# Research on China's Policies on Intelligent Services for the Aged Based on the Perspective of Policy Tools

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*Abstract*—At present, the aging of population is accelerating in China, and the problems of the aging of population become increasingly serious. The rise of the intelligent services for the aged has provided a new way for the development of China's undertakings for the aged. Based on the perspective of policy tools, this paper firstly sorts out and analyzes China's policies related to the intelligent services for the aged issued by the government in the past ten years, and by the means of policy text analysis measures and analyses the policy tools adopted by China's Central Government for the promulgation of the policies on the intelligent service for the aged. From the two dimensions of policy tools and service system for the aged, the study analyzes the problems existing in China's policies on the intelligent services for the aged and puts forward scientific, reasonable and practical policy suggestions for the future formulation and application of relevant policies, with a view to providing a reference for the development of the policies on the intelligent services for the aged.

*Keywords—policy tools; services for the aged; policy research*

## I. INTRODUCTION

According to data of China's National Bureau of Statistics, by the end of 2018, the population of 60 years old and above in the inland areas of China was 249 million, accounting for 17.9% of the total population. Accelerating the development of the undertakings for the aged has become an important part of China's active responses for the aging of population. Under the existing condition of limited human and material resources, the intelligent services for the aged have played an important role in improving the quality of the elderly's life and integrating endowment resources. Intelligent services for the aged refer to the use of information technology to develop the Internet of Things system and information platforms for the elderly, communities and the institutions for the aged through technologies such as the Internet and the Internet of Things, and on this basis provide fast, efficient and low-cost services for the aged [1]. China's government has promulgated a series of related policies to promote the development of intelligent services for the aged. However, the existing policy system has problems including inadequate laws and regulations and unreasonable policy structure. It is necessary to conduct scientific policy research to promote the improvement of the policies on intelligent services for the aged.

As an important and effective way for the government to govern the economy and society, policy tools are the bridge and link between policy objectives and implementation results. The scientific and rational formulation of the policy tools of intelligent services for the aged is of great significance to the development of China's undertakings for the aged. Policy tools refer to various measures, strategies, technologies, actions, human resources, finance, equipment, and resources used to achieve certain policy objectives [2]. The policy itself is a policy tool, and therefore the study of policy tools is in a sense a study of policy content. In accordance with the research steps of text analysis, this paper at first selects the relevant policy texts of intelligent services for the aged issued by China's central government as the content of analysis sample. Next, according to the theory of policy tools, the analysis framework and the basic analysis dimensions are designed, and then this paper systematically analyzes every element of the basic analysis dimensions. Moreover, the relevant policies corresponding to the framework are classified into the two-dimensional analysis framework for frequency statistics. Finally, this study analyses whether the existing policy system is reasonable according to the statistical results, and on the basis of the analysis to present effective policy proposals for the future improvement of the policies on the intelligent services for the aged.

## II. THE SELECTION OF POLICY TEXTS

The texts of the policies on the intelligent service for the aged in this paper are all selected from the public policy documents published by China's government on website.

Through the search for keywords such as "intelligent old care" and "services for the aged", a total of 37 texts complying with the policies on the intelligent services for the aged are selected, and the policies were introduced from 2008 to 2018. "Fig. 1" shows the statistics of the quantity of the texts.
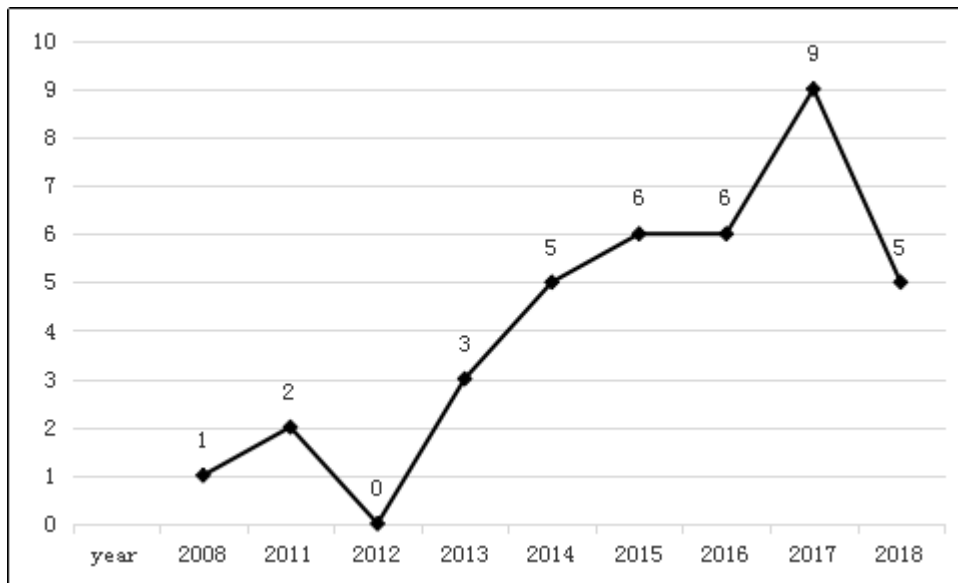


