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Influencing Factors of Consumer Health Information Seeking Behavior Via Social Media

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Abstract

Objective: We aim to analyze the consumer health information seeking behavior to figure out its characteristics and influencing factors, and make further efforts to provide targeted recommendations for media managers to promote health communication via social media.

Design/methodology/approach: Our custom model was derived from literature review, empirical research was tested by the use of questionnaire investigation, and finally the collected data was analyzed by SmartPLS, a tool of structural equation model.

Findings: Gratification of health information and its platform had a positive effect on attitudes toward health information seeking behavior. Health information literacy was proved to have a significant influence on attitudes toward health information seeking behavior, subject norms and perceived behavioral control, respectively. Attitudes toward the health information seeking behavior and subject norms were proved to positively associate with health information seeking behavior intention. In addition, some demographic factors were found to associate with health information seeking behavior via social media such as age, gender, and profession.

Originality/value: We constructed the seeking behavior model of health information from the perspective of sociology and psychology, empirically studied health information seeking behavior and its influencing factors via social media, and has laid a favorable foundation for the relevant departments about further health communication research.

Key words: Health information seeking; Seeking behavior; Structural equation model; Social media

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INTRODUCTION

Increasingly, consumers engage in health information seeking via the Internet, and the basic tenet is that access to quality electronic health resources empowers the public by increasing knowledge and improving decision-making (Keselman, Browne, & Kaufman, 2008). Social media has the vast majority of users on Internet, in particular, it offers new possibilities for communication, and is a growing tool for engagement about health and disease. Web- and mobile-based applications of social media are powerful tools for the dissemination of health information as they can reach a broad audience in a very short period of time, are easy and affordable to access and use, and cater to a large variety of audiences (Robillard et al., 2013). In March 2016, WeChat's monthly active users have reached 6.5 billion, while it is not yet 6 years old, already this application impact how doctors and patients interact (Hawn, 2009) and are changing health communication patterns (Chou et al., 2009).

In the study, we focused on the influencing factors of consumer health information seeking behavior via social media, attempted to investigate how and why consumers use health-related social media based on an integrated model drawn from two theories: The theory planned behavior and the uses and gratifications approach from mass communication research.

1. BACKGROUND AND RESEARCH MODEL

Given the rapid changes in the communication landscape brought about by participative Internet use and social media, it is important to develop a better understanding of these technologies and their impact on health communication. The first step in this effort is to identify the characteristics of current social media use on health information-seeking and its influence factors (Ibid.). Up-to-date reporting of current social media use for health information-seeking will monitor the growth of social media and inform health promotion.

1.1 Health Information Seeking Behavior

Rees and Bath indicated that health information seeking behavior (HISB) were the urge to confront oneself with the threatening situation by means of seeking more information about it (Rees & Bath, 2001). Generally speaking, the broad sense attributed to HISB related to the ways in which individuals go about obtaining information, including information about their health, health promotion activities, risks to one's health, and illness. As more and more consumers search health information online progressively, many researchers conduct studies of health information seeking behavior among them. But their research works mainly encompassed observation on searching strategy, query construction, and evaluation of the search process. In our study, we aim to start from point view of behavior, mainly to explore the characteristics and influencing factors of the behavior during the whole process of searching for health information via social media.

1.2 Health Information Literacy

The concept of health information literacy was put forward by Medical Library Association (MLA) in July 2003, based on the combination of definition of health literacy and information literacy, respectively, defined by Department of Health and Human Services (DHHS) and American Library Association (ALA)(Zhang & Du, 2010). As defined by the MLA, health information literacy was

> the set of abilities needed to recognize a health information need; identify likely information sources and use them to retrieve relevant information; assess the quality of the information and its applicability to a specific situation; analyze, understand, and use the information to make good health decisions. (Medical Library Association (MLA), 2003)

Thus, health information literacy plays an important role in the whole process of searching for health information via social media.

