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Study on the Continuance Usage of Mobile Health Management

Application based on Uses and Gratifications Theory

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Abstract: In order to examine the influence effect of uses and gratifications of mobile health services. A research model was developed to study the influence of users' utility gratification, hedonic gratification and social gratification from the perspective of Uses and Gratifications theory. SPSS and Smart PLS were employed to verify the research hypotheses using the empirical data collected via survey questionnaires. Research results show that utility gratification, hedonic gratification and social gratification all exert significant and positive effects on users' continuance usage intention. Especially, gratification of health management, perceived fantasy, social image play important roles in users' uses and gratifications. Providers of Mobile health management application should design and take personalized operating strategies and marketing strategies according to different needs.

Keywords: mobile health management application, Uses and Gratifications theory, continuance usage intention

1   INTRODUCTION

The traditional way of individual health management has been changed with the rapid development of Internet and smart health devices. A large number of mobile health management applications (MHMA) which including functions of health information searching, personal health status recording and evaluation based on the Internet and mobile terminals have emerged, and involved sports, fitness, weight loss, and health management related mobile applications. Users use MHMA mainly to meet their own health needs. When users' health needs are met, users' continued willingness to use the MHMA will be stronger. The Uses and Gratifications theory (U&G) is widely used to study the impact of need satisfaction on users' behavior [1][2], but at present, there is less research on the impact of need satisfaction on MHMA usage behaviors.

Mobile health services are still in the development stage. How to retain users is the key issue for providers to develop MHMA and enhance their competitiveness. The U&G theory is mainly used in the study of users' continuance usage behaviors[2], and how to satisfy users' needs is key of continuance usage of MHMA. Therefore, this paper mainly studies two questions: Q1-What are users' health related needs satisfied by MHMA? Q2-What are the influences of different gratifications on continuance usage behavior of MHMA? Thus, a continuance use research model of MHMA was constructed based on U&G theory, and data collected through questionnaire, research results are obtained through the empirical analysis. This research will be helpful for understanding users' continuance usage behavior of MHMA, and designing MHMA products, developing marketing strategies, innovating business models. It has important theoretical and practical significance for mobile health related research and the development of MHMA.

2   THEORY AND LITERATURE REVIEW

2.1 Uses and Gratifications theory

Uses and Gratifications theory (U&G) has been widely used in usage behaviors research of media after it

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was developed in the 1940[1][3], U&G theory believe that users' purpose of choosing and using the media is to meet their needs[4][5], and then generate the continuance usage behavior. U&G theoretical framework lays the foundation for scholars to study users' behaviors of new media through the need satisfaction perspective, and has been expanded into different research scenario by many scholars to research users' needs and continuance behaviors, such as email[6], virtual community[7], social network[8] and online games[2] and etc. In short, researches based on U&G has extended from traditional media to online media, and from social media to mobile services.

Besides the social media [9], information system is another one main research domain of U&G. Users choose an information system or social media mainly because the system or social media can meet their physical or psychological needs, such as information needs, hedonic needs, emotional needs, social needs and etc, and users will continue use an information system or social media when their needs are satisfied. Li et al. (2015) confirmed that the use of online games mainly meets users' utility needs, hedonic needs and social needs based on the U&G theory [2]. And Gallego et al (2016) researched the continuance usage behavior of online education based on the U&G theory, which showed that the gratifications of convenient need, hedonic need, social need, and information need all have significance influence on continuance usage, and among them, the impact of hedonic gratification and information gratification are greater [10]. Therefore, the uses and gratifications of an information system can impact users' continuance usage behavior. MHMA is one kind of information system which can provide different functions to meet users' health related need. Thus U&G theory also can be applied in the continuance usage behavior research of MHMA.

2.2 Users' continuance behavior research based on U&G

U&G theory was integrated with the expectation confirmation theory, social support theory to research users' continuance usage behavior of information services, mobile applications. Li et al (2015) demonstrated that the needs satisfaction have significant influence on users' continuance usage of online games[2], and Lin et al (2017) also got the same results that meet the needs of social benefits, social improvement, economic and information also has a significant impact on word-of-mouth behavior[9]. From previous studies, it can be seen that the higher degree of the meet of users' different kinds of needs, the stronger the user's willingness to continue using mobile services.

