Advances in Economics, Business and Management Research, volume 165

Proceedings of the 6th International Conference on Economics, Management, Law and Education (EMLE 2020)

Analysis on Influencing Factors and Mechanism of Action of the Insufficient Demand for Smart Pension

Qualitative Research Based on the Theoretical Framework of Planned Behavior

Bing Li[1,*] Xuan Wang[1] Ziyi Zhong[1]

[1]School of Public Affairs and Administration, University of Electronic Science and Technology of China, Chengdu, Sichuan, China

[*]*Corresponding author. Email: 490752855@qq.com*

ABSTRACT

China has entered an aging society, and the degree of aging is continuing to deepen. The development of smart pension has become a social consensus to deal with the problem of aging. Based on this, this article conducts in-depth interviews with elderly people aged 60 and above in Chengdu, uses grounded theory to carry out three-level coding, and establishes a theoretical model of planned behavior to analyze the influencing factors of insufficient demand for smart pension. It is concluded that the needs of the elderly for smart pension will be driven by behavioral intentions, which are affected by demand attitudes, subject norms, and perceptual behavior control, and demand perception affects demand attitudes. Therefore, in order to meet the actual needs of the elderly, alleviate the contradiction between the supply and demand structures of the elderly care industry, and promote the development of the "silver economy", it required not only technological innovation and conceptual change, but also coordinated governance by the government, the market, and society.

Keywords: *smart pension, demand, planned behavior theory, grounded theory*

I. INTRODUCTION

With the rapid development of science and technology, smart pension has become a new way to solve China's increasingly serious population aging problem. In addition, smart pension as an effective measure to deal with public health crises such as the COVID-19 has also emerged in the elderly pension life. However, the current contradiction between demand and supply for the elderly has become more prominent, and the overall effective demand for smart pension of the elderly is low. This article starts from the demand side of the elderly, uses grounded theory, and builds a mechanism model based on the framework of planned behavior to explore the reasons for the insufficient demand for smart pension.

II. THEORETICAL OVERVIEW AND RESEARCH PROGRESS

A. Progress of research on the smart pension demand

Smart pension refers to the use of information and other modern technologies to support the life service and management of the elderly around the elderly's life, safety, medical care, health, entertainment, learning, etc., to carry out automatic monitoring, early warning and even active disposal of elderly-related information to realize the process of friendly, autonomous, and personalized intelligent interaction between technology and the elderly [1].

At present, there are few related literatures on the demand for smart pension: Scholar Li Yan'ge found that economic status, number of children, education level, number of elderly people, health self-evaluation and mental state are the main factors that affect the demand for smart pension services [2]; Bai Mei and Zhu Qinghua analyzed a number of elderly people in Hanjiang District, Wuhan, and found that different types of elderly people have different needs for smart pension services and their influencing factors [3]. In general, the academic community has paid insufficient attention to the insufficient effective demand for smart pension services, there is less research, the fragmentation is serious, and no in-depth and systematic research has been carried out. Existing researches are mainly scattered in some related literatures, and they have not explored the factors that influence the demand for smart pension from the subject of the elderly. Aiming at the deficiencies of previous research, this article focuses on the elderly in

Chengdu as the main research object. Combined with grounded theory and planned behavior theory, the article focuses on analyzing the behavior and psychological activities of the elderly when choosing whether to use smart pension services, and sorts out the influencing factors of the insufficient demand for smart pension for the elderly, and proposes countermeasures and suggestions accordingly.

B. Theory of planned behavior

The theory of planned behavior was proposed by Icek Ajzen [4], which is the inheritance and development of the theory of rational behavior. It believes that human behavior is the result of a well-thought-out plan, which helps people understand how human change behavior patterns. The theory of planned behavior believes that the actual behavior of a person is affected by the behavioral intention, and in certain circumstances is also affected by the control of perceptual behavior. Behavioral intention is controlled by three factors, namely behavioral attitude, subjective norms, and perceptual behavior control, which together affect behavioral intentions. Generally speaking, the three are positively correlated with behavior intentions.