1.3 The Existing Theoretical Framework

1.3.1 Theory of Planned Behavior (TPB)

The theory of planned behavior (TPB) has received considerable attention in the literature and has met with some degree of success in predicting various behaviors in an expectancy value model of attitude–behavior relationships (Tolma et al., 2006). TPB maintains that an individual's behavior can be predicted based on attitudes toward the behavior (A), subjective norms (SN), perceived behavioral control (PBC), and especially, behavior intentions (BI) (Jiang et al., 2012). Attitudes toward the behavior are conceptualized as the degree to which performance of behavior is positively or negatively valued. Subjective norms are conceptualized in terms of the perception of social pressure and motivation that people perceived evaluation of important others supporting or not supporting the behavior. Perceived behavioral control refers to the perceived degree of difficulty in performing the behavior. These three factors are proposed to predict intention. Intention is defined as the readiness to perform a certain behavior, which is the closest determinant of the behavior (Rubin, 2009). TPB incorporates both social influences and personal factors as predictors, social influences are defined as subjective norms, perceived behavioral control had been added to the model as another determinant of intention for personal factors. In our study, the TPB model was cited to analyze the attitude–behavior relationships of health information seeking behavior.

1.3.2 Uses and Gratifications Theory (UGT)

The uses and gratifications theory (UGT) is to study individuals' selection and consumption of media as a means of understanding why people choose one media message rather than another (Rubin, 2009). UGT is based on assumptions about individuals' psychological traits, their motivations for selecting certain types of messages, and their level of involvement with the medium or the message (Blumler & Katz, 1974; Andsager, 2014). UGT as formulated by Katz has been used to study mass media for over 40 years. The emphasis here is on the uses of mass media in meeting the felt needs of the consumer. It outlines the following objectives for uses and gratifications research: To explain how people use media to satisfy their needs; to understand motives underlying media behavior; and to identify functions or consequences that emerge from the intersection of needs, motives, and behaviors. Thus UGT model was cited to analyze the gratifications after searching health information via social media.

1.4 Research Model and Hypotheses

We formulate a custom model to explore the characteristics and influencing factors of consumer health information seeking behavior on social media based on TPB and UGT. This model contains seven variables: gratification of information, gratification of information platform, health information literacy, attitudes toward the behavior, subjective norms, perceived behavioral control. The complete research model is presented in Figure 1.

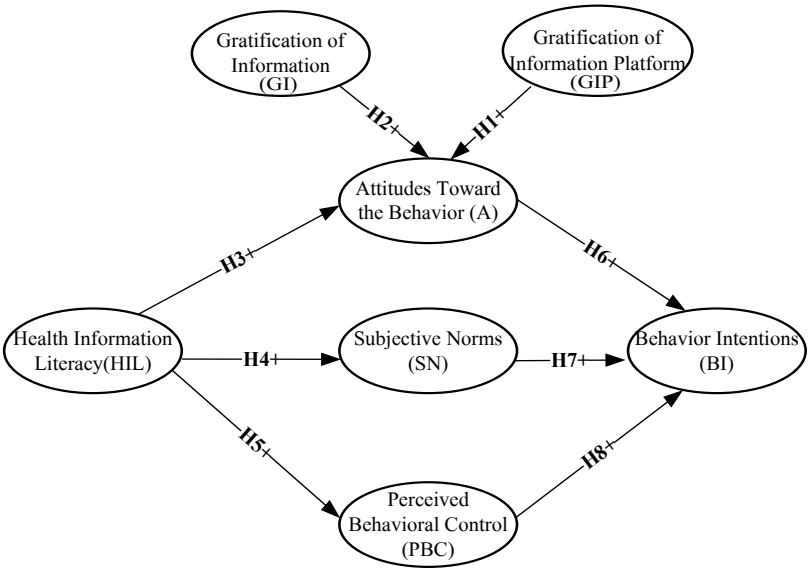


Figure 1
Research Model

Gratifications are conceptualized as "need satisfactions", which are obtained when a person's needs are met by certain types of media sources that match their expectations (Blumler & Katz, 1974). Sundar and Limperos pointed out that as we move from old to newer media, it appeared that new gratifications do emerge with new technology and to some broad gratifications, especially those related to social and information functions, tended to get more nuanced and specific with newer media. Social media as the newest media searching for health information meet new gratifications for us (Sundar & Limperos, 2013). In this model, two gratification factors are included.

