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User Acceptance of Micro-blogging in the Enterprise

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Abstract

In this paper, following the IT acceptance theory framework, we analyze factors that affect users' acceptance of micro blogging in a large corporate environment. We categorized users into 4 groups based on their posting and reading behaviors: Actives, Dabblers, Lurkers and Skeptics. Groups show different perceived benefits, cost concerns, and social influence factors. The work can help both practitioners and scholars build an initial understanding of user acceptance of micro blogging in the Enterprise.

Introduction

The success of the popular micro-blogging site Twitter has prompted many companies to encourage the use of micro-blogging within their organizations. Micro-blogging tools such as Yammer allow company employees to share brief status updates about their daily activities and life in a secure environment only accessible to other employees. Yammer users can subscribe to other users' feeds (i.e., Follow other users) to receive instant updates on their activities. They can also visit user profile pages that show a profile image, employee information, recent status updates, and information on who the user Follows and who is Following them.

Proponents of micro-blogging see it as a way to improve information exchange and social networking opportunities within corporations. Skeptics see it as an unnecessary waste of time with few, if any, practical benefits. Researchers have yet to identify the real and perceived costs and benefits of micro-blogging within a corporate environment. In this paper we focus on the perceived costs and benefits of early adopters of Yammer within a large, international corporation. Specifically we address the question: What factors affect the user acceptance of micro-blogging systems in a corporation environment?

Literature Review

A handful of recent pilot studies have examined the adoption and use of micro-blogging within a corporate environment. Zhao and Rosson (2009) interviewed 11 Twitter users in a large IT company to understand the potential benefits of micro-blogging. They provide examples of relational benefits (person perception, common ground, and connectedness) and personal benefits (valuable information to personal interests/goals) that come from informal communication enabled by micro-blogging. These benefits were supported by micro-blogging's emphasis on brief, real-time messages that could be broadcasted and accessed from anywhere. Gunther et al. (2009) conducted and analyzed 4 focus group sessions to create a preliminary model explaining the adoption of micro-blogging systems in the workplace. Key factors influencing adoption included: privacy concerns, reputation, communication benefits, perceptions regarding signal-to-noise ratio, codification effort, expected relationships, and collaborative norms.

To understand the issues of adoption and use of corporate micro-blogging at a larger scale, the authors conducted a multi-method case study including a survey of 168 corporate Yammer users, interviews, content analysis of posts, and data usage analysis. In a prior paper, we identified and quantified message genres, described job roles and demographics of the 458 users, and reported survey results related to Yammer usage and perceived value (Zhang et al, 2010). This paper uses the same data sources, but presents results from some unreported survey questions and analyzes data based on different Yammer acceptance levels.

We organize our findings into three sections loosely based on those identified by Venkatesh et al. (2003) as key factors in affecting individuals' intention to adopt an information technology, which in turn affects their technology use. Our categories include: 1) **Benefit**

Perception – the degree to which an individual believes that using the system will help him or her improve job performance. This is directly related to Venkatesh et al.'s "performance expectancy" factor, although we explicitly recognize that social media platforms like micro-blogging tools are more likely to impact one's work indirectly through maintaining and developing social relations and new informal communication channels (Zhao & Rosson, 2009). This is similar to DiMacco et al.'s (2008) finding that corporate social networking sites are useful in building and maintaining weak ties. 2) **Cost Perception** – the degree to which an individual believes that using the system will cost him or her in terms of expected time, difficulty of using the system, and potential risks including privacy and security infringement. 3) **Social Influence** – the degree to which an individual perceives that important others believe he or she should use the new system. Social influence includes both injunctive norms (what other people think you should do) and descriptive norm (what other people do).

Data & Measurement

Data overview

Our analysis is based on a case study from a large fortune 500 company, XB (a pseudonym). XB's business includes manufacturing, servicing, and software. It has over 30,000 employees worldwide. We rely on 5 months of user posting activity log data from all 458 early adopters of Yammer, as well as survey result from 168 Yammer users (37% acceptance rate). All data were collected in June 2009. Survey respondent data were matched with Yammer IDs, allowing us to associate the results from each source. See (Zhang et al, 2010) for a more detailed description of data collection, XB Yammer, and potential survey sample bias toward slightly more active users.

Measuring Acceptance

Technology acceptance is a multifaceted construct including measures of adoption and use. In this paper we compare the perceived benefits, costs, and social influence factors of 4 distinct groups of users identified in Table 1. The groups are based on two dimensions: Their self-reported reading frequency and their actual posting data. All of the groups include those who registered for Yammer. Data on individuals who did not accept Yammer invites (about half of invitees) is being collected for future work.

Reading levels were assessed by a survey question asking users how often they read Yammer. Answers were chosen from the following options:

Reading level = 5 - Real time; 4 - Couple of times a day; 3 - Once a day; 2 - Only when prompted by others; 1 – Occasionally; 0 - Read for a few days after joining, then stopped reading it.

We roll these up into 2 groups: Frequent readers (answers 3,4,5) and Infrequent readers (answers 0,1,2).

