Investigating Factors Influencing Non-use and Abandonment of Microblogging Services

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ABSTRACT: *This study explores the reason for non-usage and abandonment of microblogging. While previous studies mainly focused on individual behaviors associated with the use of social media, this research identifies why people do not use, or terminate their microblogging accounts. Studying the reasons for non-usage and abandonment is important as it helps organizations devise strategies to counteract this behavior by addressing non-users' concerns. First, focus group interviews were conducted to uncover non-usage reasons. The elicited reasons were then used to construct a survey instrument and administered. Our results suggests that preference for other technologies, privacy concern and time constraints are the top three reasons contributing to the non-use and abandonment of microblogging accounts. The paper also proposes potential improvements to microblogs to attract more users.*

Categories and Subject Descriptors:
K.4.2 [Social Issues]; H.1.2 [User/Machine System] H.3.4 [Systems and Software]

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Information Use, Social Networks, Blogs

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1. Introduction

Social media is a term that covers a wide range of Internet-based and mobile services, and may be defined as internet-based services that allow users to construct, share and search the content, and also to communicate and collaborate with other users [1]. Social media platforms include blogs, wikis, media sharing sites such as YouTube, social networking sites such as Facebook, microblogs such as Twitter, to name a few.

Among the many social media platforms available today, the microblog is one of the newest entrants and has gained popularity recently. Microblogs allow people to post short messages that are displayed on their personal pages in real time via the web, SMS, instant messaging clients, among other methods. The postings can then be viewed by others (i.e. followers). Most microblogging service providers limit the number of characters of users' postings to 140 [2]. This short post feature is a distinguishing factor that makes microblog a unique, asynchronous, fast mode of communication [3]. Many microblogging services are available today, but Twitter is favored among users. Since its creation in 2006, Twitter has gained notability and popularity worldwide. As of November 2012, it had about 140 million active users and over 340 million tweets were sent daily. Twitter's user base is still growing fast [4]. It ranks 10th on the top 500 site list according to Alexa in December 2011 [5].

The increasing popularity of microblogging has resulted in individuals and organizations putting it to many different uses. Individuals employ it for personal communication with their loved ones, friends and "fans". Organizations use it for marketing and customer support. Celebrities and even government agencies use it for publicity. Microblogs have also been applied as innovative pedagogical tools to foster learning and support class room discussion [6]. Some universities use microblogging platforms to encourage informal communications among faculty and students [7]. Additionally, the exponential growth of microblogging usage has attracted the interest of the academic community. For example, [8] studied the topological characteristics of Twitter and its power as a

new medium of information sharing. In addition, [9] explored people's search behavior using microblogging, and found that people use microblogs to search for temporally relevant information such as news and popular trends, and people-related information, such as information about people of interest, and general sentiment and opinion. The search results contain more social chatter and social events, compared with basic facts and navigational content from Web search. Next, [10] focused on reader reactions (i.e. retweeting and unfollowing). Their results suggested that users tolerate a large amount of less-desired content, and users value information sharing and random thoughts above those me-oriented or presence updates.

Despite the phenomenal interest in microblogging, there are people who do not use it. Tufekci [11] found out that even on college campuses, there was a small but persistent minority who refuse to adopt social media technologies. In higher education, the usage of Twitter is not widespread and is challenging due to various reasons normally associated with the usage of social media in universities. Grosseck and Holotescu [12] pointed out that these reasons are mainly caused by the limited number of characters that can be input, and that access to free-flowing topics generated by a large number of users is regarded as a major distraction to students. This is also the case for adolescents. A 2012 report suggested that only 8% of Americans were using Twitter, and 45% of the communications posted on Twitter were nonsense [13]. Further, [14] found that teens were bigger users of almost all online applications except for Twitter. Further, for users that socialize online, only 11% choose microblogs. The rest of the 89% of non-users provide the basis of our study of non-use and abandonment.