Gratification of information platform is defined as the gratifications brought up after using social media platform to search for related health information in this article. It contains usability and functionality two factors. The design and usability aspects of websites were accepted as a key factor to its success (Cappel & Huang, 2007). Nathan and Yeow showed that the use of color and font had the highest effect on overall web usability, followed by clarity of goals in website, trustworthiness of website, use of graphic and multimedia, interactivity of website, ease of web navigation and finally download speed of website (Nathan & Yeow, 2011).

Gratification of information has long been considered closely related with the attitudes toward searching health information on different kinds of social media and platform use. Turban and Gehrke showed that the degree of satisfaction to the website provided information directly decides the future of potential consumers (Turban & Gehrke, 2000). Information satisfaction is generally measured by the quality of the information provided by social media, for instance. In this paper, the satisfactions of health information seeking behavior should be included the content and the form of social media. Thus we hypothesized as below.

H1 Gratification of Information Platform (GIP) is positively associated with the attitudes toward the health information seeking behavior via social media (A).

H2 Gratification of Information (GI) is positively associated with the attitudes toward the health information seeking behavior via social media (A).

In addition to gratifications, health information literacy is crucial as people are expected to take responsibility for their own health care and health-related decisions (Schillinger et al., 2004). People with low health information literacy tend to have lower levels of attitudes toward searching related health information via effective ways, as well as limited practical and instrumental knowledge related to searching related health information to self-managed treatment and care (Crook, 2015). Consumers with limited health literacy may lack either Internet access or skills necessary to utilize this information. Nonetheless, consumer at all health literacy levels may prefer other primary sources to obtain health information (Gutierrez, 2014). In brief, health information literacy could also affect subject norms and perceived behavioral control. Thus we hypothesized as below.

H3 Health Information Literacy (HIL) is positively associated with the attitudes toward the health information search behavior via social media (A).

H4 Health Information Literacy (HIL) is positively associated with Subject Norms (SN) that is to say the perception of social pressure and motivation.

H5 Health information literacy (HIL) is positively associated with perceived behavioral control (PBC), namely the perceived degree of difficulty in performing the behavior.

According to the TPB model, an individual's behavior can be predicted based on attitudes toward the behavior (A), subjective norms (SN), perceived behavioral control (PBC), and especially, behavior intentions (BI). It has been proven that the more positive attitudes and subjective norms consumers hold, the greater perceived behavioral control regarding a behavior they represent, consumers are more likely to intend to perform that behavior. Similarly, the stronger intention consumer hold, they are more likely to perform the behavior. Thus we hypothesized as below.

H6 Attitudes toward the behavior (A) is positively associated with behavior intentions (BI).

H7 Subjective norms (SN) is positively associated with behavior intentions (BI).

H8 Perceived behavioral control (PBC) is positively associated with behavior intentions (BI).

2. RESEARCH METHODS AND DATA COLLECTION

2.1 Methods

We used a questionnaire survey to test our theoretical model. The questionnaire included two parts. The first part asked our respondents about their basic information, and the second part contained questions measuring consumer health information seeking behavior via social media and its effects. Each item corresponding to the constructs is measured by a 5-point Likert scale. Constructs including gratifications, health information literacy, attitudes, subjective norms, perceived behavioral control are with answer choices ranging from strongly disagree (1) to strongly agree (5).

2.2 Data Collection

The survey was administered in two ways. Online surveys were distributed for a month through an online survey website at http://www.sojump.com/, providing convenient and functional designing and administering questionnaires and paper-and-pencil surveys were distributed to people occasionally nearby hospital at the same time. We explained the purpose of our study and solicited their participation throughout the process to increase accuracy and response rate. Furthermore to be eligible, all participants had to be over the age of 18, able to read and write Chinese, and provide consent. Finally, 400 questionnaires were sent out in a chance encounter. A total of 376 questionnaires were collected, and the recovery efficiency was 94%, in which 360 samples were effective, and the effective rate was 95.74%. Table 1 summarizes the demographic profile of respondents. A total of 239 (66.39%) of the respondents were female and 121 (33.61%) were male. The maximum of two stages of age were18-29(70.56%), 30-39(13.89%). Wechat (60.28%), QQ Zone (55.22%), and microblog (48.89%) were the most commonly used social media to obtain health information. About 44.72% of respondents used social media to obtain health information multiple times a day.

