CONTINUED USE OF INTRA-ORGANIZATIONAL BLOGS: IMPACTS OF HABITS, NETWORK EXTERNALITIES, AND RANKING

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Abstract

Enterprise 2.0 applications, such as blogging systems, are increasingly prevailing in corporate contexts. As intra-organizational blogs are expected to provide a new approaching to building a flexible intra-organizational networking platform which could effectively facilitate knowledge sharing, it is worthwhile to address why and how the employees may accept a blogging system and keep blogging continually. Drawing upon the existing literature, this paper proposes a conceptual model which suggests that the continued use of internal blogging among employees is jointly driven by the forces of habituation and network externalities, while these forces can be shaped by managerial incentives such as a ranking mechanism. To empirically test the proposed model, actual usage data are collected from the internal blogging platform of a large Chinese company, so as to measure all the related constructs. Statistical results from a structural equation modeling (SEM) analysis illustrate that the model effectively explains the continued use of corporate internal blogging systems. By using the actual record data obtained from an in-practice system, our study manages to avoid the self-report bias which inevitably perplexes conventional survey-based research. We believe that the findings of this paper would contribute to the literature of Enterprise 2.0 user behavior on both theoretical and methodological perspectives, while providing helpful practical insights for better promoting the use of blogging systems in corporate contexts.

Keywords: intra-organizational blogs, continued use, network externalities, usage habit, ranking
1 INTRODUCTION

During the past decade, Web 2.0 applications, such as blogs, wikis, group-messaging, and microblogs, have been prevailing all over the world. In recent years, many kinds of these applications have also been introduced into corporate contexts, creating a new form of collaboration environment which is called “Enterprise 2.0” (McAfee 2006). As a typical Web 2.0 application, blogs are usually considered as a suitable technology for building a flexible intra-organizational networking platform, which could effectively facilitate knowledge sharing (Efimova & Grudin 2007; Huh et al. 2007; McAfee 2006; Yardi et al. 2009). Meanwhile, blogs could also provide a reliable channel for companies to connect with their customers and other stakeholders (Aggarwal et al. 2009). Nowadays, a notable number of companies spend considerable resources on constructing internal blogging platforms and encourage their employees to use them in their daily work. Prominent examples of active corporate blogging users include IBM, Google, Microsoft, Xerox and Infosys (Lee et al. 2006; McAfee 2006).

When an internal blogging system is introduced into a corporate setting, the decision makers always expect that employees would actively participate in blogging, reading, and commenting on the platform. However, the actual use of blogging systems among employees may not necessarily be in alignment with the expectations. Although the initial acceptance of a blogging system might be achieved by enforcing mandatory regulations, the effects of such compulsory methods would naturally diminish over time (Zhang et al. 2011), especially when considering the fact that, in most cases, blogging systems are just loosely coupled with employees’ daily work.

Therefore, it is worthwhile to address why and how the employees may accept a blogging system and keep blogging continually. From various perspectives, some studies have explored the factors that potentially influence employees’ adoption and usage of enterprise blogs, showing that personal attributes (Huang et al. 2010; Schler et al. 2006; Wattal et al. 2010), network externalities (Wattal et al. 2010), and organization supports (Lee & Ahn 2007; Lee et al. 2006) may be important factors that affect employees’ blog usage. Most of the studies, however, have not yet clearly identified the determinant drivers for continued use, and it remains arguable what kinds of incentives may motivate the employees to keep using the blogging systems in the long term.

Drawing upon the existing literature, this paper proposes a conceptual model which suggests that the continued use of internal blogging among employees is jointly driven by the forces of habituation and network externalities, while these forces can be shaped by managerial incentives such as a ranking mechanism. To empirically test the proposed model, actual usage data are collected from the internal blogging platform of a large Chinese company, so as to measure all the related constructs. Statistical results from a structural equation modeling (SEM) analysis illustrate that the model effectively explains the continued use of corporate internal blogging systems. By using the actual record data obtained from an in-practice system, our study manages to avoid the self-report bias which inevitably perplexes conventional survey-based research. We believe that the findings of this paper would contribute to the literature of Enterprise 2.0 user behaviors on both theoretical and methodological parts, while providing helpful practical insights for better promoting the use of blogging systems in corporate contexts.