Fig. 1. Text quantity of 2008-2018 China's polices on the intelligent services for the aged.

In order to facilitate the subsequent frequency statistics, this paper systematically sorts out the 37 policy text samples in chronological order. Due to the space limitation, "Table I" shows part of the systematizing situation.

TABLE I.     THE INDEX TABLE OF 2008-2018 CHINA'S POLICIES RELATED TO THE INTELLIGENT SERVICES FOR THE AGED

| S/N | Year | Issued Number | Policy Title |
|---|---|---|---|
| 1 | 2008 | National Committee on Aging,[2008] Reference No. 4 | Opinions on the Comprehensive Performing of the Work of Home-based Services for the Elderly |
| 2 | 2011 | State Council, [2011], No. 28 | Notice on Printing and Distributing the 12th Five-Year Plan for the Development of China's undertakings for the Aged |
| 3 | 2011 | General Office of the State Council, [2011], No. 60 | Notice on Printing and Distributing the Construction Plan for the Social Service System for the Aged (2011-2015) |
| …… | | | |
| 35 | 2018 | General Office of the State Council, [2018], No. 83 | Notice on Printing and Distributing the Key Tasks for Deepening the Reform of Medical and Health System in the Second Half of 2018 |
| 36 | 2018 | Industry and Information Technology Department(joint), [2018], No. 63 | Notice on the Demonstration of the Second Batch of the Application Pilots of the Intelligent and Healthy Services for the Aged |
| 37 | 2018 | MIIT, [2018], No. 276 | Instructions on Accelerating the Development of Virtual Reality Industry |