Current research primarily focuses on issues related to the usage of microblogging, behavior patterns, benefits and costs of microblogging, and motivations for microblogging, to name a few [15], [16], [17]. Unlike research on usage of microblogging, non-usage and abandonment research is still new, with little work done in this area. In particular, researchers have studied the phenomenon of non-usage superficially and as a byproduct of other work, focusing on whether people use or not use microblogs. Why people do not use microblogs has not been investigated. For the purposes of this paper, we study two related themes, non-usage and abandonment. Non-usage is characterized as not having an account with any microblogging service, while abandonment is defined as a user originally possessing an account with a microblogging service but terminating it subsequently.

Given the importance of the role of non-users, this study attempts to bridge the research gap and provide reasons for non-use and abandonment of social media platforms, focusing in particular on microblogs. We argue that such research can yield benefits. For example, identification of reasons for non-use or abandonment may help platform developers design features to address people's concerns to attract or sustain usage. For organizations that are using social media for branding and information dissemination, increased end-user usage can of course provide commercial benefits.

Hence, the overall objective of this research is to gain an understanding of why people opt not to use or abandon microblogging services. More specifically, we aim to: (1) identify reasons of non-use or abandonment; and (2) investigate which reasons are more influential.

2. Literature Review

Joseph [18] identified three main barriers preventing people from adopting a technology. First, functional barriers could be caused by technical issues such as poor interface design and hardware incompatibilities. Financial cost is also a functional barrier. Next, psychological barriers occur when an individual perceives conflicts with their religious beliefs, value system or preferences. Third, information barriers refer to situations where an individual is not aware of the benefits or the individual is ill-informed, and thus they may not adopt the technology.

According to Rogers [19], innovation acceptance depends primarily on five dynamics: relative advantage, compatibility, complexity, trialability, and observability. Relative advantage is the extent of performance enhancement or financial gain. Compatibility means the level of congruence with one's existing set of values, needs, and past experiences. Complexity is the perceived ease of use and confidence of potential usefulness, as well as the degree of effort required to adopt the innovations. Trialability refers to whether the innovations' merit could be tested on a small scale. Finally, observability refers to perceived positive outcomes brought by the innovations.

Dunne, Lawlor, and Rowley [20] employed the uses and gratification framework to identify characteristics of Twitter users and nonusers. Emphasizing on motives, they explained that active users engage in social media in order to meet their social and psychological needs, and they select the appropriate media platforms to achieve their goals. Gratifications such as entertainment, information seeking and searching, peer socializing, status updating and reputation building are important elements in the usage of social media platforms.

Separately, [21] explained several reasons why technological advancements may not be adopted. In particular, the brevity and speed of social media can distort a message, making content uninformative for information gathering and dissemination. Additionally, O'Hanlon argued that when a new technology comes about, there are two directions: adoption and abandonment [22]. When a new technology is introduced and people are forced to use it, they might resist. The situation is even worse if a deadline was imposed for adopting the technology.

Other researchers have put forward many reasons for not adopting new technologies, including personality traits, pressure, uncertainty, the loss of status or power, or

switching costs, unsatisfactory prior experience with other similar technologies [23], [24], [25]. Compatibility with cultures, personal values, and organizational norms, fear of losing autonomy will also impede technology adoption [26]. Non-users have also stated a number of reasons for not adopting social networking services (SNS). These include, lack of motivation (e.g. they do not find SNS appealing), time constraints or lack of time [27], preference for other communication tools (e.g. telephone) or other activities (e.g. sports) [28], cyber-safety (e.g. cyber-bullying) [29], and online self-representation [30]. Though simplicity makes a distinguishing feature in microblogging, and often seen as a key success factor, this is not without controversy, as the content might not be useful [13]. Finally, parental concern and restrictions, and adoption rates by friends and families are also potential reasons for non-use [28].

Twitter is in its early stages of growth, and it has attracted a significant user base due to its brevity and interactivity. Hence, studying Twitter presents an opportunity for both theoretical and practical significance.