2 RELATED LITERATURE

Previous studies have widely addressed the potential benefits that internal social network applications such as blogging systems may bring to corporate organizations. It is generally agreed that internal social networking may serve as new sources of knowledge sharing and an alternative channel for the communications within an enterprise (Huh et al. 2007; Kane & Fichman 2009; Kankanahalli et al. 2005; Lee et al. 2006; Yardi et al. 2009). It has been revealed that internal blogs facilitate access to tacit knowledge and resources vetted by experts and contribute to the emergence of collaboration across a broad range of communities within the organization (Yardi et al. 2009). It was also stated that
not only positive posts, but also negative ones by the employees would benefit a company (Aggarwal et al. 2009). By and large, the practical benefits and academic relevance of intra-organizational social network applications have been extensively recognized (Oinas-Kukkonen et al. 2010).

The existing literature on enterprise social network platforms has also attempted to address the motivation and adoption behaviors of internal participants. Examinations about the motivation of bloggers in general (Cummings et al. 2002; Hsu & Lin 2008; Nardi et al. 2004) have been extended to the corporate environment. As compared with ordinary bloggers who keep blogging to document their lives, provide commentary and opinions, express deeply felt emotions, and articulate ideas through writing (Nardi et al. 2004), corporate employees usually expect to receive attention, keep informed, and connect to their community, when they contribute to blogging or other forms of internal social network platforms (Jackson et al. 2007; Kankanhalli et al. 2005; Yardi et al. 2009). Other studies have suggested that network externality and peer support are critical factors driving the employees’ behaviors of system adoption and use (Sykes et al. 2009; Wattal et al. 2010). Meanwhile, classical theories such as the theory of collective action were also incorporated to explain parts of participant behaviors (Wasko & Faraj 2005). Related issues such as reward systems design have also started to be addressed (Lee & Ahn 2007).

Although network externalities have been proposed as a notable dimension for the factors driving the use of internal blogging (Wattal et al. 2010), research in this direction is still insufficient. Network externalities arise when the value of participating in a network increases as more individuals participate in the network (Markus & Connolly 1990). Researchers have used the concept to capture social processes that affect user behaviors. Prior studies examined the influence of network externalities in the areas of technology adoption, pricing, and competitive dynamics (Govrisankaran & Stavins 2004; Katz & Shapiro 1986). Conceptually, it is not difficult to predict that social network applications including blogs are strongly subject to network externalities. Therefore, it would be worthwhile to further address the effects of network externalities on the continued use of intra-organizational blogging systems.

Our current research is also related to the literature on continued use of information technologies. In this regard, existing studies have resulted in a significant number of theoretical models and a considerable amount of empirical evidences (e.g., Guo et al. 2009; Hong et al. 2006; Kim & Malhotra 2005; Kim 2008; Lee 2010; Liao et al. 2009; Limayem & Cheung 2008). However, research about the continued use of intra-organizational blogging is still limited. On the contrary, as blogging is usually loosely coupled with employees’ daily work, it is even more meaningful to explore how an employee may continue blogging voluntarily over a long time period. In our study, we will probe into the issue of continued use by examining the critical effects of habits, which has been proposed as a key factor for understanding the long-term usage behaviors of users (Limayem et al. 2007).

3 RESEARCH MODEL

This paper is aimed at postulating a conceptual model for understanding the continued use of intra-organizational blogging systems. Based on related literature discussed above, we propose that the continued use is driven by the forces of habits and network externality, while being shaped by incentives such as a ranking mechanism. To reflect the dynamic behaviors over time, the model is developed with a longitudinal structure, as shown in Figure 1, where T₀ indicates a specific time point and T₁ indicates the immediate subsequent time point following T₀ with a pre-defined interval. In this section, we will discuss the components of the model respectively and present our research hypotheses.
3.1 Habits

After employees start to use an internal blogging system and become repeated users, they may gradually foster some particular patterns of usage. Various factors, including personal characteristics, preferences, attitudes, constraints, and so on, may contribute to shaping their usage habits, such as, when to visit the blogging system, how much time they spend on the blogging system every day, and how many articles they generally post per month, and so on. In normal circumstances, since personal characteristics, preferences, attitudes, constraints and other such factors usually remain stable, the usage patterns also tend to remain unchanged over time. As a result, employees’ blog usage habits represent their customary usage patterns, which can be used to predict their future usage for the next period.

In blogging systems, the main forms of usage of employees include posting, reading and commenting. Posting is sometimes also called contribution usage, because individuals contribute blog contents and gain self-expression utility through writing (Kumar et al. 2004; Nardi et al. 2004). Since most existing research regards writing as the most important activity in blogging, our study is also focused on individuals’ writing behaviors in blogging systems.