Each member's total number of posts (i.e., Yammer status updates) is used to indicate a different type of acceptance. Those who never posted are separated from those who posted at least one message.

	Frequent reading (at least once a day)	Infrequent reading (less than once a day)
Posts (>=1 posts)	Actives: 35	Dabblers: 32
No posts (0 post)	Lurkers: 8	Skeptics: 73

Table 1: Four Groups of Yammer users with different acceptance levels

Figure 1 shows the two key variables on the same graph, using the posting score of log((n+1),2) where n is the number of messages posted. Figure 1 shows that users who read more typically post more (Reading and Posting scores are weakly correlated ($r = 0.35$). However, there are users who read frequently but don't post much (i.e., lurkers). There are also individuals who posted initially, but by the time they took the survey indicated that they do not read messages anymore, suggesting they have abandoned the system.

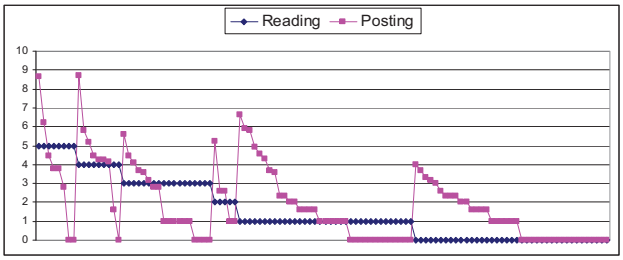

Figure 1: Users' reading level and posting score

Analysis Results

Benefit Perception

Survey respondents rated the overall usefulness of Yammer, as well as its usefulness for a number of specific variables (see Figure 2). The average ratings on a 5-point scale ranging from -2 (strongly disagree) to 2 (strongly agree) is reported for each of the 4 acceptance groups.

As expected, the Actives (frequent reading and non zero posting) have the highest overall rating for Yammer's usefulness. The Dabblers and Lurkers had lower but still positive ratings. As expected, the Skeptics (infrequent reading, no posting) do not perceive Yammer as being useful on average. This result confirms the correlation between benefit perception and technology use theorized by Venkatesh et al. (2003).

Data on specific perceived benefits shows some surprising results. In general, the Actives and the Dabblers have very consistent, and generally positive perceptions, despite the fact that the Dabblers read infrequently, if at all. The lurkers are less positive than all groups but the Skeptics. The Lurkers were differed from those who had

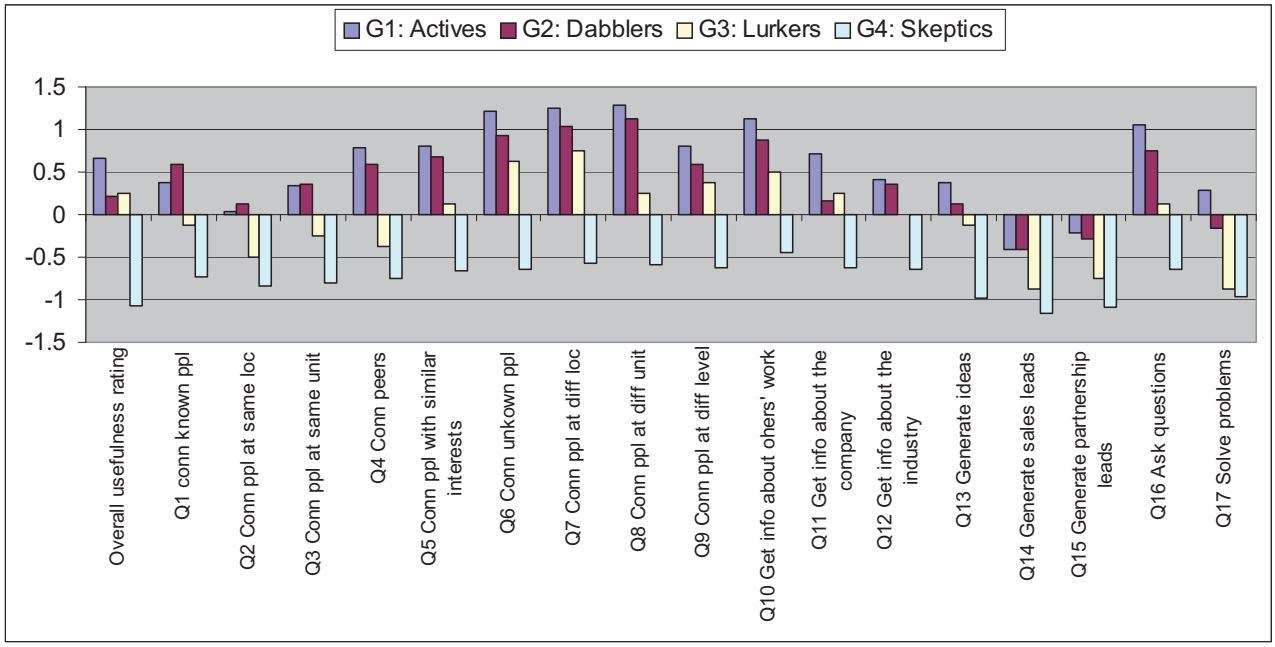

Figure 2: Different groups' benefit perception of Yammer: -2 (strongly disagree that it is valuable) ~ 2 (strongly agree that it is valuable to me)

posted in that they did not perceive Yammer as valuable for connecting to people in the same location, people that they already knew, or their peers. This may be because their peers are not on Yammer, which may help explain why they do not post (i.e., they don't have any known friends to talk to). As expected, the Skeptics who do not post or read have a negative perceived value on all dimensions.

