# Research on Empowering High-Quality Development of the Silver Economy with New Quality Productive Forces in the Context of an Aging Population

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**Abstract:** Facing the increasing challenge of an ageing population in China, effectively promoting the high-quality development of the silver economy has become a critical issue requiring urgent attention. This paper analyzes the theoretical logic, mechanisms, and practical pathways through which new quality productive forces empower the high-quality development of the silver economy. As an advanced manifestation of productive forces, new quality productive forces reshape the value creation mechanisms of the silver economy through the synergistic integration of technological innovation, knowledge capital, and digital technology. This transformation drives industrial upgrading, optimizes the supply-demand structure, and restructures the industrial ecosystem, significantly enhancing both service efficiency and quality. As an advanced form of productive forces, new quality productive forces, through the synergistic integration of technological innovation, knowledge capital, and digital technology, reshape the value creation mechanisms of the silver economy, driving industrial upgrading, optimizing the supply-demand structure, and restructuring the industrial ecosystem. This significantly enhances service efficiency and quality. Relevant stakeholders should strengthen technological innovation, regional coordination, and institutional guarantees to unleash the effects of new quality productive forces, promote the high-quality development of the silver economy, and jointly support a modernized economic system.

***Keywords*:** new quality productive forces; population ageing; silver economy; smart eldercare

## 1. Introduction

Currently, China's demographic structure is undergoing accelerated transformation, with a prominent ageing trend. Future development urgently requires support from high-quality population development. According to data from the National Bureau of Statistics, the total population at the end of 2024 was 1.40828 billion, with 310 million people aged 60 and above accounting for 22%. It is projected that by 2035 and 2050, the population aged 60 and above will reach 412 million and 480 million, respectively, accounting for 30% and 38% of the total population[1]. The Third Plenary Session of the 20th Central Committee of the Communist Party of China proposed "developing new quality productive forces according to local conditions" and "developing the silver economy", enriching the strategic approaches to address population ageing actively. In the context of an increasingly ageing demographic, it is imperative to formulate dynamic economic frameworks that can adapt to this shift. There is a pressing necessity to advance the high-quality development of the silver economy through the integration of innovative, productive forces, ensuring that we harness the potential of this demographic trend effectively. The traditional development model struggles to adapt to the changes in population structure and diversified demands, with issues such as a single supply structure and insufficient technological dividends. In contrast, new quality productive forces are innovation-driven, characterized by high technology, high efficiency, and high quality. Based on the new economic demands and population situation, this paper elucidates the value implications of new quality productive forces empowering the silver economy from three dimensions: theoretical logic, mechanisms, and development pathways, aiming to promote the high-quality and efficient empowerment of the silver economy by new quality productive forces and achieve its high-quality development.

## 2. Theoretical Logic of New Quality Productive Forces Empowering High-Quality Development of the Silver Economy

The process by which new quality productive forces empower the high-quality development of the silver economy is essentially a dialectical unity of the leap in the productive force system and the evolution of the economic form of an ageing society. From the basic principles of Marxist political economy, the qualitative transformation of productive forces has always been the fundamental driving force for the transformation of the social and economic structure. As an

advanced form of productive forces distinct from traditional ones, new quality productive forces focus on improving total factor productivity, driving changes in industrial quality, efficiency, and dynamics through technological innovation, and reshaping the economic growth paradigm[2]. Through the synergistic integration of knowledge capital, digital technology, and institutional innovation, they are at the core of reshaping the value creation mechanisms of the silver economy, driving the silver economy to break through traditional models and accelerate its transformation towards modernization, intelligence, and green development[3]. The accumulation and innovation of knowledge capital are transformed into intellectual resources and sources of innovation for the development of the silver economy, significantly enhancing the added value of services and products. The deep integration of digital technology, particularly the application of big data and artificial intelligence, optimizes resource allocation, achieves precise matching of supply and demand, and greatly improves service efficiency. Institutional innovation, on the other hand, lies in breaking through institutional and mechanism barriers, building a policy and regulatory environment adapted to new business forms, effectively stimulating market vitality, and powerfully promoting deep integration between industries.