3. Methodology

To address the research objectives, the methodology for the research comprised two parts, a focus group and an online survey. These two approaches were employed to better triangulate our results. First, focus group interviews of 15 participants were conducted as the first step to explore possible reasons of non-use and abandonment of microblogging. Participants were recruited from a local university. Of the 15 participants, nine were undergraduate or graduate students, and 6 were working adults. None of them currently used microblogging services, and were either non-users or those who had abandoned their accounts. The interviews centered on reasons for non-usage and abandonment as well as features that could encourage them to try microblogging services. Participants were also queried on their social media preferences in general. Samples questions included:

• Have you heard about microblogging?

• How much do you know about it?

• Why have you not adopted the microblogging services?

• Why have you abandoned your microblogging account?

• What do you think is lacking in microblogging services today that contribute to the reason for you not adopting it?

Having compiled these reasons, an online survey questionnaire was constructed using them. The reasons extracted from the focus group responses were further complemented with those culled from relevant literature on social media, information technology and human behavior such as [23], [24], [25] cited in Section 2. The first part included general questions on demographic information, education, career, frequency of social media usage, and so on. The second part contained questions pertaining to the possible reasons for non-use or abandonment of microblogs, as found from the focus group study. Each question required participants to state his/her level of agreement on a 5-point Likert-type scale with values representing "*not applicable*", "*not very applicable*", "*neutral* " "*applicable*" and "*very applicable*" respectively.

4. Results

4.1 Focus Group

From the focus group interviews, several reasons for the abandonment or refusal to create an account on microblogging platforms were given. Some participants did not see the need to create one, as their friends and relatives were not using it. Some were not interested to know other users', while some participants did not like to express themselves via online platforms. Interestingly, most participants frequented other social networking services (e.g. Facebook), thus leaving little time to adopt another platform. Despite being introduced to features like quick news updates, many of the focus group participants were not interested to create accounts, as they believed they could read news online.

For those participants who had abandoned their accounts, a few reasons were identified. Some participants found the information superficial while others encountered technical problems with logging in, causing frustration and leading to abandonment. The lack of features, such as photo and video sharing also deterred further use. It should be noted that when asked whether they would use microblogging services, most participants replied that they would do so if their friends and relatives were there.

In total, the focus group results yielded ten potential reasons for non-use and abandonment:

• Cyber-safety concerns include electronic threats on social media platforms, such as cyber-bullying, cyber-victimization and other forms of predation during online communication [29].

• Privacy concerns refer to issues around sharing user information in a public or semi-public space. The persistence, searchability of content and intrusiveness in SNS left users susceptible to privacy violations [32].

• Time constraints impose burdens on users as the use of twitter requires an investment of time, thus displacing other important activities from rea-life [27].

• Functional problems refer to the ease of use and the absence of features required by the user, which include user interface, server speed, website design, etc. [33].

• Lack of social connections results from the low adoption rate by friends and family members. The presence of friends and family in social media services has a strong impact on adoption rate [34].

• Preference for other technologies or activities will

decrease people's demand to use microblogging services for communication, sharing and collaboration [31].

• Content quality issues refer to people's perception of the quality of information found on microblogs. Due to the limited number of characters input and personal nature of microblogs, many comments have very little content or are not informative. This may include the trustworthiness, usefulness and diversification of the user-generated content [35].

• Information overload refers to the situation of being overwhelmed by large amounts of information coming by way of microblogging. The large amount of information may come from other users' frequent updates, conversations, and web advertisements, etc. [36].

• Acceptance/familiarity with new technologies relates to whether people stay away from microblogging due to their inadequate knowledge or confidence in using it. Those who experiences high level of anxiety due to unfamiliarity with new technologies would result in negative thoughts about using them [37].

• Self-representation refers to people's willingness to establish and promote an impression of themselves to others online. Users are supposed to fill in profile forms after registration, which include demographic information (age, gender, location, education, etc.), tastes (interests, favorite bands, etc.), a photograph, etc. [30].