U&G theory can not only study the users' behavior solely, but also integrate other theories to study users' behavior through multiple aspects and angles of the effects of system characteristics, characteristics of users, characteristics of research scenario and etc. Gratifications of utility needs, social needs, hedonic needs, cognitive needs and esteem needs all have significant influences on users' continuance usage behavior of information system, social media, and mobile applications, which was confirmed in previous researches[2][11][12]. And there are many other different factors which have significant influence on users' continuance usage behavior according to the research contents and characteristics of research scenario. Therefore, U&G theory can be applied in the research of users' continuance usage behavior of MHMA with integrating the characteristics of MHMA.

3   RESEARCH MODEL AND HYPOTHESES

3.1   Research model

MHMA not only include utility function of health data recording, analysis, assessment, and programming, but also have social functions and E-commerce functions. MHMA is belonging to a vertical mobile application integrated health management, health social and health related e-commerce. Users can manage their health data, share individual experiences, health knowledge, results of health behavior with their friends and purchase health related products such as running shoes, healthcare medicine and health related services through the MHMA. The

usa of MHMA by users is mainly to meet the individual various need of health management. when the needs are satisfied, users will continue to use the MHMA. Therefore, the U&G theory is applied in this research to study users' continuance usage behavior of MHMA.

In the research scenario of MHMA, health related knowledge, individual health management services, healthcare products and healthcare method are supplied by the instrumental function and e-commerce function of MHMA. Users' health information need and health management need can be satisfied through the using of the instrumental function. Health information need and health management need can be summarized as utility need, since they are directly related to individual's actual health, and their main purpose is to improve individual health. In addition to the instrumental function and e-commerce function, social function also plays an important role. Users can find friends with the similar health issues, communicate and keep in touch with them, share their own health experience, share health knowledge, recommend health products and express their health management achievement, and show individual healthy image to others through the chat function and online or offline friend group of the social function, and users can get likes, encouragement and good impression from other users. All in all, users' need of social interaction, social expression, and social image are gratified through the social functions. Using the MHMA is mainly to alleviate health issues and improve individual health. Before using MHMA, users fantasy that they can lose weight, be healthier, and look more beautiful after adopting the health management methods and services. When users' fantasy comes true, they will feel very happy. Of course, they also feel happy in the during of MHMA using, if users get health information they need, make friends with who have similar health issues, and adopt effective health management methods and etc. In short, hedonic need including perceived happiness and perceived fantasy can be gratified during the using of MHMA.

According to the analysis of MHMA functions above and previous researches based on U&G theory[2], the gratifications of users' need of MHMA can be summarized into utility gratification, social gratification and hedonic gratification. The utility gratification include health information gratification and health management gratification, the hedonic gratification include perceived happiness and perceived fantasy, and the social gratification include social interaction gratification, social express gratification and social image gratification. Therefore, a second-order construct research model of users' continuance usage behavior of MHMA is constructed based on the U&G theory as the Figure 1.

