Research on the Design of Internet Plus Home Care Service Platform for Intelligent Elderly

Yanping Xu(✉) and Minhang Qiu

Nanchang Institute of Technology, Nanchang 330044, China

Abstract. With the development of aging population, the concept of "smart pension" is proposed, which can alleviate the contradiction between the growing demand of better life for the elderly and the unbalanced and inadequate development of the elderly service, and meet the diversified and multi-level needs of the elderly. Through the Internet information system, a digital information platform including emergency assistance, life service and home service is established. The elderly who meet the standards of the elderly can enjoy the corresponding elderly care service through the platform. Therefore, this paper designs and studies such a platform, which has both the support of the technology of the elderly and the innovation of advanced pension management. In addition, the Internet as an information integration system is therefore called "smart pension" service system platform, and the security mechanism of the pension system is improved to realize the intelligent elderly care.

Keywords: Internet plus · Service system platform · Intelligent pension · Security mechanism

1 Introduction

The increasing demand of the elderly population and its services has brought great pressure to the pension services in China. Since the implementation of China's family planning policy for more than 30 years, it has made a great contribution to restraining the rapid growth of population, but it also makes the social population structure become very unreasonable, the aging speed is accelerating, and there are more and more one-child families, which makes the social function of family pension gradually lose. The National Bureau of statistics released the latest population data on January 21, 2019: China's elderly population aged 60 and above has reached 249 million, accounting for 17.9% of the total population. Compared with 2017, the proportion increased by 0.6%, as shown in Fig. 1. It is predicted that the population aged 60 and above will soar to 329 million in the next 20 years. The above data can show that: entering the new era, China's aging problem is aggravating.

With the rapid development of global information technology and the gradual acceleration of population aging, smart pension is a new way of pension in the experimental stage. From the national level, smart pension service is very beneficial to China's pension system in terms of both quality and cost. On the one hand, it can greatly alleviate

© ICST Institute for Computer Sciences, Social Informatics and Telecommunications Engineering 2021
Published by Springer Nature Switzerland AG 2021. All Rights Reserved
M. A. Jan and F. Khan (Eds.): BigIoT-EDU 2021, LNICST 392, pp. 607–612, 2021.
https://doi.org/10.1007/978-3-030-87903-7_73

the huge pension pressure of the country, on the other hand, it provides data support for the government's scientific and reasonable allocation of pension resources and pension planning. From the perspective of each family, intelligent pension service has its unique advantages in emergency alarm, disease prevention and relieving economic pressure. On the one hand, it improves the quality of life of the elderly, on the other hand, it can also reduce the burden of pension for many young people and reduce children's worries about their parents' pension problems [1]. As shown in Fig. 1 below.

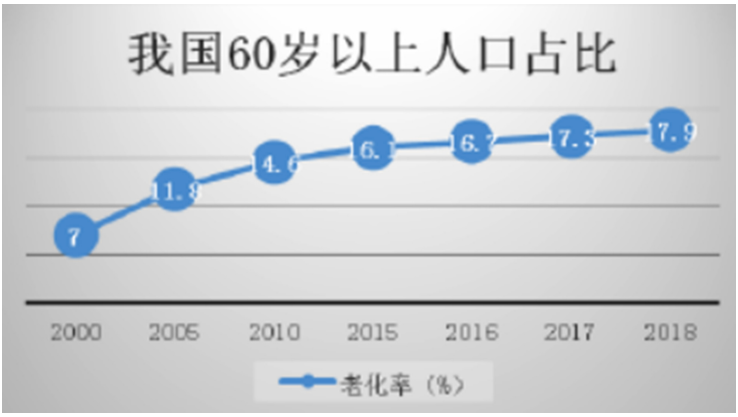

Fig. 1. Struts frame structure

2 Internet Plus Intelligent Endowment Mode

2.1 Defects of Pension Service

(1) Information exchange is not timely and flexibility is poor

The unique advantage of home-based care service mode lies in the integration of family and community care resources, providing one-to-one or many to one door-to-door service, which is recognized by the society and the elderly. However, there are some problems in practice. At present, the process to meet the needs of the elderly is as follows: the elderly first put forward the service needs to the community day care center for the elderly or the community neighborhood committee, and then the two departments send people to provide door-to-door services, and then the social workers provide services and return to the community care center or the neighborhood committee for record. Not to mention that it may be inconvenient for the elderly to put forward their service demands to the above two institutions. Even if the elderly can put forward their service demands smoothly, the day care center for the elderly must have enough manpower and appropriate time to arrange the door-to-door service of social workers, which is a common problem in reality. Similarly, the on-site service of nursing workers and elderly volunteers also needs the detailed data of elderly care needs. If the day care center for the

elderly can not provide the detailed service needs of the elderly within its jurisdiction, it is difficult for them to carry out their work effectively [2].

