

Research on the Adoption Behavior of Domestic Mobile Health Users: Present Situation and Direction

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Abstract

In recent years, the government has vigorously promoted mobile health services, and the related fields of mobile health are also developing rapidly. The research on mobile health at home and abroad mainly focuses on the present situation, problems and prospects. Users are the experience and consumers of mobile health. As an important part of "Internet + Mobile Health", the adoption behavior research of mobile health users is still relatively lacking, most of the research is stuck in qualitative research, and theoretical innovation is also less. By combing the theoretical and practical research on the adoption behavior of mobile health users, this paper looks forward to the future research direction of the adoption behavior of mobile health users, in order to provide reference for future research and industry development.

Keywords

Mobile Health; Adoption Behavior; Theoretical Model; Research Prospect.

1. Introduction

In recent years, the government has vigorously promoted mobile health services, including a series of policies to support telemedicine applications, smart health medical services and health big data guarantee systems. What's more, <The notice on the issuance of the action plan for the further improvement of medical services (2018-2020)> put forward the establishment of telemedicine system, the use of mobile health to promote hierarchical diagnosis and treatment system and other measures, vigorously promote the "Internet + Medical Health" development, promote intelligent medical and universal health information platform construction. Mobile health has become a powerful grasp to improve medical efficiency and solve the structural problems of medical care in China [1].

2. Current Status of Mobile Health Use

At present, there are three kinds of new technologies in the medical field: biotechnology (genetic change), nanotechnology (implant chip) and information Communication (mobile medicine), in which mobile health has been developed rapidly in China because of the need of its market conditions, and has rapidly turned to industrialization [2]. Mobile health refers to the provision of medical services and medical information to users through mobile communication technology, which has significant advantages in reducing the cost of medical services, improving the efficiency of medical services and relieving the pressure of the scarcity of social medical resources [3-5]. At present, the main forms of mobile health in China are divided into five categories: non-interactive medical information services, interactive online medical advisory services, health monitoring guidance, medical e-commerce services, and medical service process optimization [6]. According to statistics, the domestic mobile health services have been carried out in the interactive online medical consulting services are widely used, and mainly in the form of mobile medical APP presented to users [7-9].

With the promotion of government policy and the popularization of mobile health, it is found from the point of view of technology acceptance that more users have understood and accepted mobile health and its related services, and the mobile medical market continues to climb, until 2018, there are more than 2000 mobile medical Apps on the market, The mobile health industry is expected to reach 539 600 million RMB in 2020 [10]. However, mobile medical app products tend to be homogenous in general; user evaluation is mixed [11]. In the face of many product services, how users choose, adopt and use mobile health has become a new problem, so it will be of great academic and practical significance to explore the adoption behavior of mobile health and its influencing factors. By retrieving the database of CNKI, WANFANG, and VPCS etc., this study analyzes and combs the relevant literature of mobile medical adoption behavior, which is reported below.

3. Theoretical Research on the Adoption Behavior of Mobile Medical Care

In terms of the number of patent applications for mobile medical related products, mobile healthcare has developed rapidly in the past 10 years. From 2009 to 2013, mobile health was in a rapid development phase, with patents continuing to grow and accelerate; since 2014, mobile health has been in the early stages of maturity, with a slowdown in patent growth but an increase in the number of applicants [12]. The early research on mobile medicine mainly focuses on the current situation, problems, trends and other macroscopic research, explore the problems faced by the further development of mobile health, and the adoption of behavioral research is mainly used in mobile payment and e-commerce research, less the combination of the two research mobile medical user adoption behavior.

Since 2012, mobile medical user adoption behavior research has begun to grow, the existing mobile medical users to adopt behavior research are mainly divided into empirical and descriptive, and the research methods are mainly investigation and experimental research. At present, the research on the adoption of mobile medical users at home and abroad is mainly based on the classical theoretical model in the field of information system, there are three kinds of commonly referred models: (1) Technology Acceptance Model (TAM), which analyzes user behavior consciousness from the perspective of perceived usefulness and perceived ease of use [13-16];(2) Unified Theory of Acceptance and Use of Technology (UTAUT), which is applied to mobile medical adoption behavior scenarios. There are four core dimensions: performance expectations, effort expectations, social impact and contributing factors; (3) Expectation Confirmation Model (ECM), which explores the impact of perceived risk, trust, and so on the continued use of mobile medical APP. The specific content and model sources are shown in Table 1.

Mobile health not only represents the abstract information system, but also is an innovative product related to the user's health, involving the user's consumption behavior, psychology and other multi-domain research [27]. Therefore, the research of mobile medical adoption behavior generally does not use a certain theory alone to carry on the research, often introduces other theories as supplement, and increases the interpretation level. Therefore, the existing research more use TAM model as the basic research framework and integrate other theoretical models or factors to carry out research, such as Yang Jia based on TAM model to join the trust theory, put forward that the patient's trust in the platform and doctors affects the patient's perception of usefulness and ease of use, and then affects the willingness to use and the behavior [28].