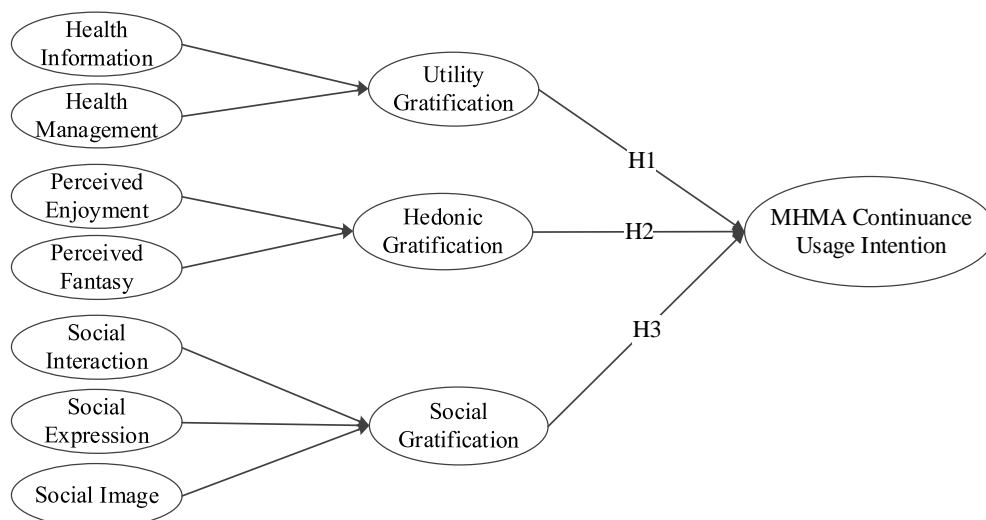

Figure 1. Research model of users' continuance usage behavior of MHMA

3.2 Hypotheses

3.2.1 Hypotheses of utility gratification

Utility gratification mainly refer to users' satisfaction of obtaining health knowledge, sharing health

knowledge, disseminating information, and managing individual health during using the MHMA, especially using the instrumental function of MHMA . For example, through the use of sports fitness applications, users can record their own exercise and diet, analyze daily health status, and get sports health information pushed by the application, and also obtain fitness information and sport experience which shared by other users through the social networks in the application. The main purpose of users using MHMA is to obtain health information and manage individual health. Therefore, we take utility gratification as first-order variable and consist of two second-order variables, which are health management gratification and health information gratification.

Information gratification refers to the satisfaction of user's need to acquire knowledge or information in vertical fields. Health information gratification refers to the user's rapid access to health information about sports, healthcare, weight loss, menstrual management, pregnancy and baby management and other related knowledge and obtain health-related guidance and help through the use of MHMA [13][14]. Health management gratification is refers to the instrumental function of the MHMA can help users record, store, analyze, and evaluate their own health data, and store, process and show the analysis result of health status to users in the process of using MHMA, and then help users adopt health management method and healthy behaviors. When the user's health information and health management needs are met, the user's willingness to continue using MHMA will be strong. Chang et al. (2013) also confirmed that gratification of utility need have significant influence on users' continuance usage intention [12]. Therefore, we believe that the higher the degree of satisfaction of health information need and health management need, the higher the satisfaction of users' utility need, and the stronger the users' willingness to continue using MHMA. Thus, the following research hypothesis is proposed.

H1: Utility gratification has positive significant influence on users' continuance usage intention of MHMA.

3.2.2 Hypotheses of hedonic gratification

Hedonic gratification mainly refers to satisfaction of getting the pleasant, enjoyable, and obtaining joyful experience and positive emotion through the use of MHMA. The convenience and promptness of acquiring health data and health information, the effectiveness of individual health management, the interactivity of users in the social function all give users use pleasant experience. Users themselves will also fantasy they will achieve their purpose after using them, when users witness the health management effects of other users through the moments and chat with them. Therefore, hedonic gratification is proposed as a first-order variable composed of the users' perceived enjoyment and perceived fantasy.

Perceived enjoyment mainly refers to the user's pleasure and happiness through the use of MHMA, mainly by viewing interesting information, sharing interesting health experience, and getting pleasant experience through the gratification of health information and health management needs [13][15]. Perceived enjoyment is one of the main cognitive of using of social media, and Li et al. (2015) [2] took online games as an example, confirming that online games can bring entertainment to users and can significantly affect users' continued willingness to use. Ifinedo et al. (2016) took social networks as the research object, and confirmed that the satisfaction of enjoyment in social network has significant impact on users' continuance usage intention of social network [15]. Shang et al. (2017) also confirmed that perceived enjoyment is the main factor affecting users' social participation and knowledge sharing in the scenario of social media [16].

Perceived fantasy mainly refers to users have a state of fantasizing about his or her physical and psychological exception will be come true when using the MHMA, for example, users will imagine that they will lose weight, have a more graceful body, greater self-confidence, and a healthier status after using the app [17]. Hirschman and Holbrook emphasized that user fantasy has an important impact on the satisfaction of users' hedonic need when use hedonic services and products. In the field of information system, Chou (2007) [18] and Li et al. (2015) [2] also confirmed the important role of perceived fantasy in users' continuous use of online

games.