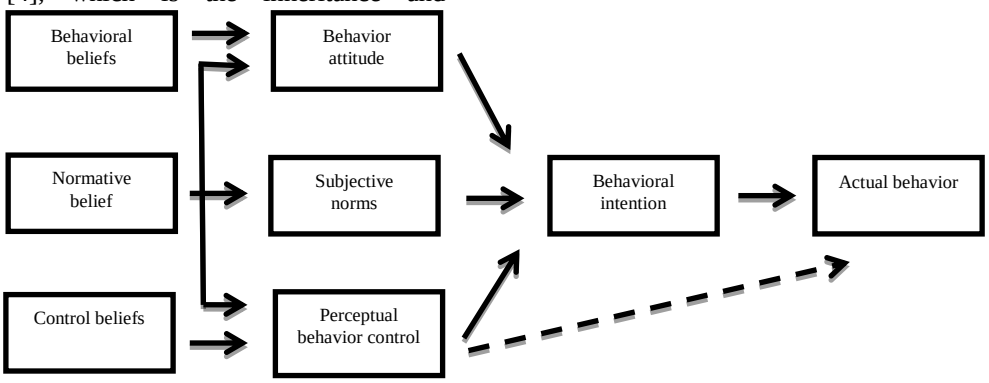

Fig. 1. The theory of planned behavior.

III. RESEARCH METHOD

A. Research method

The research method of this article is a grounded theoretical qualitative research method, which was jointly developed by Glaser and Strauss of Columbia University. This research method generally does not presuppose assumptions. Starting from the original data that has been obtained, through open coding, axial coding and selective coding, relevant concepts are refined and models are constructed. This paper selects grounded theoretical research methods, collects original data through in-depth interviews, and codes them level by level, refines related concepts and categories, and finds the relationship between categories, so as to establish a model of the impact mechanism of the insufficient demand for smart pension.

B. Sample selection

Sample selection should be typical. Sichuan Province is closely following the national development process in smart health and elderly care. In recent years, 16 streets and towns in Sichuan Province have been selected as the national smart health and elderly community demonstration streets. Among them, a total of 13 streets and towns in Chengdu took the lead in entering the pilot application of smart health and elderly care, playing the leading role of the provincial capital city in helping the elderly, filial piety, and using the elderly. Therefore, it is of typical significance to select the elderly in Chengdu as interview subjects.

C. Data collection

This research mainly conducted in-depth interviews with the elderly in Wuhou District, Wenjiang District, and Jinniu District of Chengdu, which triggered the elderly to think carefully about the problem of smart pension and explored the factors affecting the insufficient demand for smart pension. In this study, a total of 24 people were interviewed in the form of face-to-face interviews, each of which lasted about 30 minutes, and relevant interview texts were collected. In this study, 16 samples were used for coding, and the remaining 8 samples were tested for theoretical saturation to ensure that no new categories appeared and reached theoretical saturation.

IV. DATA ANALYSIS

A. Open coding

Open coding means that with an open mind, free from the influence of stereotyped thinking and subjective prejudice, preliminary coding need to be conducted line-by-sentence to the interview data that has been sorted out. This study uses the software NVivo11 to initially encode the interview text data, extract 162 representative sentences related to the needs of smart elderly care, establish free nodes, and generate a total of 21 initial concepts. For example, the item

"personal income" concluded from the original sentence "I don't have a job now and I don't have any source of income. I simply cannot afford it." Through open coding and document collation, 9 initial categories are obtained, as shown in "Table I".

TABLE I. OPEN CODING

Generic	Category	Original representative sentence (concept)
Smart pension cognition	Conceptual cognition	"I have heard of smart pension, but I don't know what smart pension is."
	Function perception	"Isn't this kind of product used by the elderly who can't move? I'm still young and don't need it. "
External environment cognition	Policy environment	"I think the country is still in its infancy and not perfect for smart pension. I will wait and see."
	Market environment	"Smart pension is still a new thing, and I haven't seen it in the market."
Pension attitude	The concept of pension	"I think my children can take care of me. I don't believe in those things."
	Pension methods	"I now live in a nursing home, and there are special people to take care of me, and I don't need other pension services."
Learning attitude	Lazy thinking	"I don't bother to learn and use new things. Now my life is very good."
	Hobbies	"I am not interested in smart products, so I might as well spend time dancing."
Consumption attitude	Consumption concept	"I save water and electricity, and I will not spend money on smart pension products and services."
	Consumer preferences	"I usually buy health care products. I don't buy these products very much."
Others norms	Children's attitude	"My daughter thinks this kind of thing is useless. She hasn't bought it for me, nor have I used it."
	Peer influence	"My friends around me have bought it, but they said it's not very useful, so I didn't buy it either."
Social norms	Government investment	"Does the government subsidize this kind of thing?" The government pays me and I use it. "
	Community support	"The community has not publicized it, and the popularity is not high. I don't plan to use it."
	Corporate services	"I think these products are more troublesome to use, and they don't really help me."
Self-efficacy control	Physical fitness	"I am in good health and can take care of myself. I don't need smart pension services."
	Past experience	"I have been deceived before and I don't believe these things."
	Education level	"I read few books, illiterate, and can't use smart products."
Payment ability control	Personal income	"I don't have a job now, and I don't have any sources of income. I simply can't afford it."
	Family investment	"My children give me very little money, and there is nothing left after buying some things."
	Social Security	"The national policy is not good, and the pension I get is very small, it is not enough."