In our current study, the number of articles that an employee had posted in time period T₀ is used for measuring the employee’s usage habit. We propose that the usage habit would significantly influence the employee’s usage behavior in the next time period. Therefore, we have the following hypotheses:

Hypothesis 1a: A team manager’s usage in time period T₀ has a significantly positive impact on his or her usage in time period T₁.

Hypothesis 1b: An employee’s usage in time period T₀ has a significantly positive impact on his or her usage in time period T₁.

Hypothesis 1c: A group of team members’ usage in time period T₀ has a significantly positive impact on their usage in time period T₁.
3.2 Network Externalities

The theory of network externalities suggests that the value of a technology depends on the number of users (Cooper & Zmud 1990; Katz & Shapiro 1986). In the case of enterprise blogs, network externalities are largely dependent on the active usage in the employees’ social networks. A recent study examined the impacts of network externalities on the usage of corporate blogging, and analyzed the effects of different social groups, such as managers and relational, positional, and spatial networks (Wattal et al. 2010). A possible problem of the study is that it does not completely separate the effects of social networks from the individual’s usage habits. Therefore, it is likely to make the results inaccurate. Our study will explore the social networks’ influence on individual’s usage by separating it from the impacts of usage habits. Special attention is paid to the relational influence and managerial influence, which has been proved to have more significant effects (Wattal et al. 2010).

3.2.1 Relational Network

Following the existing study (Wattal et al. 2010), we define the relational network as other employees within the same work team. Generally, members in the same relational network have close working relationships, dense interactions, and stronger mutual influences. In related research about IT/IS adoption, it has been shown that relational networks have stronger effects on individual’s adoption of a communication medium (Fulk 1993). Moreover, in the case of social network technologies, relational networks have greater impacts on an individual’s choice and adoption. It has also been shown that relational networks significantly affect individuals’ blog usage (Wattal et al. 2010). Therefore, we propose the following hypothesis.

Hypothesis 2: The usage of the other members in an employee’s team has a significantly positive impact on the employee’s individual usage.

3.2.2 Manager Usage

In the enterprise environment, the adoption and continual usage of a new technology are inseparable from the support and influence from the managers (Guo & Zhang 2010; Karahanna & Straub 1999). Managers account for important components of employees’ social networks, and they significantly affect their usage of new technology. Studies have shown that employees’ adoption of new technologies may be influenced by the managers through their own usage, persuasive communication, or favorable views on the new technologies (Davis et al. 1989; Karahanna & Straub 1999; Leonard-Barton & Deschamps 1988). In the context of our study, the enterprise tends to encourage employees to use the blog for internal communication, collaboration and knowledge sharing. If employees perceive the active usage of blog from their direct manager (the team manager in our research setting), the employee are incentive to use it more. We expect that the blog usage from the team manager is positively correlated with the related employees’ blog usage. Therefore, we have the following hypotheses:

Hypothesis 3a: The usage of an employee’s team manager has a significantly positive impact on the employee’s individual usage.

Hypothesis 3b: The usage of an employee’s team manager has a significantly positive impact on the usage of other member in the team.

3.3 Ranking Mechanism

As has been extensively investigated in economics, ranking can be regarded as an important form of incentive from the perspective of Conspicuous Consumption (Bagwell & Bernheim 1996). After deploying the blog system, enterprises generally employ a number of promotional methods, such as training, demonstration, ranking policies, and so on, to facilitate the usage of the system. Among them, ranking systems are most commonly used. According to some evaluation indexes, a ranking system publishes ranking data in the blog system regularly, and rewards are normally given to the more
highly-ranked teams or employees based on the ranking record. The ranking system is usually regarded as helpful for improving the blog usage. In our study settings, the blogging system also includes a ranking system with monthly published ranking data, which enables us to investigate the impact of the ranking system on the usage of employees. In our study, we selected two variables from the ranking system to analyze the effects of ranking system on the usage of employees from different perspectives.

3.3.1 Ranking

The ranking system publishes the top usage list of all teams monthly, according to the blog usage of the teams. In general, top-ranked blogs can not only bring to team members with greater honor and more reputation, but also get more attention from others. Consequently, team members are incentive to strengthen their blog usage to maintain the achieved prestige. Accordingly, we have the following hypotheses:

Hypothesis 4a: Ranking of a team’s blog in time period $T_0$ has a significantly positive impact on the usage of the team manager in $T_1$.

Hypothesis 4b: Ranking of the blog of an employee’s team in time period $T_0$ has a significantly positive impact on the employee’s usage in $T_1$.

Hypothesis 4c: Ranking of a team’s blog in time period $T_0$ has a significantly positive impact on the usage of the team members in $T_1$.