Therefore, the higher the degree of gratification of the users' perceived enjoyment and perceived fantasy, the higher the degree of gratification of hedonic needs, and the stronger the users' continuance usage intention of MHMA. Chang et al. (2013) demonstrated that hedonic gratification significantly affects users' continued willingness to use [12]. Ha et al. (2015) confirmed that users' hedonic gratification affect users' usage attitudes of social media, and then impact users' use behaviors directly [19]. Hence, the following research hypothesis is proposed.

H2: Hedonic gratification has positive significant influence on users' continuance usage intention of MHMA.

3.2.3 Hypothesis of social gratification

Social gratification mainly refers to satisfaction of social needs which including interacting with others, sharing experiences, exchanging feeling and ideas, forming good relationships with users who have the same issues, hobbies or interests, and becoming members of an organization, and receiving care and support of information and emotions from other users. According to previous researches and analysis of MHMA, social gratification as first-order construct is constructed of social interaction, social expression and social image [2][16].

Social interaction mainly refers to supporting each other with other users, strengthening contacts, and making new friends by using the social functions and services of MHMA [13][19]. Users in the MHMA can interact with others by sharing health information, commenting on or responding to other users' posts, giving likes to other users' shared information, and sending private messages. At the same time, users can set up circles and groups to form communities with same hobbies. Li et al. (2015) confirmed that social interactions in online game significantly affect users' continued willingness to use [2]. Shang et al. (2017) [16] demonstrated that social interaction is the main driving force for users' participation in social media [16]. In short, social interaction has significant influence on users' usage behavior.

Social expression mainly refers to sharing personal health information, health perspectives, opinions and health information of interest through social functions and services, expressing to other users who they are, what they like, and showing self to other users [13]. Li et al. (2015) showed that users want to show themselves to other users through online games. When the users' social expressions are satisfied, users' continued willingness to use is strong [2].

Social image mainly refers to users sharing their positive health information, health outcomes and other content through social functions and services, and transmitting a positive impression to other users in order to have a positive image and be liked by other users[13][15]. Users get their own fans and friends, and feel happy through show themselves through social functions and services, users will continue to use MHMA. Therefore, based on the above analysis, we believe that gratification of users' social interaction, social expression, and social image needs can significantly increase users' social gratification, and then affect users' continued use willingness. Hence, the following research hypothesis is proposed.

H3: social gratification has positive significant influence on users' continuance usage intention of MHMA.

4   RESEARCH METHODOLOGY

4.1 Measurement development

Online questionnaire survey is used in this research, which was constructed by three parts. Three parts of the online questionnaire was designed according to prior studies. The first part is the description of questionnaire, which involve the purpose, and significance of survey, the definition of mobile health management application, and give some example of MHMA, such as Joyrun, Sythealth, dayima mmbang and etc. The second part is basic information survey of participators including gender, age, education, use experience

of MHMA, and health status. The third part is variable measurement. Measurements of the utility gratifications including health information and health management were adapted from Gao et al. [13], and measurements of hedonic gratification were adapted from Li et al. [2], Gao et al. [13], Ha et al. [19], and Sherry et al. [20]. Measurements of social gratifications were adapted from Gao et al. [13] and Ha et al. [19]. Measurements of continuance usage intention of MHMA were mainly adapted from Venkatesh [21][22][23]. All measurements are designed based on previous research and adapted from the characteristics of MHMA. The designed questionnaire was sent to peer scholars and was reviewed and revised by them. The final version was formed after multiple preliminary surveys and revisions.

4.2 Data collection

The online survey service named WJX (www.wjx.cn) was used to collect data. The paid sample collection services of WJX and the WeChat friend group are two main channels of data collection used in this research. 401 data were collected together. Among them, 201 data were collected through paid sample collection service, and 200 data were filled by friends, teachers and students from various regions. In order to ensure the validity of the data and the results, 132 data were deleted according to the answer of trap items and the questionnaire filling time. 269 valid data was acquired in the end, and the valid rate of questionnaire is 67.1%. The demographic characteristics of these survey respondents are shown in Table 1.

