

Research on Market Demand Stratification and Precision Marketing Strategies for AI Home Robots in the Context of Upgraded Silver Economy

Ruizhe Ma

Robotics Engineering Major, Xi'an International University, Xi'an, Shaanxi, China

Abstract: With the rapid development of the silver economy in China (it is estimated that the population aged 60 and above will reach 310 million by 2025), the demand for AI home robots in the elderly care sector is growing rapidly. However, currently, most enterprises adopt a "one-size-fits-all" marketing model, lacking the refined stratification and systematic strategies for the needs of the elderly. Therefore, this study adopted a mixed method combining questionnaires and interviews to analyze the characteristics of the elderly population from dimensions such as age, health, emotions, and consumption, and to deeply explore their usage motivations and actual concerns. This study has established a demand stratification model for the elderly group and proposed a closed-loop implementation plan of "demand identification-strategy implementation", providing an operational reference for enterprises to achieve precise marketing and promote the upgrading of the silver economy.

Keywords: Silver Economy; AI Household Robot; Consumer Behavior of the Elderly; Precision Marketing

1. Introduction

The global population structure is undergoing a profound aging transformation, which has become a common reality affecting social and economic development. Against this backdrop, China's "silver economy" is rapidly upgrading from scale expansion to structural optimization, and from meeting basic needs to pursuing a quality lifestyle. Data shows that by 2025, the population aged 60 and above in China is expected to reach 310 million, accounting for approximately 22% of the total population. This indicates that a diverse and potentially huge consumer market is emerging.

Technology-driven factors have become the key force in this process. The mature application of

technologies such as artificial intelligence, the Internet of Things, and robotics is reshaping the traditional elderly care model. Among them, the continuous progress of AI household robots in areas like perception, interaction, and emotional computing has enabled them to gradually move from laboratories or high-end products to practical solutions that can be integrated into the daily lives of the elderly. They demonstrate broad prospects in areas such as life assistance, health monitoring, and emotional companionship. The increase in market penetration, the cost reduction brought about by technological iterations, and the support of the national "smart elderly care" policy have jointly laid the foundation for the development of this industry.

However, the current market is facing a prominent contradiction: Despite the rapid development of technology and demand, the marketing approach has failed to keep pace. Many technology enterprises targeting the elderly market still adopt the traditional strategy of mass consumer products, with their target groups defined vaguely, value propositions focusing on functional listing, and channels and communication methods being simplistic. This "one-size-fits-all" marketing approach makes it difficult for enterprises to precisely connect with users who truly have needs, resulting in slow market penetration.

The current research also has certain limitations: Technological-oriented studies mostly focus on the realization of robot functions, while user acceptance studies mostly base their discussions on classic theories regarding "whether they are willing to use". There is a lack of effective connection between the two—that is, how to start from the differentiated and dynamic needs of the elderly, and transform "technical possibility" into "market effectiveness".

Therefore, this study aims to construct a precise marketing strategy framework for the AI household robot market, based on the dynamic hierarchical needs of the elderly population. The

specific research questions include: (1) How to scientifically market segment potential elderly users according to multiple dimensions; (2) The differences in functional preferences, purchasing methods, and price sensitivity among different segmented groups; (3) How to design corresponding product-service combinations, channel strategies, and customer relationship management plans for each segmented market, to form a precise marketing loop.

In terms of methodology, this study adopts a mixed research design: first, a large-scale questionnaire survey is conducted to initially outline the market profile; then, through in-depth interviews, the user habits, emotions, and unmet needs are explored in depth, ensuring that the research results are both statistically representative and possess humanistic insights.

This research aims to promote in the theoretical aspect a shift in related studies from "whether to accept" to a deeper exploration of "why it is needed" and "what kind of technology is required", and by constructing a dynamic hierarchical model, it will facilitate the development of the field of elderly consumption behavior and technology marketing towards a more refined and context-based direction. At the practical level, it provides targeted marketing strategy references for enterprises, promoting the more effective service of AI household robots for the elderly population.

The structure of the following text is as follows: The second part conducts a literature review; the third part explains the research methods and data collection; the fourth part presents the stratified model of the elderly population and the segmented market portrait; the fifth part proposes precise marketing strategies for each segmented market; the sixth part summarizes the research contributions, practical implications, limitations and future directions; the seventh part is the references.

