User Perceived Quality of Online Social Information Services: From the Perspective of Knowledge Management

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Abstract – Features of emerging online social information services show promises for overcoming obstacles in knowledge management practices. This paper first discussed the potential efficacy and emerging practices of such technologies in the domain of knowledge management. Then a quality model of online social information systems was derived from prior literature on online information service quality and analyses of characteristics of emerging technologies. An online questionnaire was developed and administrated to 168 users of online social information service. Four quality dimensions that are perceived as important by users were identified by factor analysis and proved to be reliable: system usability, content quality, content exchangeability and accessibility, and sociability. The findings of this research provide implications for developers of both enterprise knowledge management systems and public social websites, and can facilitate future development of the instrument measuring the quality of online social service from other perspectives.

Keywords - Knowledge management, online service quality, online social information services, web 2.0

I. INTRODUCTION

A knowledge management (KM) system is to capture, store, and distribute knowledge throughout an enterprise. Despite the large investment into sophisticated technical systems, however, attempts in this direction have been less fruitful as expected. Many attribute these experiences to the conflict between the tacit nature of much knowledge and the requirement of explicitness of digital systems. Knowledge resides not only in structured format, but also in informal or tacit forms in human’s head. Thus how to extract knowledge from people is challenging, especially when collaborative efforts are required. Traditional knowledge acquisition suffers from narrow bandwidth (limited resources), acquisition latency, knowledge inaccuracy, and maintenance trap [1]. Another imperative is to provide a ubiquitous platform for integrating distributed content in different formats residing in different applications. The third challenge is to facilitate effective retrieval from the huge and ever growing knowledge repository of an enterprise.

A. Online Social Information Services and KM

Recently online social technologies are coming into wide usage under the name of Web 2.0 wave. While many criticized that Web 2.0 is hype or a buzzword, these emerging technologies, including blog, wikis, social networking services, and media sharing services, share certain features which distinguish them from Web 1.0 applications and are promising in overcoming obstacles to effective knowledge management. They are lightweight, easy to use and flexible, with the capability to capture knowledge in a shared, growing repository; they are widely accessible through web, and well suited for integrating distributed contents and applications; they facilitate communications and collaborations which are critical for tacit knowledge capturing; and most importantly, they facilitate a decentralized knowledge sharing model, which motivates knowledge workers to participate and contribute. It is human who processes data to information and finally to knowledge, as stated by Stantosus and Surmacz [2], “while KM is often facilitated by IT, technology itself is not KM.”

There are emerging attempts to explore the potential of online social technologies to support KM. Wagner [1] introduced wiki as software that enable conversational knowledge acquisition (so-called Bazaar style), and provided evidence for the feasibility and effectiveness of this approach by empirically analyzing the famous wiki system - Wikipedia (http://www.wikipedia.org); Coenen and his colleague [3] discussed the architecture, usage pattern, and applications of social networking systems in regard to knowledge sharing competency, and implemented the discussed results in an open source KnoSoS system (the system is available to test at http://www.knosos.be); Ahn, Brusilovsky, and Farzan [4] designed and implemented a social search system based on a social adaptive navigation system Knowledge Sea and found meaningful changes in user behaviors as time passes and use experience accumulates; Grudin [5] proposed unstructured tagging and weblogs, together with effective search tools, as possible solutions to KM logjams encountered by today’s enterprises.

These emerging technologies, no matter how promising, will be useless if users do not want to use them. To build systems supportive rather than obstructive to knowledge workers, it is important to identify quality dimensions that users adopt to assess such services. The purpose of this study is to such dimensions from a perspective knowledge management.

B. Quality Dimensions of Online Services
A remarkable body of research has been conducted to investigate online service qualities, yet there is still confusion of what online service quality is. This can be attributed to the different domains online services belong to, which lead to different sets of quality dimensions of online services only meaningful in the context of a certain targeted industry. E-commerce websites draw the most attention [6-9], and others include portal sites [10-12], online travel agencies [13], academic websites [14], personal websites [15], and etc. Prior research developed some fundamental knowledge about online information service quality. However, few scholarly studies, to date, have been undertaken to identify quality dimensions and detailed aspects of online social information services.