Table 1. Demographic Characteristics (N = 269)

Variable	Classification	Freq.	%	Variable	Classification	Freq.	%
Gender	Male	121	45	Time of MHMA using	Half year and below	73	27.1
	Female	148	55		0.5-1 year	81	30.1
Age	18 years old and below	6	2.2		1-2 year	77	28.6
	19-24 years old	119	44.2		2-3 year	28	10.4
	25-35 years old	101	37.5		3 year and above	10	3.7
	36-45 years old	29	10.8	Frequency of MHMA using	Once in a while	64	23.8
	46-60 years old	14	5.2		Once or twice per month on average	24	8.9
	61 years old and above	0	0		Once per week on average	39	14.5
Education	Junior high school and below	2	0.7		Two or three times per week on average	59	21.9
	High school, secondary school, technical school	6	2.2		Once above every day	83	30.9
	Associate degree	33	12.3	Which kind of MHMA do you use.	Lose weight APP	27	10
	Undergraduate	184	68.4		Sport and fitness APP	194	72.1
	Graduate and above	44	16.4		Physical health APP	36	13.4
Health Status	Very healthy	169	62.8		Pregnant infant health	12	4.5
	Minor health problems in the past three months	96	35.7	Health status	Serious health problems in the past three months	4	1.5

5 DATA ANALYSIS

5.1 Validity and reliability

The data analysis utilized a two-step approach. The first step analyses the measurement model, while the second tests the structural relationships among the latent constructs. SPSS and Smart PLS 2.0.M were employed as the primary tool to analyze the model and test the proposed hypotheses. The measurement quality of all the scales was assessed based on their reliability, convergent validity, and discriminant validity.

Firstly, the overall reliability of the questionnaire and the reliability of each factor were measured through the SPSS. The Cronbach's α value of overall reliability of the questionnaire is 0.968, which indicate that the overall reliability of the questionnaire was higher. The value of KMO is 0.956, which indicates that the factor analysis is suitable. The standard loadings, CR and AVE are mainly obtained through the verification factor analysis of Smart PLS. As shown in Table 2, All items load significantly on their corresponding latent construct with loading values well above the minimum threshold, indicating sound convergent validity of the measure model. Reliability was assessed using composite reliability (CR), and average variance extracted (AVE). CR values of all latent variable are greater than 0.7, indicating that the composite reliability of each latent variable is high and has good internal consistency.

Table 2. Reliability, Variance, and Confirmatory Factor Analyses.

Construct	Item	Loading	Mean	St. D	CR	AVE	Cronbach's α
Health management HMN	HMN1	0.834	3.73	0.798	0.899	0.748	0.831
	HMN2	0.885	3.90	0.708			
	HMN3	0.876	3.76	0.799			
Health information HIN	HIN1	0.824	3.72	0.820	0.919	0.739	0.882
	HIN2	0.881	3.84	0.773			
	HIN3	0.877	3.81	0.748			
	HIN4	0.856	3.81	0.756			
Perceived Enjoyment PE	PE1	0.858	3.74	0.751	0.909	0.768	0.849
	PE2	0.883	3.50	0.854			
	PE3	0.888	3.67	0.809			
Perceived Fantasy PF	PF1	0.843	3.67	0.785	0.928	0.764	0.897
	PF2	0.869	3.54	0.870			
	PF3	0.884	3.61	0.829			
	PF4	0.900	3.65	0.871			
Social Interaction SI	SI1	0.903	3.55	0.924	0.943	0.846	0.909
	SI2	0.933	3.54	0.928			
	SI3	0.923	3.48	0.908			
Social Expression SE	SE1	0.876	3.68	0.848	0.910	0.771	0.851
	SE2	0.881	3.70	0.816			
	SE3	0.878	3.65	0.897			
Social Image SM	SM1	0.890	3.40	0.890	0.941	0.801	0.917
	SM2	0.901	3.54	0.852			
	SM3	0.895	3.46	0.908			
	SM4	0.894	3.45	0.848			
Continuance Usage Intention CUI	CUI1	0.923	3.94	0.753	0.948	0.858	0.917
	CUI2	0.940	3.93	0.784			
	CUI3	0.916	3.87	0.811			

In order to test the discriminant validity, the square root of AVE value of each variable was compared with the correlation coefficient between variables. The results of the square root of AVE and the correlation coefficients were shown in Table 3. The value bolded on the diagonal lines is square root of the AVE, and the rest are correlation coefficients. As showed in Table 3, although the correlation coefficient between the latent

variables is large, the square root of the AVE is still greater than the correlation coefficients, which indicates that the discriminant validity is good.