# 3. Mechanisms of New Quality Productive Forces Empowering High-Quality Development of the Silver Economy

Within the framework of economics, technological innovation, factors of production, organizational forms of production, and industrial systems are core elements driving economic development[4]. Based on this, the empowerment mechanism of new quality productive forces on the silver economy lies in first driving industrial structure upgrading through technological innovation, then leveraging data elements to optimize the efficiency of supply-demand matching profoundly, and finally achieving a systematic reshaping of the entire industrial ecosystem through the smart eldercare model.

## 3.1 Technological Innovation Drives Industrial Upgrading

New quality productive forces reshape the production function of the silver economy through cutting-edge technological innovation, promoting the evolution of the industrial system towards intelligence and precision. Disruptive technologies such as artificial intelligence, the Internet of Things, and biomedicine deeply penetrate the fields of eldercare, medical rehabilitation, and health management, significantly improving service efficiency and quality. Intelligent diagnostic equipment and remote monitoring systems optimize the allocation of medical resources and reduce information asymmetry and transaction costs in traditional eldercare services. The accumulation of biological data from technologies like gene sequencing and wearable devices drives the transformation of medical insurance pricing mechanisms from empirical rates to precise actuarial models, optimizing risk-sharing efficiency. Age-appropriate robots replace inefficient manual labour, alleviating the Baumol's cost disease in the eldercare industry. In the context of the transformation of the techno-economic paradigm, technological innovation not only enhances total factor productivity but also opens up new markets through demand-driven effects, forming a dynamic equilibrium path where supply creates demand. This technology-driven industrial upgrading enables the silver economy to break away from the extensive growth model traditionally reliant on demographic dividends and move towards an innovation-driven, high-quality development path.

## 3.2 Data Elements Optimize Supply-Demand Structure

A core characteristic of new quality productive forces is the deep application of data elements, which reconfigures the data value chain through IoT and blockchain technologies[5]. With the synergistic effect of market-based allocation of factors and institutional innovation, the value of data elements is fully unleashed. Data elements, with their characteristics of attachment, multiplication, and intensive substitution, optimize the supply-demand structure of the elderly consumer market. Businesses utilize big data analysis to predict elderly demands and formulate precise product strategies, promoting the development of a "preparedness economy" for the elderly. Cloud computing platforms integrate resources such as medical care, eldercare, and entertainment, achieving precise service matching and reducing resource mismatch. Blockchain technology reduces the principal-agent costs of financial services and optimizes the intertemporal allocation efficiency of pension funds. Data elements bridge the "digital divide," enhancing the digital literacy of the elderly population and increasing their consumption capacity and market participation. For example, voice interaction interfaces simplify operation complexity and lower the threshold for technology use, activating potential consumption demand. This two-way supply-demand promotion mechanism not only unleashes the consumption potential of the elderly but also drives the silver industry to transform from low-end supply to high-end services, forming a virtuous cycle of "demand pulling supply and supply creating demand," injecting endogenous impetus into high-quality economic development.

### 3.3 Smart Eldercare Reshapes the Industrial Ecosystem

The smart eldercare model, enabled by new quality productive forces, promotes the digital transformation of eldercare services and builds a new smart eldercare ecosystem based on big data, fostering industrial upgrading[6]. Technologies like the Internet of Things and cloud computing integrate resources from multiple entities, building a comprehensive eldercare service platform that enables collaborative governance among government, enterprises, communities, and families. Smart health monitoring devices collect physiological data in real time and combine it with AI algorithms to provide personalized health management solutions, improving service response speed. Digital supply chains optimize resource allocation and reduce the operating costs of eldercare institutions. In terms of service scenario innovation, remote medical care breaks geographical limitations, extending eldercare services from institutionalization to community and home-based care. Smart eldercare promotes cross-industry integration, such as the integration of real estate and technology to create age-appropriate smart communities. This reshaping of the industrial ecosystem not only improves efficiency but also reduces marginal costs through economies of scale, enhancing the sustainability of the silver economy. As elderly individuals with consumption capacity and willingness gradually accept eldercare services, their demand for smart eldercare significantly increases, further expanding the market size of smart eldercare. The business models and profitability models of smart eldercare are also gradually maturing[7], thereby promoting the high-quality development of the silver economy.