Table 1. Summary of Classic Models for Mobile Health

Model	Variable	Model Establishment Purpose	Reference
Technology Acceptance Model (TAM)	Perception of usefulness	Perceived usefulness and perceived ease of use always have a significant impact on the user's behavior, and perceived usability has a positive impact on perceived usefulness	Davis(1989); Wilson E V(2004)
	Perceived ease of use		Zhang Xinyu(2017);Lopez-Nicolás c (2008)
Unified Theory of Acceptance and Use of Technology (UTAUT)	Social Influence	Study the social influence , performance expectancy, effort expectancy, facilitating conditions , etc. on the intention to use; analyze how to enable users to have a positive willingness to adopt	N Zhang P(2006);Zhang Panpan(2014)
	Performance Expectancy		Zhang P(2006);Huang Jiong(2007)
	Effort Expectancy		Cheng and Park(2005);Zhang Panpan(2014)
	Facilitating Conditions		Zhang X (2014);LI KYOUNG(2014)
Expectation Confirmation Model(ECM)	Perceived Risk	To a certain extent, it shows the perceived privacy risk, physiological risk and financial risk of consumers to mobile medical care, and explains the user's mobile medical adoption behavior from the perspective of trust.	He Minggui (2016);Zhang Min(2017);
	Trust		HSU C L(2004);Che Xiaoling(2013)

4. Study on the Influencing Factors of Mobile Adoption Behavior

The adoption behavior of mobile health is influenced by many factors, and scholars at home and abroad have done some related research. Davis presented the Technology acceptance model in 1989, using cognitive usefulness and ease of use to explain the user's adoption behavior or willingness to information technology [13]. According to Cocosila and Archer, the user's willingness to act on mobile medical services comes from the combined action of the user's intrinsic motivation and external motivation, while perceived risk has an impact on the willingness to act [29]. In 2017, Miao and others based on TAM model explored the adoption of mobile medical technology in patients with chronic diseases, and found that the degree of perceived usefulness and perceived ease of use of patients positively affected the user's adoption behavior of mobile medicine [30]. The influencing factors based on different model theories are different.

Zhang Min [24] summed up the factors influencing the adoption behavior of mobile medical users are individual factors (population variables, personality characteristics, etc.), information factors (information quality accuracy, timeliness, etc.), information environment factors (social impact, subjective norms, etc.), information technology factors, etc. (process characteristic variables, performance-type characteristic variables, etc.). All four kinds of influencing factors have been studied by scholars, such as in individual factors; Xi-tong Guo and others have confirmed that age and gender can regulate the influence of other factors on mobile medical adoption behavior in different degrees. In the study of information factors, it mainly refers to the influence of the accuracy, timeliness, completeness and relevance of information on the willingness of mobile medical adoption. In the information environment research, the information involves the user, the platform and the medical service provider, whether the user trusts the mobile medical related person to influence the adoption behavior, and among the information technology factors, Process variables mainly refer to the specific characteristics of

user-aware systems, such as ease of use, usefulness, risk, convenience, etc., and performance variables refer to the main factors that evaluate the relevant quality after the use of mobile medical services, such as perceived value, satisfaction, etc.

5. Prospect of Future Research on the Adoption Behavior of Mobile Medical Users

Through reading and summing up the relevant literature found that although the current research on the adoption of mobile medical users has made great progress, but there are more shortcomings and gaps available for future research, the future research on the adoption behavior of mobile medical users can be explored from the following aspects.

6. Innovation in the Research Object

Mobile healthcare users are not just patients and health workers, but also healthy people. At present, most of the domestic mobile medical adoption behavior is from the patient's point of view, such as Yang Jia from the patient Trust theory, talk about the patient's continued use of mobile medical app reasons, and did not consider the healthy population. And the elderly and young people, especially college students, the cognition and use of mobile health is also different, mobile medical user adoption behavior is a long-term and dynamic development of the complex process, the need for long-term systematic research, cannot stay in the user's willingness to adopt and the simple description of the use of behavior, Especially for the cognitive-attitude-intention-behavior logic inquiry of mobile medicine in college students or middle-aged and elderly people worth thinking about [32].

7. The Business Model of Different Business Subjects

The main modes of mobile medical operation in China are: direct charge, transfer payment and revolving subsidy. Among them, direct charge refers to the mobile medical end to provide services to users, users to the mobile medical end to pay fees, such as the Spring Rain Doctor and other mobile medical apps through online medical consultation to the user directly charge fees, transfer payment refers to the user free use, with the user has close contact with the emotion or stakeholders to pay for it, If the child pays for the use of mobile medical elderly, the circular subsidy refers to the mobile medical end to the hospital, pharmaceutical enterprises, institutions and other related groups to collect fees, while the relevant groups have the interests of the link, such as Lilac garden to the medical observation database, pharmaceutical enterprises and other charges, medical observation database to pharmaceutical enterprises charges [33]. The business model of the main body of mobile medical operation is different, and its demand for individual is also different, which leads researchers to encounter the difficulty in studying the user's mobile medical adoption behavior, the current research mainly aims at the popular situation, partly for the mobile health app research, does not have the differentiated to the different management subject to study its acceptance behavior, In the future, the research on the adoption behavior of mobile medical users should be more specific and targeted.

8. Summary

Mobile health involves the interest groups of hospitals, insurance companies, pharmaceutical factories, app developers, network operators, users, etc. [34]. It is widely used in chronic diseases; AIDS, neonatal health intervention, mainly to assist the diagnosis of the disease, monitoring and patient self-management, and medical services have played a very good role in supplementing. The user mobile medical adoption behavior is actually the development

process of people looking for information to find someone, and it is the result of the joint action of Information Technology and information environment. At present, the research of mobile medical adoption behavior tends to be shallow, stays at the descriptive research level, and does not deeply explore the influencing factors. In the future, the integration of cloud medicine, virtual equipment, 5G and other technologies and mobile health to promote the development of mobile medicine towards the trend of wisdom, researchers should focus on the "people" research, cross-disciplinary integration, innovation of mobile medical users to adopt behavioral research, which for the rational use of medical resources, reduce the pressure of medical services, It is of practical significance to realize graded diagnosis and treatment.

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