B. Axial coding

Axial coding, also called spindle coding, is to find out the inner relationship between the category and the category according to the connotation of each node, and link the lower category with the main category. This study is to explore the influencing factors of the insufficient demand for smart pension. After the main axis coding, it can be found that there are logical relationships among 9 categories, such as "pension attitude, consumption attitude, and learning attitude". These 3 categories are in line with the category of "demand attitude" in the planned behavior theory. The 9 categories are summarized into four main categories through axial coding, and the connotations represented by each category are shown in the "Table II" below.

TABLE II. AXIAL CODING

Main category	Corresponding category	Connotation of category
Demand cognition	Cognition of smart pension	What is the elderly's perception of smart pension and the level of cognition of the role of smart pension
	External environment cognition	The elderly's cognition of the external environment of smart pension such as government policies, market environment, etc.
Demand attitudes	Attitudes towards pension	The attitudes of the elderly towards pension, including the concept of the pension and the choice of the methods for the pension
	Consumption attitudes	The consumption concepts and preferences that the elderly have formed imperceptibly for a long time
	Learning attitude	Whether the elderly are willing to actively learn and use smart pension products and services
Subject norms	Others norms	The demand for smart pension products and services
	Social norms	The methods and means adopted by governments, enterprises, communities, etc. to develop and promote smart pension
Perceived behavior control	Self-efficacy control	The elderly's use of smart pension is affected by their health status, past experience and education level.
	Payment ability control	The elderly's own economic status, family investment in the elderly, and social security level, etc.

C. Selective coding

Selective coding refers to further coding on the basis of axial coding, to find the core category, and to summarize, merge and merge the proposed categories around the core category to form a complete "story line". The core category of this research is "the influencing factors of the insufficient demand for smart pension for the elderly". Through the analysis of the interview data of the elderly in Chengdu, based on the theoretical framework of planned behavior, the four main categories of demand attitude, behavior attitude, subjective norms and perceptual behavior control are summarized. The story line is that the elderly will be affected by the concept and role of smart pension, as well as the policy environment and market environment of smart pension, thereby forming a cognition of the needs of smart pension, that is, demand cognition. Demand cognition will affect their demand attitude towards smart pension. The three categories of demand attitude, subjective norms and perceptual behavior control jointly affect the demand intention of the elderly to purchase smart pension products and services, thereby prompting the elderly to make actual behaviors of purchasing smart pension products and services. Among them, these three categories have their own influence and have their corresponding constituent dimensions. ("Fig. 2")

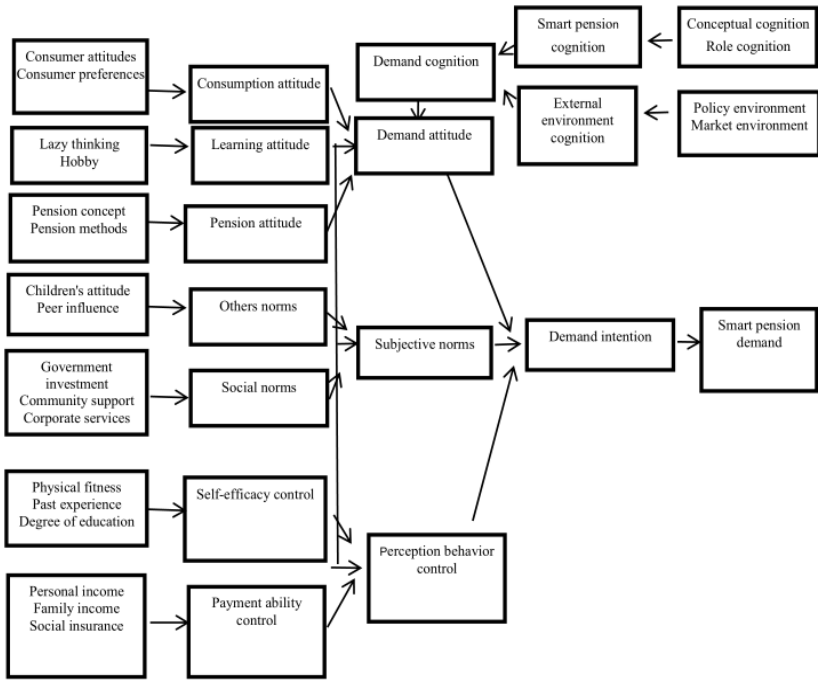

Fig. 2. The impact mechanism model of insufficient demand for smart pension.