2. Literature Review: Research Progress on Market Demand and Marketing of AI Household Robots in the Context of the Silver Economy

2.1 Research Background

With the acceleration of aging in China (it is projected that the population aged 60 and above will reach 310 million, accounting for 22% by 2025), the silver economy is shifting from "scale expansion" to "quality upgrade", and the

consumption demands of the elderly are moving from "basic survival" to "quality life". Against this backdrop, as "digital and intelligent assistants for elderly care", the market demand stratification and precise marketing of AI home robots have become the key to the development of the industry.

This literature review centers on three core dimensions: the upgrading characteristics of the silver economy, the development and application of AI home robot technology, and the consumption behavior and marketing logic of the elderly population. The aim is to sort out existing research and provide theoretical support for the "demand stratification-precise marketing" framework of this study.

2.2 Research on the Silver Economy and Consumption Behaviors of the Elderly Population

2.2.1 The upgrading trend of the silver economy
Domestic research generally suggests that China's silver economy is currently undergoing a transformation from "meeting basic living needs to pursuing a higher quality of life". Data from the National Bureau of Statistics shows that by 2025, the proportion of the elderly population will reach 22%, and this large consumer group has given rise to a "richly layered and multi-demanded" market (such as various increasingly diverse scenarios like home-based elderly care, medical health, and tourism and social interaction). Furthermore, the concept of "new elderly" has been proposed: represented by active seniors, their consumption capacity and willingness have increased, and their demand for "cultural experiences, technological products, and travel quality" has significantly grown, gradually replacing the traditional "low-cost and thrifty" elderly care consumption model with a "quality and personalized" one.

Specifically, the comprehensive upgrade of the elderly consumption market is not only reflected in the expansion of "quantity", but also in the leap in "quality". For instance, by 2025, the elderly tourism market will show a "peak and off-peak" trend, with elderly tourists becoming the main force of off-peak travel. In recent years, orders for home-based elderly care have surged, and the elderly care model has become more diversified compared to the traditional one, further demonstrating the transformation trend from "survival guarantee" to "quality of life" in home-based elderly care. [1,2]

2.2.2 Consumption behavior characteristics of the elderly population

The current research on elderly consumption presents a "contradictory" picture: On the one hand, the elderly group is influenced by the traditional concept of "risk aversion and price sensitivity", and makes cautious decisions; on the other hand, with the improvement of digital literacy, the acceptance of technological products (such as AI household robots) by the elderly group gradually increases, but their demands are highly differentiated-demands such as health protection, safety monitoring, and emotional interaction form a "nested multi-layer" structure due to differences in age, income, and health .[3]

2.2.3 Research gap: insufficient level of detail in demand segmentation

The existing studies often categorize "seniors over 60" as a homogeneous group, but in fact, they ignore the diverse needs of subgroups such as "young healthy seniors (aged 60-79)", "elderly disabled seniors (aged 80 and above)", and "empty-nest, solitary seniors". For instance, "young healthy seniors" tend to focus on "travel, socializing, and technological experiences", while the vast majority of "elderly disabled seniors" prioritize "medical care and safety guarantees". However, the existing literature has not conducted a "hierarchical and scenario-based" detailed breakdown of the demands for AI household robots, resulting in enterprises and manufacturers applying a "one-size-fits-all" marketing approach.

2.3 Technological Development and Application Status as Well as Future Prospects of AI Household Robots

2.3.1 Technological development and scene adaptation

Domestic scholars have basically established a public classification of AI household robots' technologies: Based on the hierarchical division of artificial intelligence technology, it mainly includes the perception module (such as visual, tactile, auditory sensing technologies), the cognitive module (such as learning reasoning, semantic processing, etc.), and the behavior control module (such as autonomous planning, action execution, etc.).[4] Among them, the perception module is the foundation for robots to interact with the environment, the cognitive module determines the "understanding ability" of the robot, and the behavior module provides support for its action ability.