Table 1
Demographics of Respondents

Category	Item	Percentage(%)	Category	Item	Percentage(%)
Age	18-29	70.56	Ever used we-media	QQ zone	93.33
	30-39	13.89		Renren Inc	7.78
	40-49	6.39		Micro-blog	48.89
	50-59	3.90		Wechat	60.28
	Above 60	5.20		Blog	7.50
Gender	Male	33.61		tieba	1.67
	Female	66.39		Facebook	28.33
Profession	Student	44.72		Other	10.30
	Teacher	15.00	The most commonly used we-media to obtain health information	QQ zone	55.22
	Civil servants/ public institution staff	14.72		Renren Inc	7.78
	Enterprise staff	15.83		Micro-blog	48.89
	Free profession	3.89		Wechat	60.28
	Other	5.83		Blog	7.50
Frequency of health information seeking	Multiple times/ day	44.72		tieba	1.67
	Once/day	19.17		Facebook	28.33
	Several times/week	10.83		Other	10.30
	seldom	25.28			

3. DATA ANALYSIS AND RESULTS

Partial Least Squares (PLS) structural equation modeling (SEM) was applied to estimate our theoretical model with the software application SmartPLS (Ringle, 2005), since the PLS algorithm is a components-based structural equation modeling technique, "allowing each indicator to vary in how much it contributes to the composite score of the latent variable", thus being "preferable to other techniques" (Chin, Marcolin, & Newsted, 2003) .

3.1 Measurement Model Verification

The measurement model specifies the relationships between the manifest variables and the latent variables. The assessment of the measurement model includes Average Variance Extracted (AVE), an investigation of reliability coefficients Cronbach's alpha and Composite Reliability (CR) coefficients. AVE indicated what percentage of the variance of the construct is explained by an individual item. In this study, all constructs demonstrated AVE values were between 0.526 and 0.692 (Table 2), which were higher than the benchmark of 0.5 (Fornell & Larcker, 1981) . Internal consistency was assessed by means of Cronbach's alpha coefficients which values were calculated for each of the multi-item factors included in the model. The Cronbach's alpha coefficients in Table 2 most ranged from 0.713 to 0.860 and were above the suggested level of 0.70 (Reynaldo & Santos, 1999), excepted the behavior intentions (BI) of 0.653, which was a little less than reference value, still higher than acceptable level of 0.6 however. CR coefficients could also assess internal consistency of the measurement model, and they were displayed for each of the variables and ranged from 0.816 to 0.899, and all constructs displayed a higher CR than the benchmark of 0.70 (Zha, Li, & Yan, 2013). These indictors of Cronbach's alpha and CR coefficients both suggested that the data we collected exhibited high internal reliability.

Table 2
Latent Variable Correlations

Constructs	AVE	Cronbach's Alpha	CR
Gratification of Information Platform (GIP)	0.577	0.756	0.844
Gratification of Information (GI)	0.640	0.860	0.899
Health Information Literacy (HIL)	0.526	0.819	0.869
Attitudes Toward the Behavior (A)	0.604	0.781	0.859
Subjective Norms (SN)	0.692	0.849	0.899
Perceived Behavioral Control (PBC)	0.529	0.713	0.816
Behavior Intentions (BI)	0.590	0.653	0.811

Table 3 showed the square roots of AVE and correlations between constructs. We could see that the square roots of each construct's AVE were more than 0.725 and were larger than its correlations with other constructs, suggesting sufficient discriminant validity (Straub et al., 2000). Overall, AVE, cronbach's alpha, CR and square roots of AVE demonstrated a satisfactory reliability and validity. In sum, the internal consistency and validity results enabled us to proceed to an estimation of the structural model.