(2) Immature service mechanism

At present, China's smart pension service is in the stage of crossing the river by feeling the stone. Our city only carries out demonstration sites in some communities, and has not formed a complete and mature smart pension service system, let alone mature guidance of relevant laws and regulations. Because of this, without certain legal supervision and restriction [3], smart pension service will encounter various problems, such as different service labels and chaotic service market. On the other hand, from the perspective of the protection of the rights and interests of the elderly, the only authoritative document with national legal significance issued by the government is the law on the protection of the rights and interests of the elderly, and other documents are administrative provisions and notification reports of local governments. However, these local documents do not have the authority and force of law, and can not achieve good results in the process of implementation.

2.2 Core Technology of Smart Pension

There is no accurate service delivery strategy in the traditional way of providing for the aged, so the actual needs of the elderly can not be met. In order to get rid of the disease, we must collect data to understand the actual needs of the elderly. However, these data are laborious, time-consuming, costly and not comprehensive. In the era of big data, intelligent collection of pension data is no longer far away. In addition, the traditional way of providing for the aged is a kind of "cause and effect", which is characterized by top-down. Firstly, the demand model is given, then the target object is located, and finally the service is delivered. However, big data analysis is a scientific search and analysis in massive data to find the connection between things, which breaks the traditional pension "from cause to result" supply mode, and its characteristics are bottom-up.

2.3 Internet Plus Home Care Concept

As a new thing, "Internet plus home care" is relatively late in China. The author found through CNKI search that "Internet plus home care for the aged" was first put forward by Hu Liming in 2007 by the concept of "digital pension". After 2010, the concept has been widely recognized and used in academic circles. In 2011, Ma Feng Ling published a thesis on "accelerating technological innovation to promote technology endowment" at the sixth Beijing International Rehabilitation forum, and clearly put forward the concept of "technology endowment". In 2012, Shi Yuntong put forward the concept of "network endowment", and then developed into "intelligent endowment" and "intelligent endowment". As shown in Fig. 2.