In recent years, with the support of AI technology, the "autonomy" of robots has been significantly improved. For example: Through image recognition technology, robots can identify risks such as elderly people falling or items dropping; through voice interaction technology, robots can already achieve functions such as "chat companionship, medication reminder" and so on. [5] The "imbalance" in technological development still exists: The accuracy of the perception module and the flexibility of the behavior control module are currently still difficult to fully meet the needs of various complex elderly care scenarios.[4]

2.4 Research Gaps and Research Entry Points

2.4.1 Deficiencies of existing research

The current research has three main shortcomings: insufficient refinement in demand stratification, often treating the elderly as a homogeneous group and neglecting the differentiated needs of subgroups such as younger active seniors and older disabled individuals, resulting in a lack of scene-specific product design; marketing logic lags behind technological development, with a disconnect between function research and user insight, failing to deeply explore implicit needs such as emotional companionship; insufficient cross-disciplinary integration, lacking cross-research on the silver economy, elderly consumption behavior, and robot technology, making it difficult to build an effective closed loop of "technology-demand-marketing".

2.4.2 The Innovative direction of this research

This research is based on the background of "upgrading the silver economy". It integrates methods and theories related to elderly consumption behavior (precise stratification), AI household robot technology (supply capacity), and marketing (precise reach), aiming to break through the two core issues of "fine-grained demand stratification" and "scenario-based marketing logic", and provide theoretical support and practical approaches for the market of AI household robots.

2.5 Summary

Existing studies have clearly described the basic logic of "upgrade of the silver economy-differentiation of elderly demands-development of AI robot technology". However, there are still gaps in "fine-grained demand stratification", "scene-based marketing

logic", and "cross-domain integration". This study will focus on these gaps and explore the "precise marketing path" of AI household robots in the elderly care scenarios. This will assist enterprises and manufacturers in transforming from "technology-driven" to "demand-technology-marketing collaborative-driven" development.

3. Research Design and Methods

This study adopts a mixed research design, aiming to explore the matching degree between the demand characteristics of the elderly for AI home robots and marketing strategies. Firstly, large-scale quantitative data is obtained through questionnaires, and then in-depth interviews are conducted to uncover deep-seated motivations and concerns, ensuring the research has both breadth and depth. Ultimately, a replicable research path of "data commonality + interview individuality" is formed.

3.1 First Phase: Questionnaire Survey (Quantitative Research)

3.1.1 Questionnaire design

The questionnaire focuses on "demographic needs segmentation of the elderly population", and is designed with 19 questions (including single-choice, multiple-choice, ranking, and open-ended responses) from four dimensions: demographic characteristics, functional preference, acceptance level, and consumption intention:

(1) Demographic characteristics: Age (60-69/70-79/80+), self-care ability (fully independent/with little help/with a lot of help), living situation (living alone/with spouse/with children/others), providing basic variables for demand segmentation.

(2) Functional preference: Awareness of devices such as vacuum cleaners and smart speakers, acceptance level of functions like "doing housework, chatting, measuring blood pressure" of AI household robots, and prioritization of deeper functions such as "health monitoring".

(3) Acceptance level: Price, complexity of operation, concerns about safety and privacy, etc.

Consumption intention: Price acceptance range, trust channels, willingness to try, and open-ended questions to collect individual demands.

3.1.2 Data collection and analysis

Sampling and Distribution: Stratified sampling

was employed. Questionnaires were distributed through community activity centers, nursing homes, and with the assistance of children, over a period of one week. Nearly 300 valid questionnaires were collected, covering different age groups, health conditions, and living structures of the elderly population.

Statistical Analysis: Descriptive statistics (such as frequency and percentage) were used to present the demands, and cross-analysis (such as age + functional preference, living condition + acceptance level) was conducted to reveal group differences. For example, the proportion of the "60-69 age group" was 58%, the "80 years old and above" group accounted for 26%, and the proportion of elderly living alone was 26%. In terms of functional needs, "safety protection" accounted for 79%; "health monitoring" accounted for 74%, clearly demonstrating the elderly population's emphasis on risk prevention and health management.

3.2 Second Phase: In-depth Interviews (Qualitative Research)

3.2.1 Interview design and implementation

To deepen the understanding of the collected quantitative data, this study selected representative elderly individuals for in-depth interviews. The following three core aspects were explored.

3.2.2 Life scenes and demand pain points

Understand the specific manifestations of the daily activities, physical conditions, safety concerns, and emotional needs of the elderly.

3.2.3 Robot cognition and real-world functionality

Examine the extent to which the elderly use smart devices and their expectations for the functions of AI household robots; precise marketing reach: identify the acceptance level of prices by the elderly, the influencing factors during purchase, and the most trusted sales channels.