II. CONCEPTUAL FRAMEWORK

We based our framework on the technology adoption model (TAM) [16] which has been widely applied to the Internet and WWW. It posits that the actual use of a technology can be predicted by users’ behavioral intention and his/her attitude towards use, and in turn are influenced by perceived usefulness and ease of use. The question is: what aspects of “usefulness” and “ease of use” of online social services do users expect in terms of knowledge management?

There are two underlying assumptions for developing the quality framework for online social information systems. First, these services inevitably share some common characteristics with other online information services; second, these services differ from other online information services in their architecture of participance and sharing. Therefore, based on a comprehensive review of literature on other online services quality and analyses of “social” functionalities of these services, we identified four quality dimensions of online social systems from the perspective of knowledge management (shown in Fig. 1):

1) System usability: as to any information systems, usability is important to increase the revisit of users for online social services. Users should feel the system “friendly”, easy to use, and under control. Lin et al [17] proposed eight usability criteria of usability from the perspective of human information processing: compatibility, consistency, flexibility, learnability, minimal action, minimal memory load, perceptual limitation, and user guidance. In the context of online social services, where customized avatars, messages, and other contents are so common that the feature nearly becomes essential, customization is also included in this dimension.

2) Content exchangability and accessibility: the architecture of participance bases these online social services, which also motive effective knowledge sharing. To achieve this purpose, user-generated information, in various formats, should be able to be easily and quickly published, searched and retrieved. This dimension mainly consists of variables related to information accessibility, responsiveness, and searchability. In addition, “subscribability” via RSS/ATOM is considered an important for users to get alerts of information alerts and also included. Thus the variables are: information availability, visiting speed, upload speed, download speed, search function enabled, search speed, amount of search result, relevance of search results, and subscribability.

3) Content quality: content is to the central of all online information services, and prior research repeatedly stressed the importance of content/information quality to perceived benefits from websites, user satisfaction and the level of system usage. Accuracy, relevancy, timeliness, and adequacy of content are variables shared by general online information services and are meaningful to online social services as well, whereas following variables are considered especially important or specific to the user-autonomy and decentralization nature of online social services: information uniqueness, privacy protection, and censorship against illegal content.

4) Sociability: the degree to which an online service can support social interaction, or so-called “sociability”, is a determinant to the success of online communities, and it plays a more important role in these explicitly “social” services. Since this dimension is less studied and defined than the others, we developed our variables upon a review of social presence theory, online relationship studies, and analyses of sociable behaviors of current online social service users. They are sharing and editing capability (whether users are able to share content such as articles, graphics, audios, and videos with peer users), commenting capability (whether users can comment on others’ content), relating capability (whether information from various users and various sources can be related to form an organic network, for example, via tagging, trackbacking, user recommendations), social interactions support (whether a website can support social interactions among users and help form relationships), collaboration support (whether a website can support collaborative working), self-presence (how successfully users can use the service to convey a sense of real, rather than ‘virtual’, presence), and social influencing capability (whether users can exert social impacts by attaining powers, reputations, or authorities on the website).
students to 2 selected departments in Tsinghua University, and contacting with users of Xiaonei (http://www.xiaonei.net), one of the largest online social networking services for college students in China). Respondents were required to be experienced with at least one type of online social services and to indicate it. As an incentive, two prizes, each as 100 RMB Yuan, were set up. After the data collection, two respondents were randomly selected from those who provided valid responses and rewarded. 225 responses were collected within two weeks, among which 168 were valid.

113 percent of the respondents were male (67%) and 55 were females (37%); respondents age from 16 to 37, averagely 21 years old; 82% were undergraduate students, and 16% had higher education; 52% majored in engineering, 24% in science, and 24% in art. As shown in Fig. 2, 94% were blog users and 70 had experience with social networking services (SNS). 66.7% had such experience for more than one year, and 82 reported that they use such services at least once per week. 61% had a positive attitude towards such services, 36% holding a neutral attitude, leaving only 3% reporting a negative attitude.

III. METHODOLOGY

A. Instrument Development

Based on examination of prior work on similar services and analyses of online social information services, an initial pool of 52 items was developed. These items are firstly examined by the author according to correlation between items and their centrality to quality of online social information services, with regards to knowledge knowing. Then critiques of items were sought from 3 undergraduate students who were familiar with the project and experienced in online social networking services. They were given the description of the problem and were asked to review the questionnaire for validity (measuring what is intended), completeness (including all relevant variable items), readability, and other problems in overall questionnaire design. Several items were deleted, and word modifications were made according to the critiques.