Table 3. Discriminant validity

Constructs	HMN	HIN	PE	PF	SI	SE	SM	UI
HMN	*0.865*							
HIN	0.689	*0.860*						
PE	0.563	0.685	*0.877*					
PF	0.589	0.719	0.770	*0.874*				
SI	0.441	0.574	0.636	0.696	*0.920*			
SE	0.527	0.643	0.680	0.747	0.732	*0.878*		
SM	0.444	0.616	0.655	0.765	0.794	0.769	*0.895*	
UI	0.627	0.645	0.684	0.680	0.540	0.668	0.582	*0.926*

5.2 Test of hypotheses

A structural equation model was constructed through Smart PLS to verify the path relationships, the level of significance and value of R^2. The results were shown in Figure 2. Although utility gratification, hedonic gratification and social gratification all have significant influences on MHMA continuance usage intention, the significant level of influence of social gratification on the MHMA continuance usage intention is small. Three kinds of gratifications explain more than 58% of the MHMA continuance usage intention together, which indicates strong explanatory power. Therefore the research model can be accepted in this research.
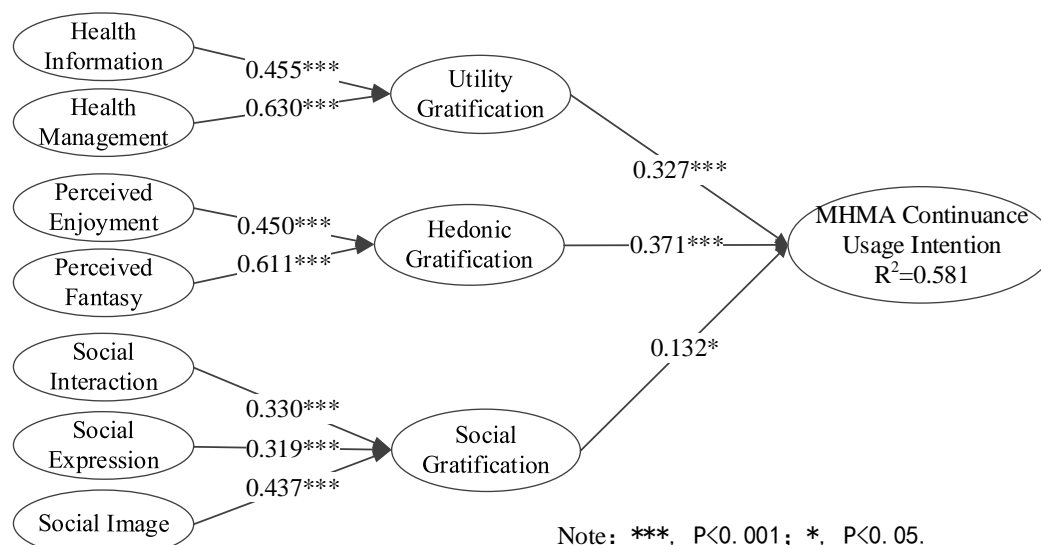

Figure 2. Research Results

5.3 Research results and discussion

As showed in Figure 2, utility gratification, hedonic gratification and social gratification all affect users' continuance usage intention of MHMA significantly, and the influence effect of hedonic gratification on continuance usage intention is largest, then the influence of utility gratification and social gratification. As analysis above, hedonic gratification including perceived enjoyment and perceived fantasy, which all come from using experience of instrumental functions and interactions on social functions. Utility gratification including health information gratification and health management gratification also mainly come from instrumental functions. Therefore, instrumental functions are especially important for a health management application which integrating the "Instrumental-Social-E-commerce" functions to meet users' needs, second is social functions,

and then is E-commerce functions. As providers of MHMA, they should be as complete as possible strengthen the utility related functions, improve health management services so as to increase users' using performance of MHMA.