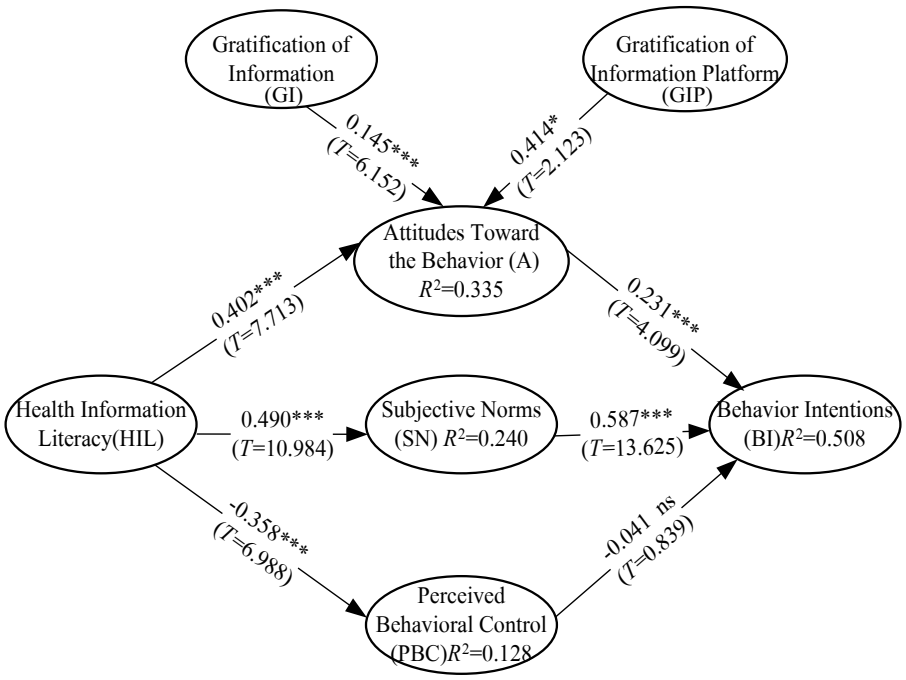
Table 3
AVE Square Roots and Correlation Between Constructs

	GIP	GI	HIL	A	SN	PBC	BI
GIP	**0.760**						
GI	0.651	**0.800**					
HIL	0.458	0.469	**0.725**				
A	0.462	0.557	0.363	**0.777**			
SN	0.398	0.438	0.490	0.275	**0.832**		
PBC	-0.420	-0.340	-0.358	-0.374	-0.253	**0.727**	
BI	0.450	0.451	0.464	0.406	0.667	-0.292	**0.768**

3.2 Structured Model Verification

The standardized solution estimated by the PLS 3.0 program was used for interpreting the structural relation results. Path coefficients for each value from the models were shown in Figure 2. Six paths exhibited a *P*-value of <0.001, one path exhibited a *P*-value of <0.05 but H8 path was exhibited of no significance. The results show that, in addition to the hypothesis of H8, the other 7 hypotheses were statistically significant in the proposed model of our study. These paths reflected the impact of gratification of information platform (H1) and gratification of information (H2) on attitudes toward the behavior (0.414 and 0.145), health

information literacy on attitudes toward the behavior(H3), subjective norms (H4) and perceived behavioral control (H5) (0.402, 0.490, -0.358), attitudes toward the behavior (H6), subjective norms (H7) on behavior inventions (0.231, 0.587). The *P*-value of H8 had no significance in this study and it would be discussed as below.



Notes: **P*<0.05; ***P*<0.01; ****P*<0.001; ns: not significant

Figure 2
Results of PLS Analysis

4. DISCUSSION AND IMPLICATIONS

4.1 Discussion of Findings

From Figure 2 we can see that hypothesis H8 was unsupported by chance, the other 7 hypotheses are well validated. We discuss the results as follows:

Hypotheses H1 and H2 were both verified in our research as in many previous studies applying UGT to explain the relationship between gratifications and attitudes toward searching health information on different kinds of social media and platform use. As previously described the degree of satisfaction to the website provided information directly decide the future of potential consumers (Turban & Gehrke, 2000). In a word, the more gratified information and social media platform presented, the more positive attitude consumers would hold in the process of searching for health information.

Ghaddar found that health literacy was positively associated with seeking health information online and exposure to MedlinePlus (Ghaddar, 2012). However Natalia Gutierrez (2014) reported that there were no statistically significant differences between patients with limited and adequate health literacy and their primary information source. Controversies existed over whether health literacy was associated with health information seeking behavior. In our research, information literacy was added to health literacy to compose health information literacy which proved to have a significant influence on the attitudes toward health information seeking behavior (H3), subject norms (H4) and perceived behavioral control (H5), respectively. This paper confirmed that people with more health information literacy preferred to use social media in the context of health information seeking, consistent with previous research (Sarkar, 2011). From the results of PLS analysis, we could easily see that health information literacy was positively associated with attitudes and subject norms while it was negatively associated with perceived behavioral control. And the contributions of health information literacy to attitudes and subject norms were more important than that of perceived behavioral control. It might because of that health suffers trend to be younger, and adequate health information literacy could help them reduce the perceived degree of difficulty in performing the behavior.