4.2 Online Survey

The online survey received a total of 120 respondents, of which 74% were non-users, while the rest had accounts but subsequently abandoned it. Of the 120, 61 were male and the rest were female. Their ages ranged from 20 to 40, with an average age of 27. With regards to their education background, 30% of the respondents came from the computer science and information technology fields, 27% had engineering backgrounds while the remainder was in fields such as arts and social sciences, business, life sciences, education and tourism. Next, our analysis sought to ascertain which reasons were more significant for non-use and abandonment of microblogs.

4.2.1 Non-Use

There were 89 non-users, comprising 74% of all respondents. The top three reasons were "*Preference for other technologies/activities*", "*Privacy concerns*" and "*Time constraints*". This is shown in Figure 1.

Interestingly, while only 22% of the non-users also do not or infrequently use other social media services, the remainder (78%) were actively engaged in alternative social media services on daily basis. Specifically, 15% used social media services very frequently (more than 5 times a day), 26% used them quite frequently (2 to 5 times a day), 37% used them around once a day. This had left the users with little need or little time for microblogging services. As shown in Figure 1, non-users strongly agreed that they preferred other online communication channels, for example, Facebook or other channels of communication like face-to-face or phone conversations.

In terms of privacy concerns, respondents did not like to reveal their personal lives to people they did not know, regarding this as potentially intrusive. Time constraints were another important factor contributing to non-use. Respondents felt using microblogging would pose a drain on their time and distracted them from other important duties, like study and work. This partly explained why respondents did not want to use Twitter in addition to Facebook.

On the opposite end, functional problems were not a major concern, possibly because most of the respondents were already familiar with other types of social media platforms. Further, acceptance and familiarity of social media technology ranked as the least important reason for non-

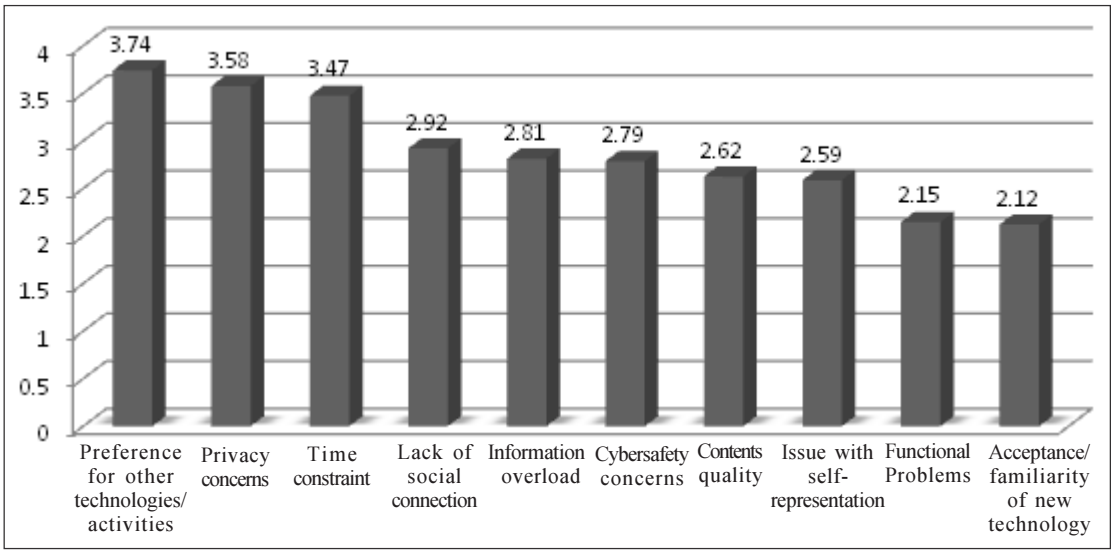

Figure 1. Reasons for Non-Use of Microblogs

use of microblogging, likely because the respondents were generally technologically savvy and many had indicated in the survey that they were very familiar with other social media platforms such as Facebook. To them, the limitation of 140 characters was not an important reason for their non-usage.

4.2.2 Abandonment

There were 31 respondents who terminated their microblogging accounts after some time of usage, making up 26% of all the participants. Among them, 91% used other social media services frequently.