## III.   THE CONSTRUCTION OF THE POLICY ANALYSIS FRAMEWORK

Policy is constructed by a series of basic unit tools that are reasonably organized, coordinated, and matched [3]. According to Rothwell and Zegveld, this paper divides basic policy tools into environmental, supply-type, and demand-based policy tools, as shown in "Fig. 2". This study combines this classification idea with China's service system for the aged by the means of constructing a two-dimensional analysis framework with the policy tool dimension as the X-axis and the service system for the aged as the Y-axis to analyze the problems of the policies on intelligent services for the aged in the two dimensions and provide suggestions for the improvement of the policies.
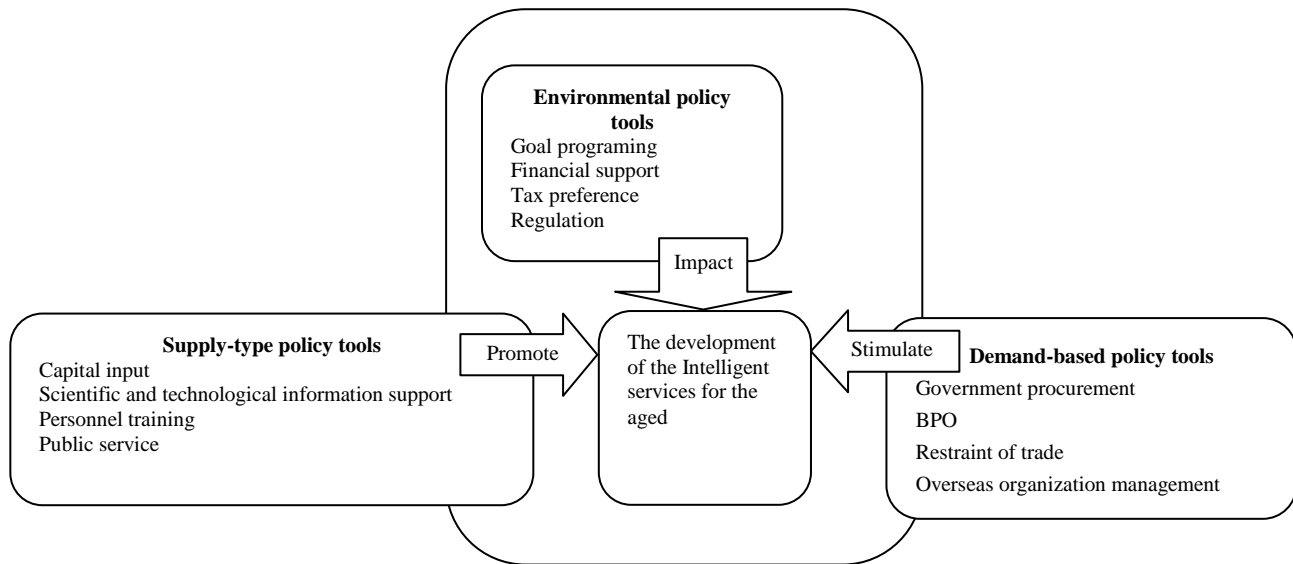
Fig. 2. The schematic diagram of the role of policy tools on the intelligent services for the aged.

## A. X-dimension: Policy Tools

Environmental policy tools are mainly reflected in the influence of the policies on the development of the intelligent services for the aged. The government provides a favorable environment for the development through a series of policies such as the formulation of goal programing, the adjustment of taxation system, and the provision of financial concessions to promote the adjustment and change of the industrial structure and indirectly advance the comprehensive development of the intelligent services for the aged, including overall goal planning, financial services for the aged, tax concessions on the institutions for the elderly, regulations and strategic measures.

Supply-type policy tools are mainly manifested in the driving force of the policies on the development of the intelligent services for the aged. The government takes actions including cultivating professional talents, providing financial supports, and promoting information constructions to effectively cope with the imbalance between the supply and demand for the intelligent services for the aged. According to the methods of support, the supply-type policy tools are supposed to be divided into pension fund input, personnel training for the services for the aged, infrastructure construction, scientific and technological information support, public services and other aspects.

Demand-based policy tools are mainly used to promote the development of the intelligent services for the aged. The government reduces the market barriers to the development of the intelligent services for the aged and stimulates the steady and rapid development of related industries by purchasing social services and outsourcing services for the aged. Specific policy tools include the introduction of talents, the procurement and outsourcing of the services for the aged, market shaping, and overseas exchanges.

## B. Y-dimension: Service System for the Aged

The 2016 "13th Five-year Plan for National Economic and Social Development" promulgated by the Central Government of China points out that it is necessary to build a multi-level service system for the aged, which is home-based, community-depended, and institution-supplemented. The intelligent service for the aged is able to be organically combined with the above three models of services, and for each model with different policy requirements, setting the service system for the aged as a point cut is better to reflect the nature truth and trends of the policies on the intelligent services for the aged. Thus, this paper identifies home-based, community-based, and institution-based services for the aged as the dimension of service system for the aged, namely Y-dimension.

