

Application and Development of Smart Pension Products in China

Ge Ying^{1*} Li Zonghua²

^{1,2}School of Political Science and Law, University of Jinan, Jinan, Shandong 250022, China

*Corresponding author. Email: 1765483990@qq.com

ABSTRACT

China has stepped into the aging society; the traditional pension model has been unable to meet the growing needs of the elderly personalized pension service. The smart pension based on modern information technology provides a new development direction for solving the problems of the old-age service industry, which is a major revolution of the old-age service industry. This paper focuses on the analysis of the application characteristics of technology, personal demands and interaction design in smart pension products and services in China, as well as the importance of the elderly's attitude towards the acceptance, demand characteristics and satisfaction of the products. The perspective of both using subject and using object is helpful to the long-term development and great progress of intelligent endowment in China.

Keywords: *The elderly, Smart pension, Product application and development*

1. INTRODUCTION

Due to the rapid development of national economy and medical technology, the aging population of China has increased rapidly in recent years. According to the data of the National Bureau of Statistics, the elderly population over the age of 65 in China reached 176 million by the end of 2019, accounting for about 12.6% of the total population, an increase of about 1.14% over the previous year. From the perspective of population structure, elderly people account for a large proportion of the population in China, and there is a growing demand for diversified social services such as daily care and medical security services for the elderly. Unlike the developed countries, which are "rich first and then old" or "rich while old", the particularity of China is that the aging trend of population age structure precedes the corresponding adjustment of economic and social structure, and the whole process of economic and social development lags behind the aging process of population, which is a typical "old before rich" country. Therefore, the development and improvement of the old-age service industry system is arduous in terms of time and task quantity, which is an important point to strengthen the quality of life guarantee for the elderly and improve the welfare level in China. Under the urgent need of the great revolution of the service mode of the traditional pension industry in China, the smart pension is born. In the current era of network information technology society, the application of the Internet to the pension industry is of great practical significance for actively improving the technology and quality of pension services and effectively alleviating the pressure of aging population. In response to the pressure on the elderly caused by the rapid aging of the population, the State Council has issued a series of policy documents,

including *Some Opinions on Accelerating the Development of the Endowment Service*, aiming to promote the innovative development of the pension service model. The Ministry of Civil Affairs, the Ministry of Industry and Information Technology, and the Health and Family Planning Commission jointly issued *The Action Plan for the Development of the Smart Health Endowment Industry (2017-2020)* in February 2017, which clearly put forward the development goals, main tasks, working mechanisms, market norms and other contents of the intelligent health pension industry in China. Although the government has given great support in policy, capital investment and infrastructure construction, the development of China's smart pension industry is still in its infancy.

2. CONNOTATION OF SMART PENSION

"Smart pension" first put forward by the British Trust Life, was known as "smart house" or "all intelligent old system", refers to the use of Internet, the Internet and other modern information technology means for the elderly intelligent pension services, so that the elderly to enjoy high quality of material and spiritual life anytime and anywhere. In 2008, IBM came up with the "smart earth" concept based on commercial demand. In 2010, IBM formally proposed the construction concept of "smart city". Then countries around the world explored and planned for this, and developed the "smart pension" on this basis.

"Smart pension" first appeared in China as "digital pension", which was put forward by scholar Hu Liming in 2007. Later, the concept underwent the evolution of "information-based pension", "scientific pension", "

networked pension” and “intelligent pension”, and finally developed into “Smart pension” [1]. In China, the concept of “smart pension” has been around for a short time, and has been studied and interpreted by many experts and scholars with different perspectives and advantages. Scholar Zuo Meiyun, on the basis of the discussion of the world history of smart pension, defined it as the use of the Internet, mobile computing and other modern technologies to provide services in the elderly's daily life, security, health care, entertainment and leisure, and the monitoring, early warning and disposal of information related to the elderly[2]. Scholar Bai Mei and scholar Zhu Qinghua believed that smart pension was a new modern pension mode that used modern network technologies such as computers and the Internet to closely link traditional home-based pension, community pension and pension institutions through various sensors[3]. Scholar Zheng Shibao proposed that smart pension utilized the Internet, mobile Internet and other advanced technologies to realize the combination of medical care, online and offline, comprehensive and all-round elderly care services[4].