## 4. Practical Strategies for New Quality Productive Forces Empowering High-Quality Development of the Silver Economy

### 4.1 Strengthening the Core Driving Force of Technological Innovation and Building a Smart Eldercare Industrial Ecosystem

The core strategy for new quality productive forces empowering the silver economy lies in building a smart eldercare industrial ecosystem led by technological innovation. Key focus areas include promoting the deep integration and application of cutting-edge technologies such as artificial intelligence, the Internet of Things, and big data in scenarios like health monitoring, remote diagnosis, and daily living assistance, forming a closed-loop innovation system of "technology research and development - product iteration - service upgrading." By establishing collaborative innovation platforms among industry, academia, and research institutions, the efficient allocation of innovation elements and the rapid transformation of technological achievements can be promoted. Simultaneously, by leveraging the market-based circulation mechanism of data elements, deeply exploring the characteristics of elderly consumption demand, and promoting the transformation of eldercare service supply from standardization to personalization and precision, a positive development pattern of mutual promotion between technological innovation and industrial upgrading can be built.

### 4.2 Promoting Regional Coordination According to Local Conditions and Addressing the Challenge of Uneven Development

Addressing the issue of uneven regional development requires establishing a differentiated promotion mechanism based on new quality productive forces. Eastern regions should focus on the research and development of high-end smart eldercare products and digital medical services, building industrial clusters with global competitiveness. Central and western regions should prioritize the promotion of inclusive, age-appropriate renovations and the construction of basic eldercare service networks, improving service accessibility. By building regional collaborative innovation centres, the cross-regional flow and optimal allocation of elements such as technology, talent, and capital can be promoted. Simultaneously, by strengthening the construction of digital skills training systems and improving the professional literacy of practitioners and the digital application capabilities of the elderly, a new pattern of collaborative development with distinct regional characteristics and complementary advantages can be formed.

### 4.3 Strengthening the Core Driving Force of Institutional Innovation and Building a New System of Factor Guarantees

The empowerment of the silver economy by new quality productive forces requires a sound system of institutional innovation guarantees. Relevant stakeholders need to focus on building a cross-departmental data-sharing mechanism, breaking down data silos in areas such as medical care, elder care, and social security, and establishing unified data governance standards. Optimizing talent training and incentive mechanisms, attracting high-calibre talent through reforms in professional qualification certification and innovation in salary systems. Improving policy support systems for the transformation of scientific and technological achievements, strengthening intellectual property protection and tax incentives, and reducing

innovation costs. Establishing a dynamic evaluation mechanism to adjust factor allocation policies in a timely, providing continuous institutional supply and factor guarantees for the innovative development of the silver economy.

### 4.4 Improving Policy Coordination and Regulatory Mechanisms and Optimizing the Innovation Development Environment

Building a multi-dimensional collaborative regulatory and governance framework is an important guarantee for new quality productive forces empowering the silver economy. Establishing a cross-departmental policy coordination mechanism, coordinating fiscal, tax, financial, and other policy tools to be tilted towards key innovation areas. Accelerating the formulation of industry standards for smart eldercare equipment, data security, and service quality, and improving the market regulatory system. Innovating regulatory methods, utilizing technologies such as blockchain and artificial intelligence to enhance regulatory precision, and achieving a balance between innovation incentives and risk prevention. Establishing a dynamic evaluation mechanism for policy implementation, forming a closed-loop governance system of "policy formulation - implementation supervision - effect evaluation - optimization and adjustment," creating a favourable institutional environment for the high-quality development of the silver economy.

## 5. Conclusion

Facing the challenges brought by changes in population structure, new quality productive forces provide a key impetus for the transformation and upgrading of the silver economy. All stakeholders need to focus on strengthening the core driving role of new quality productive forces, building an innovation ecosystem, implementing differentiated policies according to local conditions, consolidating the smart eldercare service system, and improving policy coordination and regulatory mechanisms. This initiative will effectively harness the transformative potential of advanced productive forces within the silver economy, facilitating its evolution towards enhanced quality and long-term sustainability in development. It will provide solid support for building a modernized economic system adapted to a deeply ageing society.

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