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An Empirical Study of Acquiring the Health Information by Micro-blogging: Taking Plurk for Example

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Abstract

In view of rising micro-blogging, the searchers of health information have increased dramatically anywhere in Taiwan. The purpose of this study was designed to refine and apply the theory of health belief model and tried to explore significant affected factors on the Plurkers behavior in tracing the health information. The survey methodology of this study administered the online questionnaire procedure during a two-week period in May, 2010. The effective respondent numbers totally are 233. Moreover, the multiple regression method was also used to analyze the results. After statistical analysis, the critical finding points out that majority of micro-blogging users acquiring the health information was mainly affected by the factors of Social Influence, Trust and Perceived Barriers. Hence, the professional and convenient information might be provided for us to promote the intention of use in Plurk.

Keyword: Health Belief Model; Health Information; Micro-blogging; Plurk

Introduction

Background and Motivation

In the era of web 2.0, there are many internet users contact friends and share information via free internet platform. According to Alexa, it pointed out that Internet users like to visit the community website and portal in 2010. It was consistent with the trend which was proposed by O'Reilly [1]; this trend was mainly explaining the concepts of the sharing resources, user experience, and open platform. These concepts were constructed the community network.

In recent years, the guide of Internet service transforms the information retrieval's search engine into the community site. Micro-blogging is the most popular network platform in the community site. Alexa's traffic statistics in 2009 showed that rank of plurk has rising rapidly. Besides, Plurk is popular than Twitter in the Non-English speaking countries because of language support. Therefore, this study utilizes Plurker as the research object.

Nowadays, micro-blogging is also widely used in variety of purposes, such as communication, e-commerce and knowledge sharing. It is a fast community site providing information like Twitter. Some people seek knowledge and expert's advice [2]

[3]. Due to highest Internet penetration, people using the Internet to Acquiring health information is part of everyday life [4]. Therefore, this paper takes acquiring the health information as the subject.

Purpose Statement

In the Academia, the intention of using the micro-blogging is short of related researches. Regarding Health Belief Model (HBM), many scholars have used it to explain or predict preventive health behaviors (such as deweighting, healthcheck and screening ... etc.) and health seeking behavior. Also, related studies for prevention behavior are shortage in health information. To achieve this goal, we focus on modifying the HBM to form a theoretical framework that can totally explain the intention of using micro-blog. The experiment is use the share of health information as an example to verify the self-health perspective on the intention of the use of micro-blogging.

Literature Review

Micro-blogging

Micro-blogging is transformed from the blog, and the main difference between blog and Micro-blogging is that blog often include both pictures and words, however, the Micro-blogging is designed to apply on the cell phone and it also restricts words must less 140 characters each messages which can be published directly to micro-blogging. Templeton [5] defines micro-blogging is a small-scale form of blogging, generally made up of short, succinct messages, used by both consumers and businesses to share news, post status updates and carry on conversations.

Previous studies indicated the blog in general is often used to write short essays, reviews and knowledge sharing. Micro-blogging is good at rapid exchange of views or information sharing. Compared with the blog, micro-blogging as a channel for information transmission is more efficient [7]. 75% of the micro-blogging users are surveyed and conclude that the use of this service is very simple [8]. Hence, micro-blogging becomes a novel interface of sharing information.

Templeton [5] said that most micro-blogging posts can be further divided into more specific types: Microsharing, Micromessaging and Micrologging,

details can be showed in Table I.

Table I Micro-blogging application type

Type	Explanation
Microsharing	One type of Micro-blogging where users are focused on sharing links and other content with their community.
Micromessaging	This is similar to instant messaging, with the exception that it is not instant. Most platforms utilize the @ symbol along with a person's username to direct a message to someone in particular. The message will travel fairly quickly, but it requires the person on the other end to refresh the page or to wait for their application to retrieve it.
Micrologging	This refers to a user using their Micro-blogging account as a personal log for their activities. This might mean the person is using it to chronicle their daily movements or they are using it in conjunction with a 3rd party service that requires them to submit data for tracking purposes.

Comparing with the Templeton's report [4] and Krishnamurthy's [9], we can find that difference between blogs and micro-blogging. Specifically, Krishnamurthy [9] describes that the micro-blogging has a trend on personal characteristics. Because the health information micro-blogging is published based on personal life, work environment and data collection, our study focus on both personality and subject. The characteristics of micro-blogging described in Table II by Jeremy [6].

