

RESEARCH ON THE DEVELOPMENT MODEL AND IMPLEMENTATION PATH OF DIGITAL SMART PENSION

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ABSTRACT

Digital transformation of old-age care is an important part of urban digital transformation. Under the background of Internet of Everything, through the research on digital transformation of old-age care, this paper analyzes the digital foundation of old-age care, the construction of digital application of old-age care and the research and development and application of smart products for old-age care. Focusing on the development model and implementation path of smart old-age care, taking home-based old-age care as the main scene, smart old-age care products and platforms as the core breakthrough, understanding the real needs of the elderly, and building a multi-coordinated development pattern of digital old-age care services, this paper puts forward specific paths to promote digital transformation in the field of old-age care.

Key words: *Digitalization, Wisdom for the aged, Development model, Implementation path*

1. INTRODUCTION

With the increasing aging in China, the problem of providing for the aged has become increasingly prominent. The state attaches great importance to solving the problem of providing for the aged, and strives to improve the environment for providing for the aged and improve the quality of life of the elderly. Relevant departments have successively issued policies to encourage and support the development of smart pension industry. Due to the implementation of China's family planning policy and the change of people's fertility awareness, in recent years, the number of newly born population in China has declined, the number of elderly population has continued to increase, and the burden of providing for the aged in China will continue to increase in the future. There is a huge market development space for China's pension industry, and smart pension will usher in a broad development space in the future.

Smart pension is an old-age service based on modern information technologies such as Internet of Things, cloud computing and big data. The rapid development and progress of related Internet technologies provide scientific and technological support for the development of smart pension industry. The number of community pension institutions, facilities and pension institutions in China has grown steadily. Community pension institutions and facilities and the increase in the number of pension institutions can meet the needs of social pension in China to a greater extent.

The market scale of smart old-age care in China has steadily increased, especially in recent two years. With the encouragement and support of policies, the smart old-age care industry has developed rapidly and its growth rate has risen sharply. From the perspective of regional distribution, China's smart pension demonstration enterprises are concentrated in the eastern region, among which Zhejiang Province has the largest number of smart pension demonstration enterprises. In addition to the eastern region, Shaanxi Province and Sichuan Province, which are located in the central region, also have a large number of smart pension demonstration enterprises.

The number and scale of the elderly in China continue to increase, and the aging process is accelerating. The intelligent pension model, which relies on intelligent information technology to provide pension services, has gradually become the general trend of the future development of China's pension market. With the continuous improvement of science and technology, and the deepening understanding of the real life and needs of the elderly by product R&D and production personnel, smart old-age products and services are transformed to meet the needs of the elderly.

2. SMART OLD-AGE DEVELOPMENT MODEL

According to the data of the seventh census, there are 260 million people aged 60 and above in China, among which 190 million people aged 65 and above—China has become the country with the largest number of elderly people in the world, and its proportion continues to rise. Correspondingly, a report released by China Public Welfare Institute of Beijing Normal University shows that the gap of nursing talents for the aged in China will reach tens of millions. According to the data of China Internet Network Information Center (CNNIC), as of December 2021, the number of elderly netizens aged 60 and above was 119 million, and the Internet penetration rate was only 43.2%, far lower than the national average. It is an ideal solution to alleviate the problem of population aging through digital technology empowerment and make the limited resources of pension industry play a greater role.

The collected information or the demand information voluntarily submitted by the elderly and their families is summarized to the information platform through intelligent terminals such as smart watches and intelligent detection equipment. The information platform timely processes and responds to the "service needs" of the elderly and their families, and sends the "service requirements" to the cooperative old-age service subjects. The old-age service subjects provide corresponding services in time, realizing the integration of "online" (information platform) accurate positioning and "offline" (physical service institutions and personnel) professional services, and based on data analysis.

In order to meet the needs of the elderly in different scenes such as home, community and institution, there are four development models of smart home care, smart community care, smart institution care and trinity smart care.

2.1 Smart Home Care

Based on the aging-suitable renovation of the elderly's residence, relying on smart devices such as smart watches, one-button pagers and Internet video equipment, modern technology is used to integrate the elderly service subjects and service resources such as families, communities, old-age service providers and health care units, and build an intelligent, efficient and convenient home-based aged care service platform, so that the elderly can place orders for meals, cleaning, agency and remote health consultation services through the Internet, and realize the elderly's "calling service like calling drops" It can also monitor physiological indicators and life safety in real time by installing intelligent terminals such as intelligent nursing beds, infrared fall alarms and intelligent bracelets, and realize intelligent nursing. It can also recommend the most suitable old-age care projects and other private customized services for the elderly according to their physical and mental health status, living habits and needs for

a long time, so as to meet the old-age care needs of the elderly without leaving home to the greatest extent.