It is easy to see that although different scholars have different specific definitions of smart pension, it is a common feature to embed modern technology into the mode of endowment, which is also the advantage of smart pension that is different from the traditional endowment. At present, the world is in the network information age, and it is the requirement of the times to promote the organic integration of all walks of life and the Internet with the help of the information technology platform. Under the silver wave, the change of social environment and the development of “Internet+” technology have brought new opportunities for reform to the modern pension service industry. From the perspective of “Internet +”, it has become the focus of China's elderly care industry to explore a new mode of smart pension that is suitable for the current situation of China's aging population. The technology of smart pension products widely used in today's society comes from relevant information management means, such as the information management system of pension insurance that includes functions such as information interaction and resource sharing, or the electronic medical record that relies on medical process informatization. With the continuous innovation of technology demand, the intelligent products and service platform applied in the field of pension gradually appeared, and the technology of intelligent pension products gradually developed.

3. APPLICATION OF SMART PENSION

Western countries have entered the aging society earlier, and foreign research and development of smart pension products technology are also more in-depth. The technology of intelligent pension-related products in China is relatively late, first appeared in Beijing and other regions, such as the intelligent community of Qinghua

Yuan, Haidian, Beijing, built in 2007, and community integrated service management platform opened in the next year. After that, various cities have successively carried out pilot analysis and mode design of smart pension, and many relevant enterprises have started to develop and design smart pension products, which have been widely used in different pension service industry modes. Under the influence of traditional Chinese thoughts, the home-based pension is always better than community and institutional pension, and has become the preferred pension model for the most elderly. In the traditional home pension model, the smart home care set is widely used at present. Its functions such as smoke warning and emergency rescue can effectively solve the safety problems of the elderly. In the family-care in communities, the construction of the “smart home” community service center project platform in Taiyuan provides a new model of “Internet+” home pension. Based on the concept of combining home-based care and institutional care, Chengguan district of Lanzhou city, Gansu province took the lead in adopting the new home-based care service model of “virtual nursing home” in December 2009, which is led by the government, operated by the market and participated by the society. In the design, whether it is home cameras, smart robots and other smart home products, or smart wearables that emphasize the interaction of older people with technology, or an intelligent service platform for online and offline simultaneous operation and remote monitoring and management of the daily life of the elderly, reflect the information technology embedded in the pension industry, and the application of these smart pension products also has its own characteristics.

3.1. Rely On Technology to the Greatest Extent

At present, the domestic pension industry pays attention to the development of related technologies, especially in the initial development of smart pension in China, the development of information technology such as computer network is the primary goal to promote the intelligent and networked pension industry in China. Therefore, the “Internet +” perspective has become a breakthrough point that cannot be ignored in the research and development of smart pension and its products. For the formation and implementation strategies of the information system of China's urban pension service system, in the face of the vulnerable groups of the elderly, the rapidity, accuracy, safety and supervision of services are the key to the home-based pension information system, and information technology must be adopted to achieve these characteristics. The application of next-generation information technologies such as the Internet of Things, mobile Internet, cloud computing, and big data, not only promotes the deep integration of “Internet +” technology and urban community home care services, but also effectively meets the needs of the elderly for such services as timeliness, flexibility, diversity and convenience. Some

scholars took Meizhou as an example, researched and designed the smart pension service platform based on GIS space technology and successfully operated, helping the industry to build a more intelligent and proactive smart pension model[5]. It is the rapid development of modern science and technology that gave birth to smart pensions. Its original purpose was to use science and technology to monitor the living conditions of the elderly at any time and any place, so as to provide better services. No matter how the pension industry develops, the effective application of smart pension products is inseparable from the support of science and technology.

3.2. Put Personal Demands of the Elderly First

Although the realization of the smart pension cannot be achieved without the support of smart products, the rapid improvement of living standards has made the elderly place higher requirements on the pension industry. As the service object of smart pension products, the elderly's personal demand for services greatly affects the quality of pension services. And this group is special, so that it cannot only use the smart pension products that are uniformly used in the market. Therefore, the domestic pension industry focuses on the research and development of related products from the perspective of the needs of the elderly. For the elderly, especially the special group of disabled elders, they have different needs in various aspects such as life care, sports entertainment, psychological care, etc. It is particularly important to investigate the demand for smart pension service products. The personalized development of smart pension products has become an important direction to solve the problem of satisfying their individual demands. To design smart pension products from the perspective of the elderly's personal needs, we must fully consider the elderly's physiological decline and psychological loss, and design a comfortable, convenient, safe and healthy smart living environment for them based on their own characteristics. The Chinese traditional cultural concept of tea culture also emphasizes the promotion of the new development of smart pensions from the perspective of the pursuit of the spirit of the elderly, so as to meet the "pension demands" in social development. Strengthening the development of information-based pension products from the perspective of demand is conducive to promoting the transformation of the traditional concept of "providing for the aged" to "enjoying the aged" and stimulating the transformation of the potential demand of the elderly to the effective demand. At present, there is a structural contradiction between the supply and demand of the pension industry in China. Adhering to the people-centered development concept of building pension products is conducive to alleviating the contradiction between the elderly's growing needs for a better life and the imbalance and inadequate development of existing care services.