D. Theoretical saturation test

The remaining 8 interview materials were coded again in accordance with the above procedures, and it was found that there were no other new concepts and categories, and the original logical relationship between the categories was maintained. Therefore, the impact model of insufficient demand for smart pension for the elderly is theoretically saturated.

V. MECHANISM ANALYSIS

This research has identified 4 dimensions and 9 categories through the above 3 coding stages. The following explains the 4 factors and their dimensional connotations to show the deduction process of dimensional connotations more clearly.

A. Demand cognition

Demand cognition refers to the elderly's cognition of smart pension and the cognition of the development environment of smart pension, which directly affects the elderly's demand attitude towards smart pension. Demand cognition is divided into smart pension cognition and external environment cognition.

The cognition of smart pension includes the cognition of the concept and function of smart pension. Most elderly people don't know what smart pension is, or they just heard about it but don't understand it. This directly affects the elderly's demand for smart pension. In addition, many elderly people have biased perceptions of the role of smart pension. They think they can take care of themselves and do not need smart pension.

The external environment cognition refers to the elderly's cognition of the smart pension policy environment and market environment. Some elderly people said that the time for the state to introduce policies is relatively short and the development of smart pension is not yet mature, so they adopt a wait-and-see attitude. There are also elderly people who believe that the smart pension market is not standardized, and that there are fewer products and services on the market, and the range of choices is small.

B. Demand attitude

Demand attitude refers to the attitude of the elderly towards whether they are willing to purchase smart pension products or services. Demand attitude is affected by consumption attitude, pension attitude and learning attitude.

Most of the elderly nowadays grew up in an era of economic backwardness, and developed a thrifty consumption habit. The elderly generally believe that there is no need to spend money to buy smart pension products and services. They are more inclined to save and are only willing to buy necessities.

Most elderly people insist that the family is the main body of expectation for the health and pension security [4]. In the survey, many elderly people adhere to the traditional concept of raising children to guard against the old; in addition, the way of old-age care will also affect the demand for smart pension. Some old people adopt the way of group or institution pension, without the need for smart pension.

For most elderly users, only the smart pension service is easy to operate, and they don't need to spend too much effort to learn how to use it, that they are more willing to use this service [5]. The elderly generally have the mentality of don't want to be bothered and are unwilling to think and learn to the extent that they resist using smart products that require hands-on operation; there are also elderly people who are not interested in smart products and are unwilling to spend energy.

C. Subjective norms

The subjective norms refer to the influence of the outside world on whether the elderly are willing to purchase smart pension products and services. The study found that the subjective norms consist of two parts: the norm of others and the norm of society.

Among family members, the attitude of the children affects the elderly's demand for smart pension. When asked whether they need smart pension, many elderly people said, "My children say it is not reliable, so I don't use it." In addition, the opinions of the elderly's friends and neighbors on smart pension will also affect their demand for smart pension.

Social norms include government investment, community support and corporate services. The government's investment affects the elderly's needs for smart pension. If the government is willing to provide subsidies, then the elderly will be more willing to buy. The more frequent and detailed the publicity and introduction of smart pension services and products by communities or elderly activity centers, the more users are more willing to use the products and services [7]. Many elderly people say that the supporting facilities and services in the community are not in place. In addition, the quality and ageing degree of products provided by related companies will also affect the demand for smart pension for the elderly. The words on smart products are too small for the elderly to see clearly and it is inconvenient to use.

D. Perceptual behavior control

Perceived behavior control refers to the influence of the elderly's past experience and expectations of obstacles on their perception of the difficulty of using

smart pension products and services. The author divides it into self-efficacy control and payment ability control.

Self-efficacy mainly includes three aspects: physical fitness, degree of education and personal experience. The past experience of the elderly affects their demand for smart pension. Many elderly people have been deceived, which leads to their rejection of smart pension. In addition, the physical fitness of an individual is always one of the more important impact categories of pension needs [6]. The elderly have poor eyesight and inconvenience, so there is no way to perform corresponding operations. The level of knowledge has an impact on whether the elderly can actively recognize and accept smart pension services [7]. The elderly have a low level of education and poor acceptance of new technology products. Most elderly people have low academic qualifications, even illiteracy, and do not have the basic qualities to use smart pension products.

The payment ability of the elderly includes their own income, family investment and social insurance [8]. The income and expenditure situation affects the elderly's demand for pension services, and the higher the income, the greater the demand when there is a surplus. Most of the elderly's income is pensions and children's supply, they have no labor income, and they have little savings. Some elderly people even use their savings to subsidize their children. In addition, the overall level of pension insurance benefits is relatively low, and the current cost of smart pension is relatively high, and the elderly cannot afford it, making the elderly have less demand for smart pension.