Similar to non-usage, preference for other technologies, privacy concerns and time constraints, in descending order of importance, were the top three reasons cited by respondents who abandoned their accounts (see Figure 2). The explanations were the same as for non-users. In terms of preference for other technologies and activities, account abandonment respondents claimed that they preferred using other forms of communication (e.g. Facebook) or would rather engage in other activities (e.g. reading, sports).

What was noteworthy was that content quality ranked as one of the major reasons. Put differently, low content quality also resulted in abandonment. Respondents strongly agreed that the information provided in microblogs was superficial and a large number of them stopped using the platform because the information was irrelevant. Some respondents also did not like that their personal information could be searchable publicly, citing privacy concerns.

Moreover, functional problems and acceptance/familiarity of new technology were not critical reasons for abandonment, probably as they are already engaged in other social network services with similar functions, and are familiar with this technology.

4.2.3 Differences between Reasons Across Non-use and Abandonment

T-tests were conducted to ascertain whether there were significant differences between reasons for non-usage and abandonment of microblogging services. Table I summarizes the results of the tests.

Reason	Mean Difference (Abandonment – Non-use)
Content quality	0.66560*
Functional problems	0.54210*
Preference for other technologies/activities	0.38746*
Information overload	0.38081
Lack of social connection	0.18618
Issues with self-representation	0.12260
Privacy concerns	0.11139
Time constraints	0.00915
Acceptance/familiarity of new technology	-0.02457
Cybersafety concerns	-0.03652

* $p < 0.05$

Table 1. Differences Between Reasons For non-use and Abandonment

Among the ten constructs, three showed significant differences across non-use and abandonment: content quality, functional problems, and preference for other technologies/activities.

Specifically, content quality issues had a greater impact on abandonment than on non-use of microblogging. Obviously this is because people who set up accounts and terminated them had first-hand experience of microblogs in contrast to non-users. It is evident that people who set up accounts were more familiar with content provided, and so if the quality was not satisfactory, they would abandon their accounts.

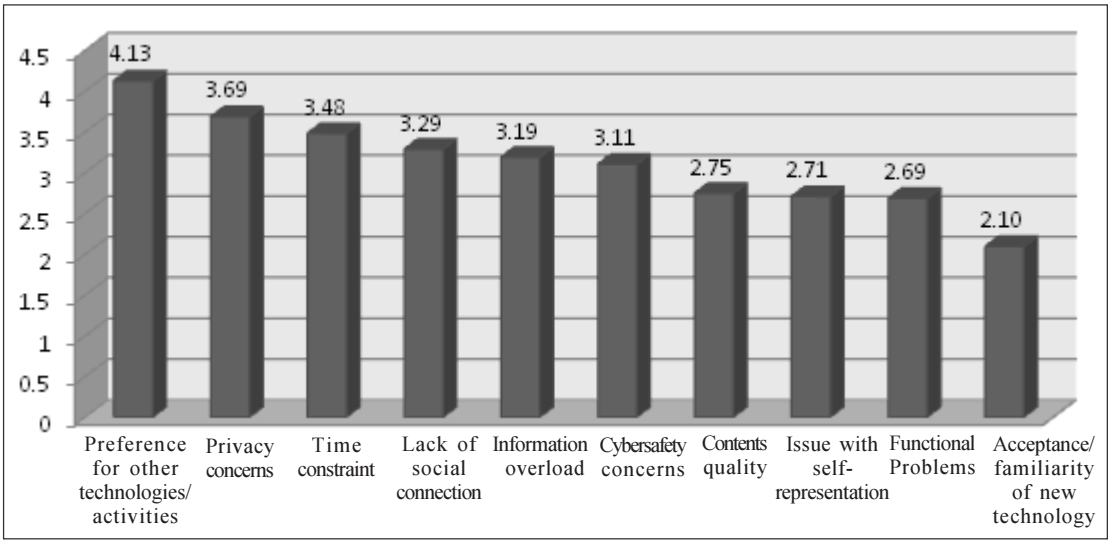

Figure 2. Reasons for Abandonment of Microblogs

The functional problems construct was another fact that was more important to the abandonment of the microblogs than non-use. Respondents terminating their accounts felt that the search features were not helpful to access information. They also disliked the limitation of 140 characters in postings. Moreover, several respondents preferred the use of real names, as nicknames were cumbersome to search for their contacts, impeding their social connections with families and friends.