Then the questionnaire draft was distributed to six undergraduate students, majoring industrial engineering to find if there were items not descriptive enough and if there were any other difficulties they had during answering the question. The feedback received was incorporated by revising the scale again, yielding a list of 32 items as the final version of the instrument. Items were worded as “how important is this characteristic to you regarding your decision on use of an online social information system?” All were measured by using a 7-point Likert scales anchored by “1” as “completely unimportant” to “7” being “completely important.” Demographic variables (age, sex, education level, occupations, and the level of income) and experiences with computer use, internet use, and online social services use were included also.

B. Data Collection and Sample Profile

The final version of the scale was administrated online. Recruitment was carried out by posting on the BBS of Universities and on online forums discussing online social services, sending invitation letters to
Sociability, accessibility and whether contents published to information is checkable are critical. The usage of users, generation is based upon active participation and collaboration support. Content exchangeability and accessibility accounted for 11% of total variance. It measured whether contents are accessible and whether contents can be found, visited, and downloaded easily and fast. The fourth dimension, sociability, represented 10% of total variance. It measured whether users can build social presence, interact with others, develop relationships and exert social influences in virtual communities. The small differences in explained variances indicated that these dimensions do not differ a lot in importance ratings.

V. DISCUSSION

According to our study, quality of online social information services perceived by users as important to their decision to use is related to four major factors: system usability, content quality, content accessibility, and sociability. To deploy online social information systems for knowledge sharing in enterprises, these factors should be taken into consideration.

First, the mean scores of content accessibility dimension and content quality dimension are quite high (5.8), whereas sociability, a more recognized feature for such services, has a score of 5.2. This may indicate that “content” is perceived central to online social services. Users come to such online services for good content generated or recommended by others, and expect it is easy to find and fast to download. Especially, the rating of accuracy of search results was above 6. To improve accuracy of search results, using user-generated metadata to help determine relevance of results may be a possible solution. Collaborative tagging has proved to be successful in engaging users in online information management by its highly social and interactive characteristics. There is potential for extracting and capturing tacit knowledge from professionals in enterprises with such social tagging systems, and for supporting social navigation [19-20]. However, as Scott Golder and Bernardo Huberman [21] pointed out, there are numerous problems to overcome, including polysemy (one word with different meanings), homonymy (one word with unrelated meanings), and synonymy (people applying different terms to the same object).

The high rating of content quality implies that enterprises and web developers should actively seek ways to improve the content quality. Given the autonomous nature of such services, promoting the quality of content on such websites needs not only censoring mechanism against illegal content but also a culture of innovation and contribution.

To foster such a culture, both usability and sociability of the online social system should be improved. They were found key factors influencing participation and contributions in online communities [22]. Whereas endeavors to improve usability can be started from intensive prior research and guidelines, creativity is required to improve sociability of a website. Tools are required to help users build shared sense of identity and purpose, to develop continuous relationships among users, and to encourage community knowledge building and distributing.

The primary limitation of this study is the context where the data were collected. Given the fact that few, if
any, companies in China have attempted to adopt such technologies in their KM systems. We found it extremely difficult to conduct the study in the context of enterprises. Data were gathered in the context of public online social services, which is different from enterprise information systems in terms of both information proprietary and the hierarchy of social relationships. In addition, respondents were mostly college students rather than company employees, since they are the most active players on social websites. The differences in social roles may lead to different usage patterns and requirements, and different perceptions of quality as well.

VI. CONCLUSION

This paper first discussed the potential efficacy of online social information systems in the domain of knowledge management. Then quality dimensions of online social information services were built upon TAM. The quality model was tested and the results showed the developed instrument is fairly consistent with proposed model, and the internal consistency of the instrument is acceptable.

Despite the limitations resulted from the context of data collection and the sample, the research provides some valuable findings for developers of both enterprise KM systems and public social websites by identifying four factors influencing perceived quality from users: system usability, content quality, content exchangeability, and sociability. It also contributes to future development of instrument measuring quality of online social information systems from other perspectives.

REFERENCES