3.3.2 Ranking Change

Prior studies show that individuals are normally concerned with the relative level of their blog usage compared to their peers (Huang et al. 2010), if an employee finds that his or her usage is much more than others, he or she may try to reduce his or her usage to reach the equilibrium. After the initial phase of the adoption of an enterprise blogging, the usage of each team becomes relatively stable. Meanwhile, teams also hold a relatively stable position in the ranking system with certain degrees of fluctuation. The ranking system publishes the ranking changes of every team contemporarily with the publication of the ranking list, providing the information of ranking changes to all employees. Blog users would usually tend to maintain the relatively stable ranking positions of their teams by regulating their usage. So we have the following hypotheses:

Hypothesis 5a: The change in the ranking of a team’s blog in time period $T_0$ has a significantly negative impact on the usage of the team manager in $T_1$.

Hypothesis 5b: The change in the ranking of the blog of an employee’s team in time period $T_0$ has a significantly negative impact on the employee’s usage in $T_1$.

Hypothesis 5c: The change in the ranking of a team’s blog in time period $T_0$ has a significantly negative impact on the usage of the team members in $T_1$.

4 RESEARCH METHOD

4.1 Research Settings

Our research site is a mobile service provider in south China, whose parent company listed in Fortune 500. The company has about 40,000 employees and provides mobile services for more than 90 million customers. In 2009, the annual revenue of the company is about 90 billion Yuan, taking about 1/9 market share of mobile service in China.
Since 2005, The Company pays more attention on team-building, trying to improve the work teams’ self-management ability. In 2006, an enterprise blog system was introduced to enhance the communication among teams and employees, promote information sharing, and offer a network stage for self-expression by teams or employees. The system is located in the intranet and is not accessible by people outside the organization. Each team or employee within the company is allowed to host his own blog on the platform, which are accessible to other employees across the entire hierarchy in the company.

In the past several years, effective measures were adopted to encourage the usage of the blog system, making the enterprise blog widely used. Now, almost all teams in the company have set up their blogs on the system. There are about 3,000 active team blogs, with more than 7 million posted articles in the blog system. The daily posts are around 5000 articles plus about 10000 comments. Among the posted articles, work-related articles and lecture-related articles account for about 50% respectively.

The data were extracted from the log data on the company’s blog system. We collected over a period of 12 consecutive months of employees’ blog usage data across the company, and the use of the blog data for a monthly statistics. After omitting the records with missing data, 185063 valid records remained in our study.

4.2 Measures

Study variables are listed in table 1. We define one of the main dependant variables (Usage (T₁)) as the number of articles posted by an individual in the blog system within a month. Then we employ Usage (T₀), which measures the number of articles posted by the individual on the blogging system in the previous month, to represent the individual’s usage habit. Similarly, we use the number of articles posted by the team manager within a month (Manager Usage (T₁)) to measure the managerial influence on team members, and employ the total number of articles posted by other employees in an employee’s team within a month, excluding the team manager (Team Usage (T₁)), as the measure of the usage of team, to estimate the influence of the relational network on the employee’s blog usage. Manager Usage (T₀) and Team Usage (T₀) represent the usage habit of the manager and team members, respectively.

To investigate the impact of the ranking system on the blog usage, we created the variable of Ranking (T₀) (implying the rank of a user’s team blog in the whole company in the last month), to represent the team blog’s position. At the same time, another variable (Ranking Change (T₀)), is generated to represent the position change, which measures the rank change of a user’s team blog in the whole company last month.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Variable Meaning</th>
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<tbody>
<tr>
<td>Usage (T₁)</td>
<td>Number of articles posted by an employee in a month</td>
</tr>
<tr>
<td>Usage (T₀)</td>
<td>Number of articles posted by an employee in the last month</td>
</tr>
<tr>
<td>Manager Usage (T₁)</td>
<td>Number of articles posted by the team manager of an employee in a month</td>
</tr>
<tr>
<td>Manager Usage (T₀)</td>
<td>Number of articles posted by the team manager of an employee in the last month</td>
</tr>
<tr>
<td>Team Usage (T₁)</td>
<td>Total number of articles posted by other employees in an employee’s team within a month, excluding the team manager</td>
</tr>
<tr>
<td>Team Usage (T₀)</td>
<td>Total number of articles posted by other employees in an employee’s team in the last month, excluding the team manager</td>
</tr>
<tr>
<td>Ranking (T₀)</td>
<td>The ranking of a user’s team blog in the whole company last month</td>
</tr>
<tr>
<td>Ranking Change (T₀)</td>
<td>The change in the ranking of a user’s team blog in the whole company last month</td>
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</tbody>
</table>

Table 1. Measurement of Constructs
5 RESULTS AND DISCUSSIONS

We use the method of structural equation model (SEM) for the hypotheses testing due to its advantage in dealing with highly complex predictive variables. Meanwhile, Maximum Likelihood estimation and Lisrel software (version 8.70) are adopted for the analysis.