The results also revealed that preference for other technologies/activities were more pertinent for abandonment than for non-use. This is possibly because people who created accounts and abandoned them were more open to various types of technologies, while non-users might choose not to use any social media services.

4.2.4 Differences between Reasons within Non-use and Abandonment

While the previous section compares reasons across non-use and abandonment, this section compares reasons within non-use and abandonment separately. To accomplish this analysis, two repeated measures ANOVA were computed, first for non-usage and then for abandonment.

For non-use of microblogging, the Wilks' Lambda test shows that there were significant differences across reasons [Wilks' Lambda = 0.24, F (9, 80) = 28.220, $p < 0.001$]. Further, Bonferroni pairwise comparisons in Table 2 show significant differences between the reasons. Note that for brevity, non-significant differences are not shown. From the table, it can be inferred that preference for other technologies/activities, privacy concerns and time constraints were once again the most important reasons as respondents significantly rated them higher than the other seven reasons. In contrast, concerns over functional problems and acceptance/familiarity of new technologies did not seem to be important reasons, according to our respondents.

For abandonment of microblogging, the Wilks' Lambda test demonstrates significant differences between pairs of reasons [Wilks' Lambda = 0.24, F (9, 80) = 28.220, $p < 0.001$].

Again, Bonferroni pairwise comparisons reveal the specific significant differences between the reasons (Table III). This time, preference for other technologies/activities was the top reason for abandonment as respondents rated it higher when compared to eight other constructs. Next was privacy

(A) construct	(B) construct	Mean Difference (A-B)
Preference for other technologies/activities	Cybersafety concerns	.955
	Functional problems	1.596
	Lack of social connection	.820
	Content quality	1.117
	Information overload	.929
	Acceptance/familiarity of new technology	1.620
	Issues with self-representation	1.154
Privacy concerns	Cybersafety concerns	.790
	Functional problems	1.431
	Lack of social connection	.655
	Content quality	.952
	Information overload	.764
	Acceptance/familiarity of new technology	1.455
	Issues with self-representation	.990
Time constraints	Cybersafety concerns	.688
	Functional problems	1.329
	Lack of social connection	.553
	Content quality	.850
	Information overload	.662
	Acceptance/familiarity of new technology	1.353
	Issues with self-representation	.888
Lack of social connection	Functional problems	.775
	Acceptance/familiarity of new technology	.800
Information overload	Functional problems	.667
	Acceptance/familiarity of new technology	.691
Content quality	Functional problems	.479
	Acceptance/familiarity of new technology	.503
Issues with self-representation	Functional problems	.441
	Acceptance/familiarity of new technology	.466

Table 2. Pairwise Comparisons for Constructs in non-use

(A) construct	(B) construct	Mean Difference (A-B)
Preference for other technologies/activities	Cybersafety concerns	1.379
	Time constraints	.645
	Functional problems	1.441
	Lack of social connection	1.022
	Content quality	.839
	Information overload	.935
	Acceptance/familiarity of new technology	2.032
	Issues with self-representation	1.419
Privacy concern	Cybersafety concerns	.938
	Functional problems	1.000
	Acceptance/familiarity of new technology	1.591
	Issues with self-representation	.978
Time constraints	Functional problems	.796
	Acceptance/familiarity of new technology	1.387
	Issues with self-representation	.774
Content quality	Functional problems	.602
	Acceptance/familiarity of new technology	1.194
Information overload	Acceptance/familiarity of new technology	1.097

Table 3. Comparisons for Constructs in Abandonment

privacy concerns followed by time constraints, content quality, and finally, information overload. Issues with self-representation, acceptance/familiarity of new technology, functional problems, cybersafety issues and lack of social connection were not important reasons.