2.2 Smart Community Pension

Smart community pension is based on community pension service stations or centers. By building functional areas such as health centers, day care centers, canteens for the elderly, recreational classes, etc., and installing "dining information systems" and various smart pension equipment, it provides services such as chronic disease monitoring, health guidance, catering, culture and entertainment, short-term housing and maintenance for the elderly, and builds a community pension information platform to remotely monitor the home situation of the elderly and meet the online booking service for the elderly. Community pension service centers cooperate with medical institutions, domestic service companies and other pension service subjects to quickly meet the service needs of the elderly.

2.3 Smart institutions provide for the aged

In addition to guiding the market to build a retirement community with continuous care, smart institutions mainly transform traditional pension institutions based on portable health monitoring, emergency call and other equipment and information technology. Considering the strong willingness of the elderly to care for the aged at home in the community, and gradually promoting the transformation of existing old-age care institutions into rehabilitation nursing homes, professional medical staff mainly provide health care, rehabilitation promotion, hospice care and other services for long-term bedridden patients, advanced palliative care patients and other patients who need long-term care services.

2.4 Trinity Wisdom Pension

Trinity intelligent old-age care breaks the boundaries of traditional home-based old-age care, community-based old-age care and institutional old-age care. Service stations not only have the functions of staying in old-age care institutions and rehabilitation care, but also have the functions of day care and door-to-door service to radiate to the elderly at home, effectively promoting the deep integration and development of community-based old-age care, home-based old-age care and institutional old-age care.

Specifically, intelligent detection equipment, intelligent nursing beds, intelligent training instruments and other equipment are installed inside the institutions, and home equipment such as intelligent watches and infrared detectors are recommended to the elderly in the community. Different service subjects and service resources such as old-age service institutions, medical institutions, communities, social organizations, enterprises and governments are effectively integrated by using the old-age service information platform. It integrates three service forms: the elderly stay (including full-time care and day care), the elderly come to enjoy services and the service personnel come to the door, so that the elderly with different needs can seamlessly connect with the old-age service providers such as old-age service institutions, medical institutions, community enterprises, social organizations and voluntary service organizations, and meet the diversified and multi-level old-age service needs of the elderly with "one-stop" old-age service.

3. THE IMPLEMENTATION PATH OF SMART OLD-AGE CARE

3.1 Taking home care as the main scene and smart care products and platforms as the core breakthrough

The "9073" old-age care model based on home, supported by community and supported by institutions has pointed out the direction for the development of China's smart old-age care industry. At present, smart old-age care must first achieve a breakthrough in the home-based old-age care scene; In the long run, home-based care for the aged is also the pillar supporting the whole smart care industry.

With the continuous development of economy, young people are under increasing pressure to live, and "90%" of home-based care for the aged has gradually changed into the elderly staying at home or even living alone. The elderly in these families often have a certain ability to take care of themselves. However, due to the absence of children all the year round and insufficient companionship, sudden illness, accidental fall and loss of the elderly frequently occur, and the daily health management means for chronic diseases such as hypertension with high incidence of the elderly are insufficient. Especially, once the elderly living alone encounter these problems, they often fall into a situation of "isolation and helplessness".

At present, intelligent old-age care can effectively solve at least two kinds of problems besides ensuring daily care and emergency care for the elderly: shortage of manpower. The application of intelligent old-age products such as risk prevention for the elderly, unmanned intelligent medical care and various sensors can save a lot of time and energy for children and social workers; Information integration. Through the big data service of smart pension platform and perfect information early warning mechanism, public service resources can be allocated to the elderly more effectively and directly.

Intelligent nursing products and intelligent nursing platform are indispensable and important components of intelligent nursing in home nursing. For smart old-age products, because there is a "digital divide" between the elderly and the products, passively triggered products may be more in line with market demand. For example, anti-fall, anti-loss, anti-sudden death, emergency rescue, bed care and other scenarios can give birth to a series of concepts of intelligent old-age care products.

The smart old-age platform needs to build a systematic "cloud-management-end" integrated smart old-age platform, break through the barriers of different platforms and regions, and build specific scenarios such as cloud consulting room, cloud pharmacy, cloud nursing and cloud service through efficient, customized, scene-driven, integrated and service-driven technical support and services, using "AI + old-age care" and "big data + old-age care".