3.3. Interaction Design Between the Elderly and Products

Smart pension first appeared in Western countries. There is a difference in ideological culture, traditional customs, and other differences between Eastern and Western countries. Foreign countries pay more attention to the technology of products. Therefore, the idea of "technology first" was more profound at the beginning of the emergence of domestic smart pension. With the development of the times, people gradually realized that the spiritual and psychological demands of the elderly were also very important. Until now, the pension industry has paid more and more attention to the interaction between information technology and the elderly, and advocates giving full play to the autonomy of the elderly and mobilizing their wisdom when using smart pension products, which can not only continuously activate their brains, but also can prevent too much disconnection from the world. In the smart home system, the real-time interaction between the elderly's own wishes and the furniture scene creates an interactive experience process that makes the elderly more satisfied. The design of smart pension apartments based on interactive concepts can also reflect this. The intervention of social work elements is also conducive to the integration of humanity and science in smart pensions. The perspective of social work is good at combining domestic and foreign smart pension experiences and introducing social forces to improve the construction of smart pension products. The elderly and smart products interact with each other and promote each other. At the same time as the technology of smart pension products has been developed, it has in turn greatly improved the quality of life of the elderly. The two are a mutually beneficial relationship.

4. DEVELOPMENT OF SMART PENSION

The attitude of the product user determines the survival of the product and the research and development direction. The elderly as the service object of the smart pension products are the main driving factors for the development of the product. The survey and research on the elderly is an important link in the development of smart pension products, which is conducive to better understanding of the elderly user group, improving the service quality of the products, and thereby meeting the diverse and personalized needs of the elderly users. Paying attention to the elderly's attitudes towards the following three aspects of smart pension products will help the development of products and the promotion of smart pension in China.

4.1. Acceptance of Smart Products by the Elderly

The rapid development of the information age has made it impossible for the elderly to keep up. Many old people are very unfamiliar with smart products, such as computers

and smart phones, and they can only use basic functions. There are even more old people who do not touch smart products in their daily life, not to mention the short time of smart pension products. Some scholars found through the investigation of Wangcheng district in Changsha city that 67% of the elderly in the city had never known about smart products, and 33% of the elderly could only use smart phones and computers[6]. Some scholars also conducted a survey on the acceptance degree of Internet pension mode for the elderly over 50 years old in Jiaojiang district, Taizhou city, Zhejiang province. The data showed that 25% of the elderly were unwilling to accept the Internet pension mode, and 44% of the elderly were on the fence[7]. The main reasons for this are the complex operation and high price of smart products, as well as the psychological resistance caused by the limited educational level of some elderly people. The gap caused by the differences in the background cannot be erased. Most of the elderly are unfamiliar with the operation of smart products, conservative about daily consumption, and have limited education, which cannot be changed. Therefore, the government and enterprises should try their best to promote smart pension products, help them get familiar with the use of the products, increase the publicity and training efforts, and at the same time, simplify the operation process of the products to the greatest extent, eliminate the resistance of the elderly as far as possible, and change their views on smart pension products.

4.2. Characteristics of the Elderly's Demand for Products.

At present, most of the domestic research on the needs of the elderly is based on Maslow's hierarchy of needs theory, which divides the needs from low to high into physiological needs, safety needs, love and belonging needs, respect needs, and self-actualization needs. Under this theoretical background, the monitoring of the elderly at any time and place has become a rigid demand for most smart pension products. As product users, due to differences in consumption concepts, lifestyles, and personal hobbies, different elderly people have different needs for smart pension products. In terms of product types, some scholars conducted a survey on some people over 65 years old in 11 communities in Jilin province, and the results showed that the elderly's demand for smart pension products includes smart walking equipment, smart wearable equipment, and smart devices with decorative function[8]. In terms of products and services, the relevant survey data of some people over 60 years old in Jinan city shows that the needs of the elderly are generally physiological needs, safety needs and spiritual needs. Compared with ordinary old people, such groups as empty nest elderly and solitary elderly have greater safety needs for medical assistance and remote care[9]. At present, the influencing factors of the demand for smart pension products and services for the elderly in China mainly focus on the following aspects: age, educational level, economic

status, living status and physical condition. Therefore, smart pension products should be given different types, services and price positioning according to different consumer groups, to meet the elderly's pension needs to the greatest extent. The study on the demand characteristics of the elderly for smart pension products is conducive to the rapid transformation of the elderly's willing demand for smart pension products to practical and effective demand, so as to fundamentally accelerate the development process of smart pension in China, and improve the happiness and social stability of the elderly.