3.3 Data Analysis

After the interview, key information was extracted and organized into an analysis framework, such as:

Urban elderly with high education (like interviewee Grandpa Zhang) place more emphasis on privacy and ease of operation, and prefer "companionship-type robots" that can engage in emotional interaction;

Rural elderly left behind (like interviewee

Grandpa Wang) focus on price and practicality, and expect "instrumental" robots that can assist them with farming and household chores; Half-disabled elderly (like interviewee Grandpa Liu) stress that the operation must be simple and can help them with self-care in daily life.

These interview contents collectively reflect the conclusion in the questionnaire that "safety protection is the primary need", revealing the underlying motivations behind the different groups' demands. This provides strong support for the precision of marketing strategies.

3.4 Integration and Effects of Mixed Research

By integrating the data conclusions from quantitative and qualitative research: The proportion of respondents choosing "safety protection function" in the questionnaire was extremely high. This finding was further confirmed by the interview materials. During the interviews, the vast majority of elderly people living alone and the majority of senior citizens over 80 years old emphasized the importance of safety protection. The "price acceptance" in the questionnaire and the "2000-3000 yuan" price range mentioned in the interviews formed complementary verification.

This chapter adopts a mixed research design. It not only outlines the macro structure of the needs of the elderly population through 300 questionnaires, but also explores the motivations and intentions at the micro level through in-depth interviews, laying the foundation for the subsequent "need stratification model" and "precision marketing strategy".

4. Research Findings: The Stratification Model for the Elderly Population and the Characteristics of the Segmented Market

4.1 Analysis of the Demand Characteristics of the Elderly Population

4.1.1 Structural hierarchy of functional requirements

The survey data shows that the elderly group has a very clear hierarchical structure in their functional requirements for AI household robots. Among them, the safety protection field is the most concentrated. The functions of "fall prevention monitoring" and "emergency call" receive the highest level of expectation and attention. The second is the health management aspect of the demand, mainly reflected in the monitoring of vital signs (blood pressure, heart

rate, sleep, etc.) and medication reminders. The demands for daily life assistance and emotional interaction companionship are relatively scattered and show significant differences among different groups.

4.1.2 Factors affecting the acceptance of ai household robots

The research indicates that the main factors influencing the adoption of AI household robots by the elderly can be divided into two aspects: price and the complexity of operation. Most of the respondents involved generally believe that the current products are too expensive and the operation is quite complex, with a high learning cost. These two core factors work together, significantly affecting the market acceptance of the products.

4.1.3 The influencing path of purchase decisions

At present, the purchasing decisions of the elderly group exhibit a unique logic of trust. The degree of trust in interpersonal relationships is the primary factor influencing the decision-making. Among them, recommendations from relatives and children play a crucial role. Moreover, the elderly group currently lacks personal experience, and personal experience is an important link in the transformation of the decision-making process. Contacting physical objects and personally operating them can significantly increase the purchase intention. Traditional advertising and marketing methods have significant limitations in their influence among the elderly group.

4.2 Demographic Segmentation Model for the Elderly Population

4.2.1 Autonomous and active type:

The target group consists mainly of elderly people aged 60 to 75, who are in good health and have a relatively stable financial situation. They place great emphasis on the quality of life and have an open attitude towards technological innovations. They pay attention to the intelligent experience and emotional interaction of the products.

4.2.2 Function-dependent type:

The target group consists mainly of elderly people aged 70 to 85 who require mild assistance for daily life. This level places greater emphasis on the practicality of the products, as they need to meet a specific scenario in daily life.

4.2.3 Professional Care Type:

The target group consists mainly of elderly

people over 80 years old with poor health conditions and requiring professional care. Their demands mainly focus on certain functions at the medical care level. The purchasing decisions are largely influenced by relatives and caregivers.

4.3 Detailed Characterization of Target Groups

4.3.1 Autonomous and active group

This group has a relatively high level of learning willingness and technology acceptance. Their expectations for the functions of AI household robots extend beyond basic functions and place greater emphasis on the intelligence and emotional value of the products. In terms of consumption decision-making, they not only consider the practicality of functional parameters but also the emotional value and recognition brought by the products. They have a moderate sensitivity to prices and possess strong purchasing power.

The interview data shows that this group's household robots can better understand individualized needs. For example, one respondent said: "I hope it not only executes simple commands, but also understands my living habits and provides the services I need at the appropriate time."