Based on this, the two-dimensional analysis framework of intelligent services for the aged and policy tools is established. "Fig. 3" shows the framework of the two dimensions: policy tools and the service system for the aged.
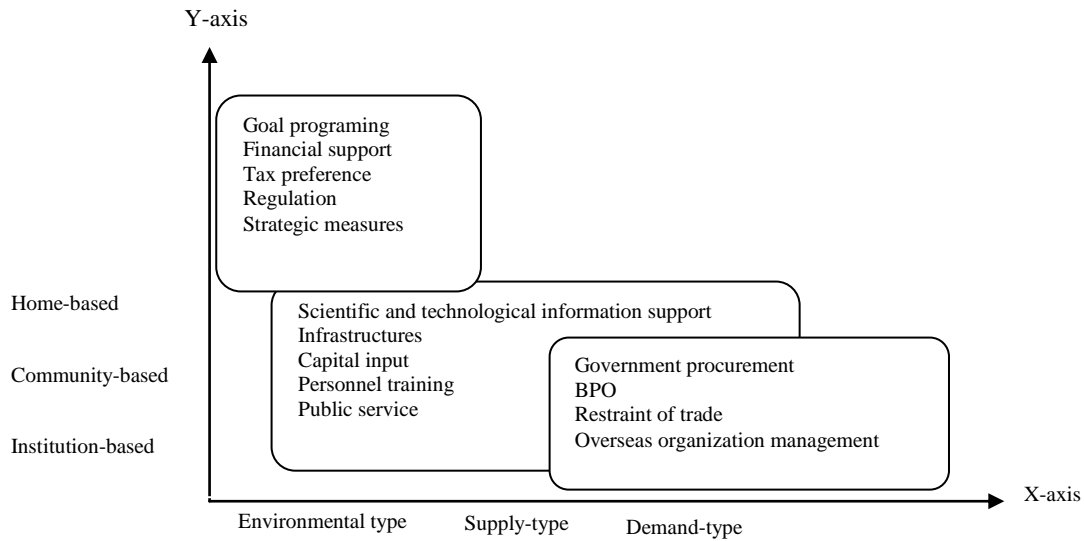
Fig. 3. Two-dimensional analysis framework of the policies on the intelligent services for the aged.

## IV. FREQUENCY STATISTICS AND DIMENSIONAL ANALYSIS

The articles covering specific policy tools in the 37 policy texts related to the intelligent services for the aged are coded item by item, and a total of 133 clauses involving policy instruments are compiled, on which frequency statistics are performed under the X-Y two-dimensional analysis framework, as shown in "Table II". According to the statistics, the 37 policies issued by China's government take into account the application of the 3 major policy tools, covering the 3 service systems for the aged, and provide various incentives and regulations for the development of the intelligent services for the aged.

TABLE II. THE STATISTICS OF THE FREQUENCY DISTRIBUTION OF POLICY TOOLS

| Tools type | Tools | Home-based service | Community-based service | Institution-based service | Percentage (%) | Total |
|---|---|---|---|---|---|---|
| Environmental policy tools | Goal programing | 8 | 6 | 8 | 16.5 | 66(49.6%) |
| | Financial support | 4 | 3 | 6 | 9.8 | |
| | Tax preference | 0 | 0 | 7 | 5.3 | |
| | Regulations | 6 | 4 | 9 | 14.3 | |
| | Strategical measures | 3 | 0 | 2 | 3.8 | |
| Supply-type policy tools | Scientific and technological information support | 3 | 2 | 3 | 6 | 52(39.1%) |
| | Infrastructures | 5 | 10 | 5 | 15 | |
| | Capital input | 2 | 5 | 1 | 6 | |
| | Personnel training | 5 | 3 | 2 | 7.5 | |
| | Public service | 2 | 1 | 3 | 4.5 | |
| Demand-based policy tools | Government procurement | 1 | 2 | 3 | 4.5 | 15(11.3%) |
| | BPO | 1 | 1 | 0 | 1.5 | |
| | The restraint of trade | 0 | 0 | 0 | 0 | |
| | Overseas institutions | 0 | 3 | 4 | 5.3 | |
| Quantity | | 40 | 40 | 53 | | 133 |
| Percentage(%) | | 30.1 | 30.1 | 39.8 | 100 | |

### A. The Dimensional Analysis of Policy Tools

As shown in "Table II", the overall distribution of China's policies on the intelligent service for the aged is unequally: the most is environmental policy tools accounting for 49.6% of the total policy tools, the second is supply-type policy tools accounting for 39.1%, and the least is demand-based policy tools accounting for 11.3%. This indicates that the government prefers to adopt indirect influence strategies to improve the development environment of the intelligent services for the aged. However, the serious lack of demand-based policies leads to insufficient driving force for the intelligent services for the aged. It is difficult to drive the quality improvement and capacity expansion of the consumption and the adjustment, and the upgrading of the industrial structure of the intelligent services for the aged,

and the participation of private capital in the development of the services for the aged are restricted.