3.2 Technology is not omnipotent, and smart old-age care should understand the real needs of the elderly

Different from the "hard integration" that relied on institutions to integrate resources in the past, it is less difficult and more efficient for smart old-age care to integrate old-age industry resources through scientific and technological means. Smart old-age care is also conducive to breaking through the difficulties of traditional old-age care in home, travel, safety protection, health management and spiritual care. For example, services such as unmanned care and health management are more timely and convenient, which can save the high labor cost of traditional nursing services; After the application of intelligent assistive devices, the travel convenience and barrier-free degree of the elderly will be greatly improved; VR technology, remote companionship, etc. It may alleviate the family communication and spiritual care of empty nesters living alone.

With the in-depth development of more and more technology and Internet enterprises in the field of smart old-age care, products related to smart old-age care, such as wearable devices, convenient health testing equipment, independent health testing equipment, intelligent old-age monitoring equipment, home service robots, intelligent old-age management platform, etc. It is also emerging in the market-but we find that many smart old-age products are caught in a strange circle of "rave reviews", and the utilization rate of equipment is low, so the elderly don't like it or use it. The fundamental reason is that many intelligent old-age products do not take into account the living habits and use ability of the elderly, and do not have a deep understanding of the real needs of the elderly. Most of them are

designed from the perspective of adults and young people. For example, there are products that focus on fall alarm for the elderly, install the latest Android system, and develop many fancy functions, but the screen is small and the characters are small, which is very unfriendly to the elderly. This kind of products' cognition of smart old-age care is divorced from the actual demand, just showing off the high-end exquisiteness of equipment, not the real technological empowerment.

For a long time, intelligent old-age products have the phenomenon of "triple emphasis and triple light", that is, "emphasizing technology over demand", "emphasizing products over service" and "emphasizing concepts over scenes". On the one hand, cutting-edge technologies such as 5G, artificial intelligence and big data are constantly tested and studied in the field of aged care services; On the other hand, intelligent old-age products lacking insight into users' needs and services often make the elderly feel uneconomical and difficult to use, and those who are willing to pay for them are even more embarrassed.

Market feedback and policy guidance remind us all the time that we should pay attention to the application of science and technology in smart old-age care, but science and technology are not cold products and tools without feelings. Behind every product and tool, there should be the cohesion of people-oriented spirit. Understanding the real needs of the elderly, subtracting in technology and adding in service are the meanings of intelligent technology to empower the elderly.

3.3 At the time of smart old-age care, the Internet of Everything solution held up the happy old age of the elderly

Under the traditional cultural concept, we habitually treat the elderly with "care"; However, for the smart pension industry, the role of the elderly is "customer" and "user", and it is far from enough to "care". To treat this special customer group with a natural generation gap with the digital age, we need to pay a hundred times more efforts than "understanding young people", listen, understand, read and meet their needs, and do everything possible to serve them well. Even in all the current technology application scenarios, the elderly are the most unfriendly to technology, and we should try our best to turn the "digital divide" into a "digital dividend", pay attention to the needs of the elderly and pay attention to different use scenarios. At the same time, we should rationally see that as a new business form, many development models of intelligent old-age care are still being explored, and there are still many difficulties and problems waiting for us to overcome. For example, the problem of "Internet of Everything", which is common in intelligent old-age products at present. There are many kinds of intelligent pension brands, devices and terminals, but the transmission ports between devices are not open and connected with each other, which makes it difficult to integrate and flow subsequent pension data. It also needs manual input to match the relevant data of each terminal into a system before analysis-data is data, hardware is hardware, and the output of data and hardware is still in a relatively primitive stage. The lack of overall system coordination is a true portrayal of the Internet of Things in smart old-age care at present.

Smart pension industry is like a new sapling in the wilderness. It needs a more sound and mature market environment to grow into a towering tree. It needs more enterprises in science and technology, Internet and other industries with data and technological advantages to join in and jointly open up more and broader "experimental fields" and "infrastructure", so as to gradually evolve into a blueprint for intelligent old-age care with complete ecology, complete closed loop, openness, tolerance and diversification.

4. CONCLUSION

Empowering intelligent old-age care with digitalization can reduce labor and material costs and

improve the efficiency and quality of old-age care services through intelligent equipment and systems. Wisdom provides for the aged, wisdom is the means, and providing for the aged is the end, both of which are indispensable. It should start with people and end with people, and everything is centered on the elderly. Emotion and close proximity are the basic characteristics of old-age care services. Therefore, in the process of intelligent old-age care practice, we stress "both technical precision and humanistic temperature".

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