Utility gratification has significant influence on users' continuance usage intention of MHMA, and the hypothesis H1 is supported. The impact of health management on utility gratification is larger than the impact of health information on utility gratification. As a result, Users use MHMA mainly to get intelligent and useful health management services including recording health data, storing data and giving health report, which was satisfied through the use of MHMA and significantly impact users' utility gratification. Although health information has a significant influence on utility gratification, its influence effect is lesser compared with health management.

Hedonic gratification has significant influence on users' continuance usage intention of MHMA. Hypothesis H2 is supported. Hedonic gratification includes perceived enjoyment and perceived fantasy, and the influence of perceived fantasy is larger than the influence of perceived enjoyment. Perceived enjoyment comes from users' using experience and interactions among users and the APP, and perceived fantasy mainly come from users' beautiful imagination about their outcomes of MHMA use. It can be seen from the research results that MHMA set up a wonderful fantasy, but the outcomes do not meet users' expectations. Therefore, MHMA should focus on improving the outcomes of MHMA use, not only improving the user experience, but also meeting user expectations.

Social gratification has significant influence on users' continuance usage intention of MHMA. Hypothesis H3 is supported weakly. Social gratification was constructed of social interaction, social express, and social image. Among them, social image has the largest impact, which indicates that mobile health services mainly meet the user's social image need. Through the use of MHMA, users can get better individual image, and obtain more likes from friends. Social functions are important for users to exchange information, show their images and share their health management outcomes. Although the influence of social gratification on users' continuance usage intention is weak significant, providers of MHMA should strengthen the services of social functions.

6   CONSLUSIONS

6.1 Research conclusions

According to the previous empirical analysis and research results, utility gratification, hedonic gratification and social gratification all have significant influence on users' continuance usage intention of MHMA. It can be seen from the constitutive second-order variable research model, Health information and health management significantly affect the utility gratification, of which health management have a larger impact; Perceived enjoyment and perceived fantasy significantly affect the users' hedonic gratification, of which perceived fantasy has a greater effect; Social interaction, social expression, and social image significantly affect the user's social gratification. Among them, social image has the largest influence effect. That is, health management gratification, perceived fantasy, and social image play important roles, and has the strongest impact on users 'willingness to use MHMA.

6.2 Research significance

6.2.1 Theoretical significance

There are two aspects of theoretical significance in this research. First, this research demonstrates that the main aim of using MHMA is to satisfy users' health related needs, and then introduces the U&G theory into the research of users' continuous behavioral willingness of MHMA, which confirms that U&G can be employed in research scenario of MHMA, and the research scope and field of U&G theory was expanded. Second, three

kinds of gratifications are summarized as utility gratification, hedonic gratification and social hedonic through the analysis of MHMA functions. And then divided three kinds of gratification into seven dimensions including health information, health management, perceived enjoyment, perceived fantasy, social interaction, social expression, and social image, which are all important for users of MHMA. Therefore, this study illustrates that user health-related need are multi-dimensional, and have different effects on different users. This research has laid the foundation for subsequent research on MHMA.

6.2.2 Practical significance

Practical significance can be summarized as two aspects. First, Health service providers should pay more attention to the impact of user needs, and ensure the richness, completeness, comprehensiveness and accuracy of health information, provide users with more and better health management program, and allow users imagine their own outcomes of MHMA use. In addition, providers should pay attention to the social needs of users and satisfy the needs of social image. Second, utility gratification and hedonic gratification are main factors which promote users' continuance using of MHMA. Therefore, MHMA should focus on the utility need, and meet users' personalized needs of MHMA.

6.3 Research limitations and prospects

Although the research hypotheses have been confirmed, there are still some limitations which should be further research in the future. First, although this research uses a variety of methods to collect data, a large part of the 269 data is from students. Therefore, in future research, we can expand the scope of respondents, and study the impact of different users' characteristics on the willingness to use MHMA. Second, health consciousness can be introduced into the research of users' usage behavior, and analyze its moderating effect between the health related needs and users' usage behavior. Third, comprehensiveness, completeness and accuracy of health information and the timeliness and reliability of health management will affect users' continuous use behavior. Therefore, ECM and IS success theory can be employed in future research to test the influence of quality of health information and health management services on users' usage behavior of MHMA.