5. Discussion

The objective of this study was to identify influential factors for non-use and abandonment of microblogging services. With these, potential improvements to attract or increase usage could be devised. Some well-established theories such as diffusion of innovations theory [19, and uses and gratifications theory [20] were cited to explain this non-usage behavior. Our research yielded a total of 10 factors which were obtained through a focus group interview, online survey and complemented with prior literature [24], [29], [33].

It was found that preference for other technologies/activities, privacy concerns and time constraints were the top three reasons for both non-use and abandonment. This is similar to the results from previous research [28] showing that non-use and abandonment are less likely to be caused by problems concerning online self-representation, functional problems, or acceptance/familiarity with microblogging. Findings from [24] show that the perception of social connections strongly predicts the usage of Facebook, and most people use it to interact with their friends. This differs from our results, which shows the lack of social connection does not appear to have a large impact on non-use and abandonment of microblogging services.

Our study found that privacy concern was an important reason for both non-use and abandonment of microblogs. Yet interestingly, most of the respondents used Facebook and were not concerned with divulging their information using that service. Hence, this seemingly contradicting phenomenon might be less about what other people or the platform providers may do with user profiles, but more about perceptions or feelings of insecurity over microblogging, perhaps due to unfamiliarity.

The results also suggest that microblogs have to compete fiercely for the attention of users who may prefer other technologies or activities. This arises from the observation that the top and third ranked reason for non-use and abandonment was a preference for other technologies and time constraints respectively. In particular, most respondents appeared to use Facebook as their social media platform of choice and thus do not have time for other services. It would hence be useful for microblogging providers to study Facebook's strategy to entice more users to jump on board the microblogging bandwagon.

6. Conclusion

Arising from our findings, the following are design guidelines that may help microblogging service providers to address the reasons for non-use and abandonment. First, since the preference for other technologies and activities is the most important reason for both non-use and abandonment, microblogging service providers could consider identifying popular features from other social media platforms to adopt so as to attract, increase and sustain usage. Examples of features include group-based private messaging, photo/video sharing (especially for Twitter which is text-based), and tagging of posts. Further,

the entertainment factor could be enhanced using games, activities with incentives, collaborations with business campaigns, or celebrity endorsements. Doing so could help compete with other social media platforms.

Next, to improve information quality and reduce information overload will require microblogging service providers to distinguish high-quality, informative documents from the others. New service tools such as intelligent information filtering to present information relevant to an individual user are needed for widespread use of microblogging. Features such as filtering, searching, classifying and tagging could be provided to make it easier for users to find the information they want.

Further, privacy concerns should be addressed. In particular, the disclosure of user's information should be handled carefully, and policies should be put in place to forbid illegal or unethical trading of user information to third parties. Features such as blacklisting of users, harassment reports, and viewer restrictions of posts could be introduced to protect the privacy of users. To complement these measures, microblogging service providers should also effectively communicate these policies to their users since perceptions drive behavior. With these enhancements in privacy, users may be willing to express themselves through microblogging platforms.

To conclude, this study is one of the first one to explain reasons for non-use and abandonment of microblogging services. The results of our work contribute to the academic community and microblogging service providers. First, it has important implications for the adoption of social media services because extant literature has mainly focused on motivations and characteristics around usage while overlooking non-use, and abandonment issues. Second, this study not only identified the influential reasons for non-use and abandonment separately, but also compared the reasons across the two. Third, suggestions were identified to help attract usage and reduce abandonment. Microblogging service providers could draw lessons from this study to strategize future developments.

Nevertheless, there are several limitations in the study that may prevent the generalization of our results. First, the survey sampled only 120 respondents, which may not be representative of the entire population of microblogging services. Further, we did not consider differences between microblogs such as Twitter and Sina Weibo. These services offer different features and this might lead to different reasons for non-usage and abandonment. As part of future work, longitudinal studies to track usage patterns could be conducted to determine if there are behavior changes due to changes in perceptions, features offered, and/or other environmental factors. This research targeted adults, while children, youths and seniors were not adequately represented. These groups should be studied as they are quickly picking up new technologies, and may have different reasons for non-use or abandonment.

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