VI. COUNTERMEASURES

A. Improving the elderly's cognition of the demand for smart pension

From a macro perspective, the government should strengthen the promotion of smart pension, so that the elderly truly realize that smart pension can enrich the life of the elderly and prevent potential risks. At the same time, it is necessary to strengthen market supervision, enhance the pertinence of the smart pension policy system, and improve supporting policies and regulations to protect the rights and interests of the elderly. From the micro level, the community should regularly carry out science popularization and experience activities, teach the elderly hand in hand, and alleviate the unfamiliarity of the elderly with smart pension.

B. Leading the elderly to form a positive attitude towards smart pension

First, it is a must to attach importance to the construction of smart pension communities, and improve related infrastructure, so that the elderly can feel the convenience brought by smart pension to promote the transformation of their elderly care concepts, and form a positive attitude toward smart pension. Second, it is also a must to provide appropriate subsidies to the elderly who purchase smart pension to reduce their burden.

C. Strengthening the subjective norm role of the elderly

First, the government should increase investment in smart elderly care, improve the smart elderly care system, facilities, and the construction of talent teams. Second, it is necessary to improve the social participation mechanism, give full play to the role of social organizations, and develop into voluntary services and charities for the elderly, so as to realize that there are people who take care of the work of the elderly in the community, who are in charge of matters for the elderly, and who can help the elderly in difficulties. Third, it is of great significance to establish a multi-party cooperation mechanism to promote the construction of a smart pension platform, and at the same time establish a smart pension service feedback mechanism to solve problems in products and services in a timely manner.

D. Enhancing the behavior control of the elderly over smart pension

On the one hand, companies should further increase their research on smart pension products, reduce production costs, and lower the prices of smart pension products and services, so that the elderly have the ability to purchase. On the other hand, the government should cultivate and regulate the consumer market, reduce or even eliminate the elderly's fear of smart pension, and encourage qualified places to support families and individuals to purchase and use smart pension products and services through subsidies and other forms.

VII. CONCLUSION

As an important way to solve the problem of China's population aging, smart pension has incomparable advantages. However, smart pension is still in its infancy in China, and its development is not perfect, and there is still a long way to go in the future. In addition, although this research is based on the demand side of smart pension, this article adopts qualitative research and is not objective enough. In the future, it is hoped that the quantitative research method can be used to further accurately measure the real needs of the elderly for smart pension.

Acknowledgment

Fund Project: Chengdu Philosophy and Social Science Planning Project (Key Funded Project) "Research on the Construction of a Supporting System for Social Cross Border Linkage of Smart and Health Care Communities" (2019A06).

References

[1] Yang Fang, Innovative Logic and Practical Direction of the Development of Smart Elderly Care [J]. Administrative Tribune, 2019,26(06):133-138. (in Chinese)

[2] Ajzen I. From Intentions to Actions: A Theory of Planned Behavior. In: Kuhl J, Beckman J, (Eds.), Action Control: From Cognition to Behavior. Heidelberg, Germany: Springer, 1985:11-39.

[3] Bai Mei, Zhu Qinghua, Analysis of the Influencing Factors of the Demand for Smart Elderly Care Services and Willingness to Volunteer Services of Elderly Users — Taking Jianghan District of Wuhan as an Example [J]. Modern Information, 2018,38(12):3-8. (in Chinese)

[4] Li Fei, Qin Kai, Zhang Peifang, Yuan Jin, Luo Yanhong, Empirical Study on the Demand and Influencing Factors of Health Care Services for the Elderly [J]. Health Economics Research, 2019, 36(12): 42-46. (in Chinese)

[5] Mao Yu, Li Dongling, Research on the Influencing Factors of Smart Elderly Care Users' Usage Behavior Based on UTAUT Model — A Case Study of Wuhan City [J]. E-Government, 2015(11): 99-106. (in Chinese)

[6] Guo Lina, Hao Yong, Health Conditions, Informal Care and Social Provision: Which Is More Influencing the Elderly's Demand for Home-care [J]. Northwest Population Journal, 2019, 40(05): 36-49. (in Chinese)

[7] Zhang Li, Yan Xiaoping, Service Supply and Realization Path of Smart Pension [J]. Journal of Hebei University (Philosophy and Social Science), 2019, 44(04): 96-102. (in Chinese)

[8] Sheng Jian, Analysis of the Root Causes of Insufficient Effective Demand for Social Pension Services and Its Solutions [J]. Academic Journal of Zhongzhou, 2019(12): 28-34. (in Chinese)