4.3.2 Functionally dependent group

This group exhibits characteristics of high scene focus and practical orientation. They have a low willingness to learn about the product and pay more attention to the actual performance of the robot in specific life scenarios. Ease of operation, functional reliability, and long-term maintenance costs are their core concerns, and they have limited acceptance of complex functions.

In terms of consumption decisions, this group is highly price-sensitive and attaches great importance to the durability of products and the reliability of after-sales guarantees. Trust is mainly established through recommendations from friends and family and personal experiences. As the respondents stated: "The functions don't need to be many; what's crucial is reliability, not being prone to breakdown, and the operation should be as simple as possible. The best scenario is that you can learn it immediately."

4.4 Supplementary Information on Urban-Rural Differences

The research process revealed that there are significant differences in the demands of elderly

people in urban and rural areas. Urban elderly people focus on integrating smart home technologies to improve their quality of life, while rural elderly people tend to have unique requirements for specific scenarios (such as agricultural needs, etc.). This difference is particularly taken into account in product design and marketing strategies.

5. Precision Marketing Strategy based on Demand Segmentation

Based on the stratified model of the elderly population, this study will propose specific precise marketing strategies. Focusing on the four core marketing elements of "product-pricing-channel-communication", it will design differentiated marketing combinations for three typical groups of the elderly, aiming to provide an operational path for enterprises to transform from "homogeneous marketing" to "precise marketing".

5.1 Marketing Strategies for the Autonomous and Active Group

This group values the quality of life and technological experience, has a moderate sensitivity to price, and makes decisions that balance rationality and emotion.

5.1.1 Product strategy

Adopt "intelligent experience" and "emotional connection". In product design, in addition to ensuring the basic safety monitoring and health monitoring functions, it is also necessary to enhance the smoothness and fun of human-computer interaction, and pay attention to the aesthetics of the product design. Family social functions can be developed to facilitate interaction with consumers' children and grandchildren.

5.1.2 Pricing strategy

Adopt value-oriented pricing. For instance, offer different selectable versions. Reasonably increase the added value in terms of interactive content, service content, and design materials, and the price can range from 5,000 to 8,000 yuan, meeting their pursuit of quality.

5.1.3 Channel strategy

Combining online and offline elements, with a focus on hands-on experience. Online, it can be through platforms for the elderly community. Offline, one can visit high-end community experience centers, senior universities, senior clubs, etc.

5.1.4 Communication strategy

Convey the core concept of "Technology Empowering a Wonderful Later Life", avoiding merely listing technical parameters during communication, and achieving a balance between technology and humanistic care.

5.2 Marketing Strategies for Functionally Dependent Groups

5.2.1 Product strategy

Highlight the product features of "core functions" and "easy operation", closely targeting the most concerned issues of this group such as "fall prevention monitoring", "emergency call", and "medication reminder". The operation should be as simple as possible, and the functions should be fewer but more refined, rather than numerous and complicated.

5.2.2 Pricing strategy

Adopting a cost-effective pricing strategy. The price range is set at 1000-3000 yuan, which is within a widely acceptable range. The enterprise can control costs by simplifying some unnecessary functions and optimizing its supply chain itself, ensuring the competitiveness of the price in this group.

5.2.3 Channel strategy

Deeply delve into the assistance that the group relationship network can provide for marketing. Have the elderly listen to and trust the people who tell about the products. Strengthen cooperation with community committees, community health centers, and senior activity centers, and carry out regular experience services.

Communication strategy: Emphasize "safety, convenience, and reliability". The communication should be scenario-based, with on-site demonstrations of functions, and collection of evaluations from users who have purchased the products.

5.3 Marketing Strategies for Professional Caregiver Groups

This group has highly specialized needs, and decisions are usually made by the children or the daily caregivers. They are extremely demanding in terms of product reliability.

5.3.1 Product strategy

Emphasize "professional-level monitoring" and "medical-level reliability". The product's functions should be deeply integrated and aligned with professional care scenarios, such as 24-hour vital sign monitoring, automatic alarm for abnormalities, and collection of daily

indicators. It can be jointly developed with medical institutions to ensure the accuracy and professionalism of the data and functions.

5.3.2 Pricing strategy

These products, due to their integration of professional medical monitoring functions, can have their hardware prices appropriately raised to over 3000 yuan. At the same time, it is possible to explore the adoption of a remote subscription model to continuously provide remote medical monitoring and interpretation services.