As a whole, users are more positive about Yammer's value in helping them finding people whom they don't know or are not similar to (Q6, Q7, Q8, Q9 – people whom they don't know, or people from different location, unit, or level) than Yammer's value in helping them finding people whom they know or are similar to (Q1, Q2, Q3, Q4, Q5 – people whom they know, people from the same location, unit, or level, or people with similar interests). This may change as membership increases. Furthermore, users value Yammer's function in getting information about what other people are doing (Q10) and helping them reach other people and asking questions (Q16) more than its function in getting general corporation or industrial news (Q11, Q12), helping generate ideas, sales leads or official partnerships (Q13, Q14, Q15), or solving a problem (Q17).

Cost Perception

Figure 3 shows the cost related factors from the question "*what were your reasons for not posting messages in Yammer?*" From the figure, we can see that "Don't have time" is the top reason for Dabblers and Skeptics. For the Lurkers, "Don't have time, still learning, and security concerns" are equally important reasons for them to post. Interestingly, Lurkers are also the only group that didn't report "privacy concern" as a big barrier. "Bad interface" is not selected as a barrier by most groups, but all the groups reported "Still learning to use the system" as an important reason for not posting more messages. This indicates that while the interface of Yammer is not a barrier, the social practice of what to post and related micro-blogging concepts (i.e. following and hash-tagging) are still confusing for many users, as reported in other related survey questions and interviews.

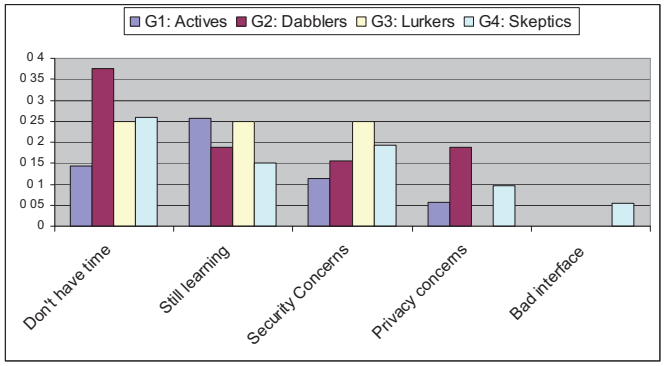

Figure 3: Cost factors of Yammer adoption

The "time" related cost is highly related to the noise-value issue that we identified in our previous work (Zhang et al. 2010). The noise-value issue referred to that it is difficult for users to find relevant information valuable to them from tons of Yammer postings. The following quotes are telling:

"The value to me has been finding out what projects other people are working on, but the S/N ration is waaaay to high."

"There are too many things to read, follow and take part in since joining XB. I cannot understand how if you do them all, how you could possibly get any work done."

"Its been hard to devote time to it. Not sure if I have found the right balance between participation and spending too much time on it."

Both the system and security issue could be mitigated, however, pursing the balance of spending time on social media and work is one of the biggest challenges for users' adoption of Yammer-like social applications in companies.

Social Influence

Figure 4 shows social influence related factors from the question "*What motivates you to participate on Yammer?*" From this figure, we can see that "my-co-workers participate" is clearly the most important factor for all groups, suggesting that peer participation is important to acceptance in a grassroots social media roll-out. "My manager participates" is a motivating factor for all but the Skeptics. Interestingly, both Actives and Skeptics do not view "Management approval" as a motivating factor.

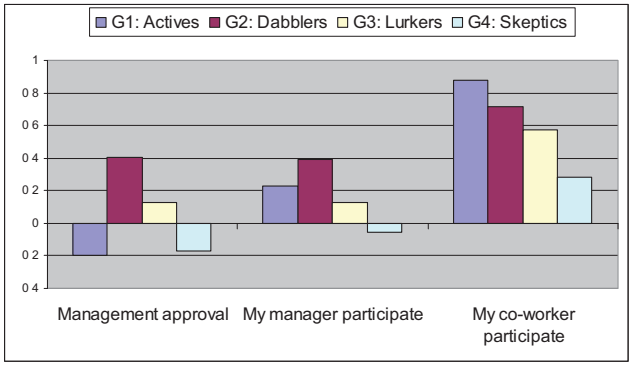

Figure 4: Social influence factors of Yammer adoption

Discussion

Our analysis confirmed that factors related to benefits perception, cost concerns, and social influence all contribute to users' acceptance behaviors. More importantly, by categorizing users to different groups by their reading and posting behaviors, we identified different benefits, costs, and social influence factors for different groups. This suggests that the concept of acceptance must be dealt with as a complex variable, particularly in a social media platform like Yammer. In the future, we plan to combine these data with user's demographic information and other activity data (i.e. invitation and following data) to further study this important problem.

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