Figure 2 shows the final test model and the testing results of the model. With all of the hypotheses significantly supported by the statistical estimates, this model explains nearly 50 percent of the variance in employees’ blog usage. The proposed model is acceptable for us to better understand the continual usage of enterprise blogs.

It is worth mentioning that the impact strength of different factors to the blog usage is also significantly different. Either at the individual or at the team level, blog usage in the last period (usage habit) ranks first among the factors in affecting the blog usage. Effects from other factors are relatively weaker. The dominant effect from the usage habit in the enterprise blog system is not surprising, because the usage habits reflect a person’s characteristics, preferences, constraints, attitude, as well as many other factors. The impact of network externalities on blog usage in the model was relatively weaker. Comparing with prior research (Wattal et al. 2010), the impact of network externality will be more accurately in this study after taking into account of the effect of usage habit. The significant effects and negative coefficients of Ranking \((T_0)\) and Ranking Change \((T_0)\) supported our hypothesis effectively. Especially Ranking Change \((T_0)\), although the influence is weak as indicated with the small coefficient, it shed us a light that both team and individual concern about their relative position in the network, and as a result, they would regulate their behavior corresponding to the relative position, so that their blog usage levels could remain at a relatively stable position. This study also provides a clue to the future research that the dynamic of the technology usage both at the individual and team level should be the concentration, meanwhile, factors that promote the convergence of the technology usage should be another focus.

6 CONCLUSION

In this paper, we propose an integrated conceptual model to examine the effect of usage habit, network externalities, and the ranking system on the usage of enterprise blogs. The model integrated
individual characteristics, such as usage habits, social factors, such as network effect, as well as organization incentive, such as blog ranking system into the investigation. Based on the data from a large enterprise's internal blog usage, our study provides several interesting insights to both academic and management world that interested in the usage of social computing tools (such as blogs, wikis, etc.) within an organization.

Our research results show that, both at the individual level and team level, the usage of blog indicates the characteristic of inertia. Usage habit imposes strong explanatory power on blog usage (at the individual level, it is able to explain nearly 50 percents of the variance of blog usage, and nearly 70 percents at team level) due to the reason that the usage habit catches personal characteristics, preferences, attitudes, constraints, and many other factors’ that affect blog usage. The dominant effects from usage habit provide guidance for the future research as well as the management world. For the future research on dynamic technology usage, usage habit from last period could be a good representative of combined factors of personal characteristics, preferences, attitudes, constraints and so on, to facilitate the isolation of specific factors, such as network externalities, that affect technology use. The implication offer to the practice is that technology usage from last period can be used to predict the usage of the latter period under the condition that the technology has experienced its adoption phase. Once great change has been observed in the technology usage, something unusual must happened.

Besides the usage habit, we find that network externalities also have important impact on blog usage. Through the examination on the blog usage from team manager and team members, we come to the conclusion that consistent with existing studies (Wattal et al. 2010). Namely, team manager’s usage of technology significantly affects his team members’ technology usage even in the voluntary technology using case. Our results also show that relational network have significant positive effect on individual’s usage. However, the estimates also showed that the effect strength of network externalities (including managerial influence and relational influence) on individual's usage is weaker relative to the usage habits. This shows that in the enterprise social computing technology usage case, network externalities are not the most important factor; future research should explore that which factors really decide the usage level.

Our hypotheses on the impact of the ranking system are also supported by the empirical data. The negative coefficient of Ranking (T0) implies that the higher the rank of a team’s blog, the higher incentive for the team to use it. Meanwhile, the negative coefficient of Ranking Change (T0) indicates that both the team and the individual concern about their relative position in the network, and they would regulate their behavior corresponding to their position change, accordingly, team blog usage levels normally remain relatively stable. In other words, the ranking system acts as feedback motivator, driving the technology usage converge to a steady state.

On-going research is focused on extending our current study to more empirical research sites so as to further test and develop our theoretical model. Meanwhile, more indicators extracted from corporate blogging systems are being examined and will possibly be incorporated for measuring the constructs in the model, so as to further improve the internal validity of the research.

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