### B. *The Dimensional Analysis of the Services for the Aged*

The statistical results show that the 37 policy texts provide a comprehensive support for the development of the intelligent services for the aged, including home-based service (40%), community-based service (40%) and institution-based service (53%). The proportion of institution-based service's clauses is the highest, highlighting its dominant status in the development of the intelligent services for the aged, with the primary use of environmental policy tools, and providing a good space for the development and combination of the intelligent services for the aged and the institution-based services for the aged; the home-based service for the aged is both an effective way to guarantee and improve the quality of life of the elderly and a reflection of China's long-standing and rich filial piety culture; the community-based service for the aged has two major functions: community day care and family support for the aged, which can better meet the elderly's growing demands for the services for the aged [4]. Home-based service and community-based service for the aged account for similar proportions in the development of the intelligent services for aged, indicating that the government attaches equal importance to the coordinated development of these two models and intelligent services for the aged, and tends to promote the lasting development of the intelligent services for the aged in home-based and community-based services for the aged by financial support and infrastructure constructions.

## V. POLICY SUGGESTIONS

### A. *Adjusting the Frequency of the Use of Environmental Policy Tools to Achieve the Operability of the Policies*

In the next step, the government needs to moderately reduce the frequency of the use of environmental policy tools, implement and supervise the application of announced policy tools such as goal programming, financial support, and tax preference, establish according implementing regulations and guidance, and improve corresponding laws and regulations, in order to improve the applicability and operability of the policies.

### B. *Emphasizing the Use of Supply-type and Demand-based Policy Tools*

It is needed to emphasize the promoting and stimulating effects of supply-type and demand-based policy tools on the development of the intelligent services for the aged, and increase the frequency of the use of supply-type and demand-based policy tools in the policy formulation process. In the application of supply-type policy tools, the emphasis on the policies such as public services, scientific and technological information support and capital input is supposed to be enhanced, and the government's scientific decision-making is supposed to be based on information, with the fact that the information and high-tech combination is the developing trend of the intelligent services for the aged.

Meanwhile, increase investment and establish a database for the undertakings for the aged, information management system and related industrial standards to provide funding, information and technology foundation for the development of the intelligent services for the aged. In the application of demand-based policy tools, the application of policy tools such as service outsourcing and the restraint of trade is supposed to be strengthened so that the government is able to reduce the pressures on finance, technology, personnel, etc., and provide a broad market space for the development of the intelligent services for the aged.

### C. *Establishing Multi-sectorial Cooperating Mechanism*

Multi-sectorial participation is a major feature of the management of the services for the aged. However, due to the lack of core departments and the existence of "departmentalism", the lack of unified coordination of policy formulation makes it difficult to allocate resources efficiently. Many developed countries have set up exclusive management institutions for the development of the undertakings for the aged, for instance the Agency on Aging established by U.S. Health and Human Services leading the development of the undertakings for the aged, and the apartment on pension of German's Federal Ministry of Social Insurance responsible for the programing and operation of the undertakings for the aged. Drawing on the experience of other countries, China's National Working Committee on Aging should give full play to the role of the top-level design and strategic programing of policies, and to integrate various resources to achieve the coordination and integration of the intelligent services for the aged and the service systems for the aged, subsequently with the use of overall governance concept to establish a budget-based and information-based multi-department synergy mechanism to jointly promote the sustainable development of China's undertakings for the aged.

## VI. CONCLUSION

This paper adopts the X-Y two-dimensional analysis framework of policy tools and service system for the aged to study China's policies on the intelligent services for the aged, and makes some basic conclusions, which has certain reference significance for promoting the development of the intelligent services for the aged. However, this research is limited in that with the limited collection of policy texts the sample size is small and the quantitative analysis of the policy texts of the intelligent services for the aged is not deep enough. How to use professional quantitative tools to analyze the theme changes, the main cooperation network, and the reference and circulation of the policies on the industry of the services for the aged will be the next research.

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