As previously proved by Ajzen and Fishbein (2005), hypotheses H6 and H7 are well validated in our research, nevertheless H8 has not been proved unexpectedly. Obviously, attitudes toward the behavior and subjective norms significantly influence behavior intentions, while the perceived behavioral control did not show any relationship with it.

As for H8, In the literature Understanding Middle-Aged Women's Health Information Seeking on the Web: A Theoretical Approach (Yoo & Robbins, 2008), perceived

behavioral control was shown to be a relatively weaker predictor than attitudes and motivations concerning. They thought that the underlying reasons for the limited effect of perceived behavioral control are likely due to the characteristics of the study sample. We agreed to the statement and considered the other possible reason for this kind of situation was the interaction between perceived behavioral control and its results has not been found and explained; besides the introduction of health information literacy variable may affect the role of other variable like perceived behavioral control more or less. In this respect we would do further validation in the future research. In general, this part had strongly indicated that maintaining a positive attitude to find health information and keeping health communication with important others will positively promote health information search behavior.

Our results also indicated that demographic factors of age, gender, and profession had certain influence on health information seeking behavior via social media. The highest proportion of health surfers occurred in the 18-29 years age group, female were more likely to seek online health information than males, students and teachers were of the most proportion of respondents, who typically shared health information on Wechat. This higher prevalence may also be a reflection of greater health awareness of this group.

4.2 Theoretical and Practical Implications

TPB and UGT are applicable models for analyzing influencing factors of consumer health information seeking behavior via social media. In this paper, we explored scientific, reasonable, simple and feasible measurements to develop theoretical research, because the measurement of each construct in the theory varies depending on the behavior under investigation and the user group chosen (Sarkar, 2011). The health information literacy and gratifications of information and its platform were proved to be strongly effective measurements in our study. Furthermore, they could be used as exogenous variable of this relevant specific behavior.

The results can also have practical implications for understanding the influencing factors of consumer health information seeking behavior via social media and developing more tailored social media for health surfers. It was reported that the true spirit of user-centered design was to ensure accessibility and functionality across a diverse group of end users (Lyles & Sarkar, 2015). We need to ensure that we sent patients to social media simple to access, easy to understand, developed in literacy-appropriate and language-appropriate ways. Gratification of health information and its platform had been proved to have a positive effect on health attitude and behavior intention. Therefore, it is imperative for the government departments to increase the popularity of the network and to improve the network accessibility. At the same time, it is particularly important to improve the satisfaction of health information, which requires the improvement of the health information filtering mechanism, the development of health information standards, and improve the readability of health information. In addition, optimizing the steps of health information retrieval, adding the column of readers, and contacting us and other reader training programs to improve platform satisfaction are effective strategies.

In our study health information literacy was shown to be associated with attitudes toward the behavior, subjective norms and perceived behavioral control. The challenge seems to be the need for information literacy activities relating to health literacy or health information literacy skills and competencies to be developed and encouraged within consumers. For example, it is of great benefit to hold a variety of health information inquiry competitions, health information analysis activities, health information science popularization and other activities to strengthen users' health education and self-management.

CONCLUSION AND LIMITATION

In health information research field, health information seeking behavior and its influencing factors are important branches. This article empirically explored the influencing factors of consumer health information seeking behavior via social media. Finally we found that gratification of health information, gratification of health information platform, health information literacy, attitude toward health information seeking behavior, and subject norms were significantly associated with behavior intentions. In addition, the demographic characteristics were also very important factors. In our study, females (66.39%) were more likely to search for health information than males (33.61%) and the maximum of two stages of age were 18-29 (70.56%), and 30-39 (13.89%). Although we had done empirical research and the survey results also had proved the establishment of research hypothesis, but for specific groups, such as the elderly, pregnant women, people with diabetes need for more targeted research in the future.

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