CONFERENCES

[1] Ruggiero T E. Uses and gratifications theory in the 21st century [J]. Mass communication & society, 2000, 3(1): 3-37.

[2] Li H, Liu Y, Xu X, et al. Modeling hedonic is continuance through the uses and gratifications theory: An empirical study in online games [J]. Computers in Human Behavior, 2015, 48: 261-272.

[3] Swanson D L. Political communication research and the uses and gratifications model a critique [J]. Communication research, 1979, 6(1): 37-53.

[4] Katz E, Blumler J G. The uses of mass communications: Current perspectives on gratifications research [M]. Sage Publications, 1974.

[5] Weibull L. Structural factors in gratifications research [J]. Media gratifications research: Current perspectives, 1985: 123-147.

[6] Dimmick J, Kline S, Stafford L. The gratification niches of personal e-mail and the telephone competition, displacement, and complementarity [J]. Communication Research, 2000, 27(2): 227-248.

[7] Cheung C M K, Lee M K O. Understanding the sustainability of a virtual community: model development and empirical test [J]. Journal of Information Science, 2009, 35(3): 279-298.

[8]   Xu C, Ryan S, Prybutok V, et al. It is not for fun: An examination of social network site usage [J]. Information & Management, 2012, 49(5): 210-217.

[9]   Lin Y H, Hsu C L, Chen M F, et al. New gratifications for social word-of-mouth spread via mobile SNSs: Uses and gratifications approach with a perspective of media technology [J]. Telematics and Informatics, 2017, 34(4): 382-397.

[10] Gallego M D, Bueno S, Noyes J. Second Life adoption in education: A motivational model based on Uses and Gratifications theory [J]. Computers & Education, 2016, 100: 81-93.

[11] Wang Z, Tchernev J M, Solloway T. A dynamic longitudinal examination of social media use, needs, and gratifications among college students [J]. Computers in Human Behavior, 2012, 28(5): 1829-1839.

[12] Chang C C. Examining users′ intention to continue using social network games: A flow experience perspective [J]. Telematics and Informatics, 2013, 30(4): 311-321.

[13] Q Gao, Ch Feng. Branding with social media: user gratifications, usage patterns, and brand message content strategies [J]. Computers in Human Behavior, 2016(63):868-890.

[14] Kourouthanassis P E, Mikalef P, Pappas I O, et al. Explaining travellers online information satisfaction: A complexity theory approach on information needs, barriers, sources and personal characteristics [J]. Information & Management, 2017.

[15] Ifinedo P. Applying uses and gratifications theory and social influence processes to understand students' pervasive adoption of social networking sites: Perspectives from the Americas [J]. International Journal of Information Management, 2016, 36(2): 192-206.

[16] Shang S S C, Wu Y L, Li E Y. Field effects of social media platforms on information-sharing continuance: Do reach and richness matter?[J]. Information & Management, 2017, 54(2): 241-255.

[17] Hirschman E C, Holbrook M B. Hedonic consumption: emerging concepts, methods and propositions [J]. The Journal of Marketing, 1982: 92-101.

[18] Chou C, Tsai M J. Gender differences in Taiwan high school students' computer game playing [J]. Computers in Human Behavior, 2007, 23(1): 812-824.

[19] Ha Y W, Kim J, Libaque-Saenz C F, et al. Use and gratifications of mobile SNSs: Facebook and KakaoTalk in Korea [J]. Telematics and Informatics, 2015, 32(3): 425-438.

[20] Sherry J L, Lucas K, Greenberg B S, et al. Video game uses and gratifications as predictors of use and game preference[J]. Playing video games: Motives, responses, and consequences, 2006, 24: 213-224.

[21] Bhattacherjee A. Understanding Information Systems Continuance: An Expectation-Confirmation Model [J]. MIS Quarterly,2001,25(3):351-370.

[22] Sun H.A longitudinal study of herd behavior in the adoption and continued use of technology [J]. Mis Quarterly,2013,37(4):1013-1041.

[23] Venkatesh V, Davis F D. User Acceptance of Information Technology: Toward A Unified View [J]. MIS Quarterly, 2003, 27(3):425-478.