Table II Micro-blogging characteristics

Characteristics	Explanation
1.Low-loaded	Quick release and respond by 140 characters.
2. Immediacy	The message that published can immediately send to the related communities.
3. Openness	The new message is released, can be received in a short time.
4. Interactivity	Like real time features, if

	real-time chat, and enhancing their interaction.
5.Distance	Reduce the pressure on instant messaging, users can easily choose to respond or not
6. Diffusivity	Can also call "information ripple". In the most important topic, there will be fast forwarding phenomenon, and will be a hot topic.
7. Mobility	Real-time updates or receive messages by cell phone

Health Information

Health information is a concept for sharing the knowledge of disease, it can help patients understand related health message. Besides, it can also call health information if this message is consisted of hygiene knowledge[10]. Public in general quick access to information about disease, drug use, side effect, and healthcare etc. by health information websites for improve knowledge of disease prevention, maintaining health [11]. Through an online electronic questionnaire survey found that Internet users in 1829, with 70.8% of the subjects had used health information website, its main purpose is to acquire 53.3% of health-related information [12]. The health information's demand described in Table III by Dickerson [13].

Table III Health information's demands

Demand form	Percentage
Physical illness	82
Nutrition and fitness information	59
Specific physician, clinic ,and hospital information	37
Alternative treatment information	33
Mental health information	20
Experimental treatment information	17
General Health Advice	15

However, people usually take health status as privacy, especially they get ashamed disease. Through the dissemination of health information web site, it can help patients effectively understand the relevant knowledge, and reduce the damage caused by disease [14][15]. In short, this study will focus on micro-blogging for acquiring the health information.

Trust and Social Influence

Trust was defined as a set of specific beliefs, in accordance with other research on buyer-seller ongoing relationships that deal with integrity, benevolence, ability, and predictability [16]. Giffin think trust means the risk of believing each other [17]. Therefore, trust in the interaction is the essential factor for expectation of things [18]. As a result, it plays an important role in the study of the health information [19]-[22]. Also, some

study pointed out trust will affect intention of using health information website [23].

Social influence is the degree to which an individual perceives that others believe he or she should use a technology. Rice et al. describes social influence is that individuals in their networks affected by behavior [24]. Venkatesh and Brown also defined social influence is a behavior that is affected through the extension of social networks, apart from others, through secondary data can influence individual behavior [25]. Secondary data are such as newspapers, magazines, television, etc. [26]. Rosenstock describe that the main factor of “Cue to action” is the mass media [27].

Self-efficacy

Self-efficacy is mainly through the study of social cognitive theory has been confirmed by the individual behavior [28]. Bandura defined self-efficacy as judge a person’s ability to perform particular acts [29]. Many studies have found that the perceived of self-efficacy would affect our decision to adopt the behavior [30][31][32]. In particular, the self-efficacy implicate health behavior will more significant affected [33][34][35][36]. Compeau and Higgins proposed a computer self-efficacy (Computer self-efficacy) is defined to indicate that the individual ability in the perceived of the use of computer, and has significant affected in the information research area [28].

Health Belief Model

Health belief model in explaining health-related behaviors has become one of the most commonly cited models [37] [38]. After Hochbaum proposed health belief model at 1985[40], Becker do more intensive study to construction of the health belief model[41]. Rosenstock [37], Becker and Maiman [39], Rosenstock et al. [27] modified the health belief model, and health belief model formed gradually the main framework as shown in the Figure 1.

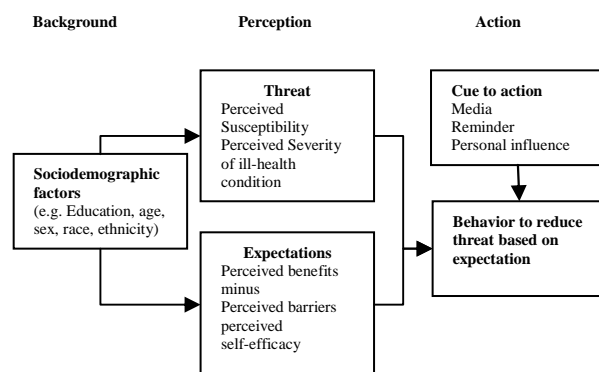


Figure 1 : Health belief model framework

In research of health belief model, people prevent disease based on their own subjective views, and they adopt some health behavior. These views are the following four points: Firstly, the possibility of individuals susceptible to disease, and have serious

implications for disease. Secondly, economic or physical are affordable. Thirdly, the treatment or prevention of disease action is effective. Fourthly, willing to accept external cues to action for encourage doing healthy behavior [27].