4.3. Satisfaction of the Elderly With Products

With the gradual popularization of smart pension products, the satisfaction of the elderly for the use of the products provides substantive suggestions for the improvement of the products. Some scholars have established a public satisfaction evaluation model based on rough set theory[10]. After that, some scholars put forward a more reasonable and scientific comprehensive evaluation method based on the analytic hierarchy process, which relies on expert experience and combines subjective and objective weights[11]. However, the current pension industry in China is mainly focused on the elderly's demand for pension services, and the degree of satisfaction of smart pension products is not sufficient. The elderly's satisfaction survey on smart pension products represents direct customer feedback. These information reflect which aspects of the elderly group are satisfied with in the smart pension, and put forward the imperfect aspects, so as to provide a more scientific and reasonable evaluation basis for the improvement of smart pension products and the development of smart pension.

5. SUMMARY

The aging of our country is getting more and more serious, and the traditional old-age care model is gradually unable to be maintained. In the case of limited resources, smart pension has become an important development direction of China's pension. The emergence and development of smart pension is an inevitable trend of the rapid development of science and technology and the rapid growth of China's aging population, which provides a new development path to relieve the huge pressure of China's silver industry. With the advantages of information technology, especially the advantages of strengthening information exchange, meeting the spiritual and cultural needs of the elderly, and saving labor costs, the smart pension not only ensures and improves the quality of life of the elderly, but also promotes the rational allocation of national endowment resources. Smart pension products have effectively avoided the safety problems of many elderly people in their daily lives and enriched their lives. But meanwhile, the real needs of the elderly in all aspects, especially the spiritual aspects, should always be paid attention to. The

pension industry should pay attention to collecting the attitudes of the elderly towards smart pension products, and make corresponding research and improvement of the products according to the elderly's needs and their usage information. It will help strengthen the operability of smart pension products, further promote the wide application of smart pension products, and help the elderly to adapt to the world dominated by information faster.

smart pension.J.Journal of Shanghai University of Engineering Science,32(03):278-283.

REFERENCES

- [1] Sun Mengchu, Gao Huansha, Xue Qunhui.(2016) Advances in research on smart pension at home and abroad .J.Special Economic Zone, 06:71-73.
- [2] Zuo Meiyun.(2014) Connotation, mode and opportunity of smart pension.J.China Public Safety,10:48-50.
- [3] Bai Mei, Zhu Qinghua.(2016)Status analysis and development strategy of smart pension.J.Modern Management Science, 09:63-65.
- [4] Zheng Shibao.(2014)Internet of things and smart pension.J.Television Technology,38(22):24-27.
- [5] Dai Huojin, Chen Haojie, Sun Xiaoyan, Zhong Guangrui.(2018)Research and design of GIS-based smart pension grid comprehensive service platform——taking Meizhou as an example.J.Science and Technology Innovation Herald,15(05):163-166.
- [6] Lei Qinyi. (2016) Viewing the smart pension service from the adjustment of the quality of life of the elderly .J.Journal of Insurance Vocational College,30(02): 61-65.
- [7] Wang Chunchen, Chen Lingxiao, Xie Wei.(2017) Development and discussion of Internet+ home-based elderly care service model.J.Future and Development, 41(05):1-4.
- [8] Zhu Dan. (2018) Analysis of the needs and products for the elderly in smart communities——Based on a survey in Jilin Province.J.Journal of Jilin Institute of Business and Technology,34(03):119-121.
- [9] Bai Mei, Zhu Qinghua.(2018)Analysis of the factors influencing the demand for smart pension services and willingness to volunteer for elderly users——taking Jiangnan,Wuhan as an example.J.Modern Information, 38(12):3-8.
- [10] Mao Taitian, Sun Hongxia.(2017)Research on public satisfaction of smart pension based on rough set theory.J.Age Science Research,5 (04):72-80.
- [11] Peng Liangui, Yan Ruixia. (2018) Research on comprehensive evaluation method of public satisfaction of