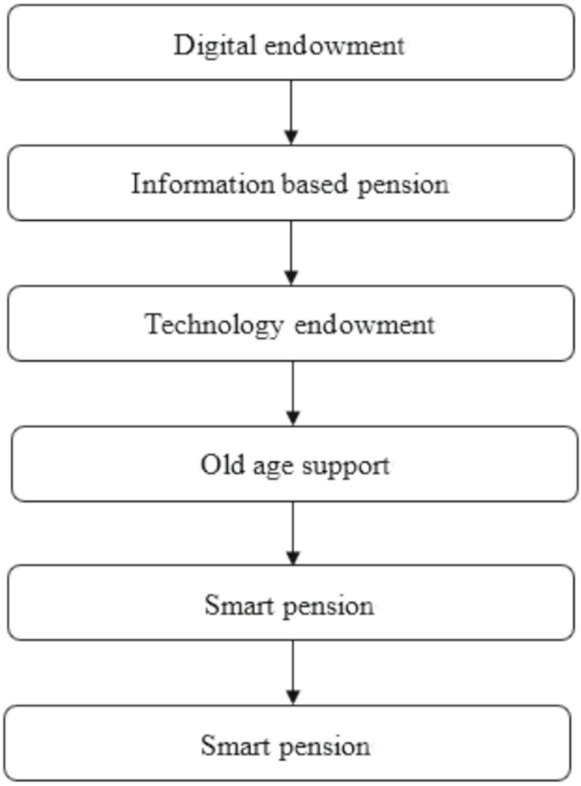

Fig. 2. Conceptual evolution

3 Design of Intelligent Pension Service System Platform

Under the background of "Internet plus", we should establish a daily monitoring and management mechanism for health information of the elderly. The monitoring of health information mainly adopts the method of mobile self-service detection equipment or fixed self-service detection equipment and medical staff detection to monitor the health information of the elderly under different conditions and different scenes. The elderly health information management is the data obtained through different monitoring methods, which are processed and integrated, and uploaded to the data center in a unified data format. The data center needs to analyze and process the acquired data, and at the same time, combine with the developed intelligent medical system, The elderly community information service platform is seamlessly connected with the medical information system of the remote hospital and the information exchange is realized to realize the real-time remote consultation or monitoring [4]. The elderly health information monitoring terminal can use the elderly intelligent health detection terminal device, including portable biochemical analyzer, 3G blood pressure meter, 3G weight scale and 3G motion detector to meet the needs of elderly health monitoring. Secondly, we should monitor the abnormal behavior of the elderly. The elderly's daily behavior habits are tracked and

analyzed, and more effective service schemes are provided according to the analysis results, and the abnormal situation is reported in time, and corresponding emergency treatment is carried out. RFID, video monitoring and GPS positioning technology can be used in the monitoring mode. The platform architecture of smart elderly care service system is shown in Fig. 3 below.

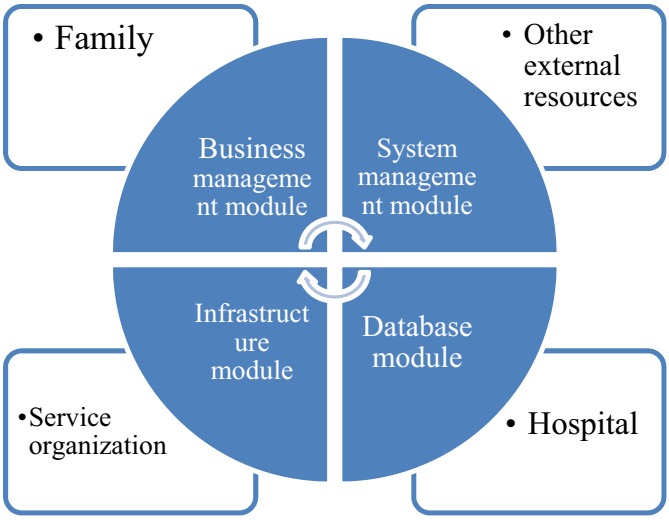

Fig. 3. Platform architecture of smart pension service system

The system architecture is shown in Fig. 3. The overall architecture of the system mainly includes infrastructure module, database module, business management module and system management module. Families, service institutions, hospitals and volunteers monitor the life of the elderly, provide consultation, carry out psychological comfort and emergency assistance after selecting relevant functions in the corresponding modules through the network.

4 Internet Plus Home Care for the Elderly

The government should adhere to its leading position and improve the top-level design, so as to optimize the allocation of existing pension service elements and form a good environment for the development of pension industry. The government should work in the formulation of relevant laws and regulations, infrastructure construction, service platform construction and other aspects.

The development of smart pension is inseparable from the strong support of the government, enterprises, social institutions and other aspects, so all parties need to work together. First of all, the government should introduce a variety of preferential policies, such as financial support, infrastructure support, human resources support, to attract social forces to participate in the construction of smart pension services. In addition,

improving the relevant laws and regulations of smart pension industry can create a good external environment for the development of smart pension. The government should reasonably divide the duties of functional departments, guide enterprises and social organizations to participate in smart pension through various incentive measures, and form a pattern of multi-agent joint participation and collaborative pension service.

5 Conclusion

In the new era, with the increasing problem of population aging, the traditional way of providing for the aged cannot meet the increasing demand of the elderly. Therefore, under the background of mobile Internet, Internet of things and big data technology, intelligent pension emerges and gradually enters people's vision. Therefore, this paper analyzes how to reform supply to meet the demand from the two aspects of "supply" and "demand", so as to promote the development of smart pension.

References

1. Liu, M., Zuo, M., Li, Q.: Research on informatization demand of home care for the aged based on community service. J. Inf. Syst. (01) (2013)
2. Wang, L., Rao, P.: Design criteria of IT products for Chinese elderly users. Ergonomics (03) (2013)
3. Lu, Z.: Research on development strategy of intelligent pension service industry under the background of "Internet plus". J. Ningbo Polytechnic (02) (2017)
4. Yuan, B.: CNNIC: smart pension perspective, Ding. Service outsourcing (04) (2015)