These factors will be the impact of different personal backgrounds. When individuals adopt healthy behaviors, it will be influenced by the threat of disease and result of taking action. Thus, according to the concept of the above discussion, the Health Belief Model can be divided into the following table, as shown in Table4:

Table IV Health Belief Model variables

Variables	Description
Perceived Susceptibility	Self-evaluation of the probability of suffering from diseases.
Perceived Seriousness	Be generated for a serious illness, treatment or will be possible occurrence of self-assessment.
Perceived Benefits of Taking Action	Appropriate recommendations for action under the effect will reduce the disease impact and risk self-assessment.
Perceived Barriers to Taking Action	According to the proposed action will have the appropriate number of other issues such as cost or pain.
Cues to Action	Events to enhance personal motivation or strategy
Self-efficacy	The confidence of the take and complete health-related behaviors

According to the above, the health belief model of the previous research are in the field of health behavior, in addition to helping patients in the treatment of preventable diseases is very helpful, the health behavior can be found through the great impact of the health. This study was designed to apply the theories of health belief model and tried to explore affected factors on the Plurkers behavior in tracing the health information.

Research Framework and Hypothesis

Based on the previous literature, this research is proposed to investigate the intention of Plurkers in acquiring health information. The constructs in this study consists of perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, trust, computer self-efficacy and social influence; we use theses factors to explore the intention of using health

information micro-blogging. The research framework as shown in the Figure 2.

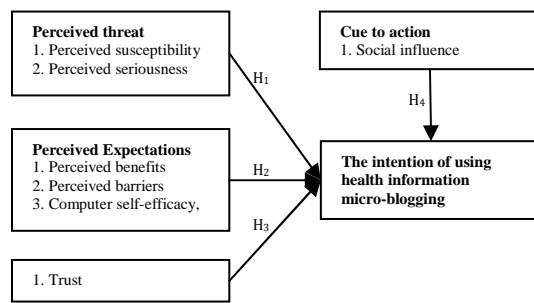


Figure 2 Research framework

When individuals feel health will be threaten, they will take positive health behaviors and reduce the probability of become ill [37] [42]. The positive health behaviors are like health check and disease prevention behavior etc [43] [44]. Nowadays, if young people know the seriousness of his illness, they will change their behavior on the basis of health information [45]. Obviously, when plurkers feel they may have other diseases, they may be affected by finding relevant health information. In light of the aforesaid, the following hypotheses are proposed:

Hypothesis 1-1. Perceived susceptibility is positively related to intention of acquiring health information through the micro-blogging.

Hypothesis 1-2. Perceived seriousness is positively related to intention of acquiring health information through the micro-blogging.

Bandura et al. proposed for most of users, they would try to engage in this behavior when they find that to do some behaviors have benefits [29]. In addition, many people used the Internet to search for relevant health information to prevent illness from being worsen [46]. Rosenstock mentioned that when the healthy behavior appended with barrier and cost will reduce the intention to change the healthy behavior [47]. Compeau et al. discussed the study with respect to the acceptance by the information technology, a greatly of computer self-efficacy will increases the intention to use the information technology [48]. Eastin and LaRose research in the relationship between self-efficacy and Internet, the research found out the results showed us a positive relationship [49]. Because of using the website to find the information or take part in discussions, the greatly of the computer self-efficacy will cause the users to use the website which can be simpler and reduce the resistance. In light of the aforesaid, the following hypotheses are proposed:

Hypothesis 2-1. Perceived benefits is positively related to intention of acquiring health information through the micro-blogging.

Hypothesis 2-2. Perceived barrier is negatively related to intention of acquiring health information through the micro-blogging.

Hypothesis 2-3. Computer self-efficacy is positively related to intention of acquiring health information through the micro-blogging.

Ganesan states trust can increase the credibility of health information they provided [50]. Lack of credibility of information on the web, then will cause troubles to receive information [51]. Henman et al. researched in doctor-patient relationship, they found out that if patients trust in physicians, they will fully accept the physician's treatment even in unknown circumstances. Therefore, this showed the importance of trust in information communication [52]. People will engage with a website when they think it was trustworthy [53]. Thus, the following hypothesis is proposed:

Hypothesis 3. Trust is positively related to intention of acquiring health information through the micro-blogging.

Hoeman et al. [54] found that cues to action in health behavior could change the public's health concepts. Falomir pointed out that through the social influence that can help the public to change the health behavior [55]. Thus, the following hypothesis is proposed:

Hypothesis 4. Social influence is positively related to intention of acquiring health information through the micro-blogging.

