing web pages, travelling outside, or just chatting online (Zhao and Rosson 2009). Interoperability also allows people to update their status descriptions at different applications through one interface. The more compatible an application is with other applications, the more benefits users could get from the extended network, and the less efforts they would involve when using the application. Thus we proposed that:

H2: Interoperability positively affects users’ satisfaction towards micro-blogging service.
Ease of use, which refers to the “degree to which a person believes that using a particular system would be free of effort” (Davis 1989), is an important factor affecting technology acceptance. Brevity of micro-blogging means less effort to edit updates, which reduces the costs of using the service. Moreover, the functions of micro-blogging are not complex and it’s easy for users to learn how to use. This would result better experience and user satisfaction. Thus we proposed that:

**H3: Ease of use positively affects users’ satisfaction towards micro-blogging service.**

Telepresence refers to the feeling that an individual feels like being located remotely from where he currently is (Kim and Biocca 1997), and describes the phenomenal sense of “being there”. Telepresence is an important function CMC should provide to optimize users’ communication experience. Real-time is regarded as one salient characteristic of micro-blogging as its brevity and mobility make it easy and convenient to share the spot news or latest status. These real-time contents, sometimes also contain photos captured from the spot, would facilitate the receiver’s sense of telepresence and the perception of getting in touch simultaneously. Thus we proposed that:

**H4: Telepresence positively affects users’ satisfaction towards micro-blogging service.**

Intimacy reflects the fulfilments of social interaction needs and describes the affective feeling of being close to or connecting with others. Previous research pointed that feeling of being connected to the outside world was an dimension of interactivity (Chen and Yen 2004). As an informal communication tool, micro-blogging provides a way in which people could enhance their perception of connecting with others who are either strangers or acquaintances, such as family members or friends. Zhao and Rosson (2009) found that co-workers could acquire social supports and intimacy from each other by using micro-blogging. The disclosure of personal activities on micro-blogs also results intimacy as self-disclosure is an important variable in the development of intimacy (Qian and Scott 2007). Thus we proposed that the more intimacy users got from using micro-blogging, better experience they would have through the process, which future resulted in satisfaction.

**H5: Intimacy positively affects users’ satisfaction towards micro-blogging service.**

Perceived enjoyment was considered as one dimension of interactivity (Ha and James 1998). Hoffman and Novak (1996) proposed that intrinsic motivation, such as perceived enjoyment enhanced self-relevance, making an individual feel more involved in an activity. Perceived enjoyment, which was proved to be an important intrinsic motivation of technology adoption in previous research, focused on the fun and pleasure individual got from conducting an activity. In the extension model of Technology Acceptance Model (TAM), perceived enjoyment was added to TAM as an important factor that affected Internet use (Teo et al. 1999). Hsu and Lin (2008) examined the acceptance of blog usage and found that perceived enjoyment significantly affected attitude toward using weblog. Similar to other social media, such as weblog, one major purpose for using micro-blogs is to sharing visibility of interesting things to one’s social networks (Zhao and Rosson 2009). And we believe that enjoyment would be a certain consequence of using micro-blogging service as well as an important antecedent to users’ satisfaction. Thus we proposed that:

**H6: Perceived enjoyment positively affects users’ satisfaction towards micro-blogging service.**

### 3.3 Other Personal factors

Personal innovativeness refers to one’s willingness to adopt an innovative technology and reflects the degree of individual interest to trying new things, such as innovative product or service (Rogers 1995). According to the theory of innovation diffusion, people with higher level of personal innovativeness are more likely to be the innovators or early adopters of a new technology. Agarwal and Prasad (1998) proposed that personal innovativeness in the domain of information technology had moderating effects on the relationship between antecedents and consequences of individual perception about a new information technology. Results from previous empirical research also confirmed the role of personal innovativeness in new service adoption. For instance, Hung et al. (2003) found that personal innovativeness significantly influenced attitudes towards WAP use. In the study of Kuo and Yen (2009) on 3G mobile value-added services, personal innovativeness was positively related to
perceived ease of use 3G mobile value-added services. As a new service, the use of micro-blogging should be affected by the personal innovativeness. Thus we proposed that:

**H7: Personal Innovativeness positively affects micro-blogging service continuance intention.**

Privacy was a consequential concern for people to use micro-blogging service. The research on normal blog revealed that though “individuals may report information on their blogs with less regard to how others may perceive it”(Guadagno et al. 2008), most bloggers concerned their readers because of privacy concern (Nardi et al. 2004). Three reasons might raise the concern on privacy. First, lots of information shared by micro-blogging users is quite private, such as things happened in their daily life, personal schedule or feelings. Second, people could follow someone without his permission when using micro-blogging. Third, the broadcasting feature of micro-blogging might help send these personal information to those “followers” who the sender doesn’t want to. This concern would be severer especially when users of micro-blogging service are not anonymous. Thus we proposed that:

**H8: Privacy concern negatively affects micro-blogging service continuance intention.**

4  **METHODOLOGY**

4.1  **Measurement**

In order to ensure the validity of the scale, we adapted most of the items from previous research. Specifically, items to measure perceived enjoyment were adapted from Hsu and Chiu (2004), four items were adapted from Agarwal and Prasad (1998) to measure personal innovativeness. Telepresence was measured using items adapted from Novak et al. (2000). Items to measure satisfaction and continuance intention were adapted from Bhattacharjee (2001). Privacy concern were measured by items adapted from Dine and Hart (2005-6). Intimacy was measured by the items adapted from (2004). As there was no scale to directly measure interoperability, we adapted and revised the scale of compatibility from Rogers (2003).

As the original scale is English, we used the forward-backward translation. First, items were translated into Chinese by one researcher, and another researcher independently backward translated the items into English. We then compared the two English versions and made revisions to the Chinese questionnaire to ensure the translation accuracy of the survey instrument. Later, further revisions were done to the questionnaire according to the feedbacks from several researchers and micro-blogging service users.

4.2  **A pilot study**

To further ensure the reliability and validity of the scale, we conducted a pilot study prior to the formal large-scale survey. Revisions to the questionnaire could be done according to the results of the pilot study. We developed an online version of our survey and posted its URL on a forum designed for communication of academic researchers. 100 subjects who reported that they had ever used micro-blogging service were recruited to finish the questionnaires. Analysis on the data shows that Cronbach’s alphas are all above 0.7 except interoperability, which implies strong internal consistency of most constructs. We also interviewed with some recruits to get feedbacks about the questionnaire. Thus, items for interoperability still need revision before the actual test. As the large survey, we plan to collect data through online survey, and the users of Tongxue (the largest micro-blog in China), or Digu (a quite famous micro-blog in China) would be chosen as the surveyed sample.

5  **CONCLUSION AND EXPECTED CONTRIBUTION**

In this research-in-progress study, we proposed the conceptual model that examined the factors affecting satisfaction and continuance intention of micro-blogging service from a perspective of
interactivity. We proposed that user satisfaction toward micro-blogging service was positively affected by perceived interactivity, which contained five dimensions: interoperability and ease of use in terms of user-system interaction characteristic, telepresence, intimacy and enjoyment in terms of user-user interaction characteristics. Users’ satisfaction and personal innovativeness further positively related to continuance intention of micro-blogging service, which was negatively affected by users’ privacy concern. The pilot study results implied that some constructs retained low internal consistency, thus more revisions should be done to the final questionnaire. Final large-scale survey should be conducted to test the conceptual model.

We are expecting there would be several contributions of this study in terms of theoretical and practical implications. There are two theoretical implications. First, to our best knowledge, this study is expected to be the first empirical study on micro-blogging service. Though there are a few research on use of weblog, insufficient attention are paid to the usage of micro-blogs which is a quite new phenomenon (Milstein et al. 2008; Zhao and Rosson 2009). Our study would provide a theoretical framework for future research on this CMC application. Second, our study is expected to provide further understanding of interactivity which is widely examined in previous research, but rarely applied to micro-blogging.

This study is also expected to have practical implications. As a relatively new online application, the future of micro-blogging is still questionable. Our study will empirically examine factors affecting current satisfaction and future use intention. And we believe that the results will be referential to micro-blogging service providers. In addition, take micro-blogging service in China for example, there are several service providers in the market and the competitions among these providers are intensive. However, the product differentiations between these services are not distinct. Thus understanding what factors facilitate users’ satisfaction and continuance intention would be helpful for the improvement of micro-blogging services and enhance their competition advantages.

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