5.3.3 Channel strategy

Mainly target professional institutions and actual decision-makers of families. Establish deep cooperation with institutions such as nursing homes, rehabilitation centers, and retirement homes, for instance, through centralized procurement or long-term leasing.

5.3.4 Communication strategy

The communication of the presentation materials should demonstrate professional qualifications, clinical verification, and endorsements from renowned experts from top-level hospitals. For relatives such as children, the focus should be on how the product enables "remote filial piety", emphasizing the deep value of the product.

5.4 Foundation of Marketing Implementation and Adaptation to Urban and Rural Areas

Taking into account the differences between urban and rural elderly groups, marketing should focus on two aspects: Firstly, establish "experiential and trialable" physical touchpoints to make the products tangible and real; Secondly, provide after-sales support including lifetime warranty, on-site teaching and maintenance, gradually building trust.

The strategy needs to be adapted to local conditions. In the rural market, the environment optimization functions (such as dust prevention and battery life) should be combined with pricing, and local methods such as rural radio broadcasts and recommendations from village officials should be utilized to reach users.

Overall, the core of hierarchical marketing lies in breaking the homogenized perception of the elderly customer group and matching differentiated resources based on their needs and characteristics, thereby enhancing marketing efficiency.

6. Summary and Outlook

This study focuses on the market demand and

marketing strategies of AI household robots in the context of the upgrading of the silver economy. Through a mixed research method combining questionnaire surveys and in-depth interviews, a systematic analysis was conducted on the demand characteristics, adoption barriers, and consumption decisions of the elderly population.

The study found that the demand for AI household robots among the elderly population presents a clear hierarchical structure. The safety protection function is a universal and rigid demand, while the health monitoring function ranks second. There are significant individual differences in emotional companionship and life assistance, fully demonstrating the diversity of the elderly market. During the adoption process, price sensitivity and operational difficulty are two core pain points. The decision-making layer is different from previous groups, and the elderly population highly rely on recommendations from relatives and personal experience.

Based on the analysis of demand characteristics, this study constructed a hierarchical model for three subgroups: autonomous active type, function-dependent type, and professional care type. These three groups have significant differences in functional preferences, value demands, and decision-making logic. The autonomous active type pursues quality experience and emotional value; the function-dependent type focuses on practical safety and has high price sensitivity; the professional care type requires medical-level support and the decision-making process involves multiple parties.

For different subgroups, the study proposed differentiated marketing strategy suggestions. For the autonomous active type, emphasis should be placed on intelligent experience and emotional value transmission, and pricing should be carried out based on value orientation; for the function-dependent type, the focus should be on core safety functions, and marketing should be pushed down; for the professional care type, cooperation with professional channels should be strengthened, and authoritative endorsements

should be established. For urban-rural differences, full consideration should be given.

This study enriches the research framework of the silver economy and elderly consumption behavior at the theoretical level, and provides operational solutions for enterprises to explore the silver market in practice. However, this study also has certain limitations, including the representativeness of the sampling sample. Further research in the future needs to be improved.

As the degree of population aging deepens and intelligent technology continues to advance, the market potential of the silver economy market will be further released. Future research can focus on the impact of technology integration on the demand structure, the research on urban-rural differences, and the regulatory role of policy environment on market development. Only by deeply understanding the real needs of the elderly population can truly age-friendly products and services be developed, providing sustainable solutions for technology-enabled healthy aging.

References

- [1] Kang, Q. (2025). High-quality upgrade of silver consumption. *Economic Daily*, 001. <https://doi.org/10.28425/n.cnki.njjrb.2025.010841>
- [2] Xiang, J. (2025). The robot industry is on the eve of an explosion, and household scenarios are poised for growth. *Electrical Appliances*, (12), 34–35.
- [3] Li, K., Song, C., & Ogata, Y. (2019). Investigation and analysis of elderly user behavior for home robot design. *Industrial Design*, (2), 135–136.
- [4] Li, M. (2017). Research on artificial intelligence in home robots. *Electronics World*, (23), 62–64. <https://doi.org/10.19353/j.cnki.dzsj.2017.23.026>
- [5] Liang, R., Zhang, T., & Wang, X. (2016). A review of home service robots. *Smart Health*, 2(2), 1–9.