Research Method

Subjective and Data Collection

This research used online questionnaire and subjects had to use the plurk of the health information. Questionnaire information released by health related plurk. Finally, the study reclaimed effective questionnaire 233.

Questionnaire Design

The questionnaire was designed by referring to measurements of related studies. Since the constructs investigated in this study were latent variables that couldn't be directly observed. These variables were measured with a seven-point Likert-type scale. 1 represents "Very much disagreed" and 7 represents "Very much agreed". This study invited experts in the academic and practical to modify the questionnaire and give feedback. All items were slightly modified to accommodate specific behavioral characteristics and the context of this study.

Sample Characteristics

The questionnaire was totally administered to 416 plurkers. Limitations of this study were consistent with 233 in the sample. Among them, 126 are female (54.1%), and 107 are male (45.9%); the male -to-female ratio is 0.85 to 1; most of the respondents are between 21 to 25 in age (56.7%); the

respondents' health-risk behavior or habits include smoking (5%), taking medicine for fitness (18%), taking medicines due to a personal condition (19%), taking health products (76%), etc.

95.3% of the respondents have at least 5 years of Internet using experience, and about 53.6% of the respondents use the Internet for at least 5 hours each day. 44.6% of the respondents report that they can find the health information they need through Plurk. Health websites that have been visited frequently by respondents belong to health-related blog (33%), site for medical professionals, and hospital (16.8%). 30.6% of the respondents that they search health information for nutrition counseling. 29.1% of the respondents that they use of information made the reference in the medical.

Data Analysis

Measurement Model Analysis

Items of the questionnaire were constructed according to the related literature to ensure validity. Construct validity was assessed by convergent and discriminant validity.

The reliability of the constructs was assessed by using Cronbach's α , which indicates the degree of internal consistency among the measurement items and is inversely related to the degree to which a measure is contaminated by random errors. In this study, the construct's value of coefficient alpha higher than the threshold level of 0.7 was deemed to provide satisfactory reliability.

Convergent validity of individual items may measured by individual item loadings and the constructs of the average variance extracted (AVE). In this study, data analysis showed that the value of the individual items loading are above 0.7, all reached significant level ($p < 0.01$), and the value of the constructs of the average variance extracted higher than 0.5 threshold. Therefore, the measurement has convergent validity. Since each constructs the square root of the AVE values are greater than the pairs of constructs correlation coefficient between the values, so measurement model also has good convergent validity.

Research Framework Analysis

After testing of reliability and validity, this part will analysis the hypothesis. Regression analysis explains the model predictive power through the test of individual regression coefficients of significant t values or F value should be significant. The findings of the study showed in Table V.

Based on the Table V shows that the result of the hypothesis 3, 4, and 2-2 are statistically significant, others are non-significant. The significant level of H3 and H4 achieve $p < 0.001$ and H2-2 achieve $p < 0.05$.

The R-square is 48.4 %.

Table V Test results

Construct	t-value	p-value	Result
H1-1 Perceived susceptibility	-0.788	0.432	--
H1-2 Perceived seriousness	-0.590	0.556	--
H2-1 Perceived benefits	0.627	0.532	--
H2-2 Perceived barrier	-3.002	0.003	Significant
H2-3 Computer self-efficacy	0.010	0.992	--
H3 Trust	5.591	0.000	Significant
H4 Social influence	4.104	0.000	Significant

Conclusions and Discussion

The data analysis confirmed that the intention really affected by the constructs of trust, social influence, and perceived barriers. On the impact of social influence, this result consistent with Rosenstock [27] bring forward the "cue to action" are significant to people's intention to acquire health information through the micro-blogging. It can be seen that external propaganda may stimulate the personal use of micro-blogging. Consequently, friends, family or society is driven to enhance the effective use of micro-blogging.

On the impact of trust, the health-related micro-blogging should pay attention to the overall impression for plurker. When operating and managing plurk of health information, it can enhance the professionalism and credibility of plurker, also increase the will to use micro-blogging.

About perceived barriers, the plurk of health information should release information that is easy to understand and use. When satisfy the need of plurkers, we may inspire plurker to use micro-blogging. It can be seen that manager can develop plurk robot to help release message, sharing information can make it easier to reduce plurker's barriers to enhance the intention of using the micro-blogging. Or share the URLs; it can also achieve the same goal.

In this study, online questionnaire sent by plurk, the plurk's properties such as "real time" and "immediacy" can be found a lot of subjects. Although amount of messages reveal to the river course, excessive amount of information submerge the information of questionnaire. This result is unlike online questionnaire, so to send the questionnaire in the future can use robot for reclaiming more sample.

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