

Research on the Reconstruction of the Elderly's Role from Passive Acceptance to Active Innovation in the Digital Silver Economy of China's Megalopolises: A Case Study of Chengdu

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Abstract: This study focuses on the transformation process and reconstruction mechanism of the role of the elderly group in Chengdu under the background of the digital silver economy in China's megalopolises. With the acceleration of population aging and the rapid development of digital technology, the silver economy has become increasingly prominent in the economy of urban agglomerations. Taking Chengdu as an example, this paper adopts a mixed research method, including questionnaire survey, in-depth interview, and case analysis, to explore the transformation process of the elderly group from passively accepting digital technology to actively participating in innovation. The study finds that the role reconstruction of the elderly group in Chengdu in the digital silver economy is mainly reflected in the following aspects: (1) The improvement of digital literacy promotes the transformation of the elderly from technology users to innovation participants; (2) The improvement of social support networks promotes the integration of the elderly into the digital economic ecology; (3) Policy guidance and market driving jointly promote the release of the innovative ability of the elderly group. Based on the research results, this paper puts forward policy suggestions to promote the role reconstruction of the elderly group, including improving the digital technology education system, building an elderly-friendly digital environment, and encouraging the elderly to innovate and start businesses. This research provides a new perspective and empirical basis for understanding and promoting the development of the digital silver economy in megalopolises, and is of great significance for promoting the active participation of the elderly group in the digital economy and realizing the sustainable development of urban agglomerations.

Keywords: Megalopolis; Digital silver economy; Reconstruction of the elderly's role; Innovation participation

Online publication: October 21, 2025

1. Introduction

China's population aging is accelerating, and digital technology is also developing rapidly. Against this backdrop, the digital silver economy has emerged as a new economic form. Chengdu, as a megacity in western China, is

representative. The proportion of the elderly population aged 60 and above here reaches 20.6%, while the added value of the digital economy accounts for as high as 43.2% of GDP. This indicates that Chengdu has both a high degree of aging and a high level of digitalization ^[1]. However, the elderly group has long been in a marginalized position in the digital economy. Most of them passively accept technology and face problems such as the digital divide and low participation.

This paper takes Chengdu as a case study to explore the role transformation process of the elderly group in the digital silver economy. The focus of the research is on how the elderly transform from passive technology recipients to active innovation participants. By analyzing Chengdu's practices, including policy support, digital skills training, the development of elderly-friendly products, and the construction of new participation models, it reveals the internal mechanisms and laws of the development of the digital silver economy in megalopolises ^[2]. These explorations provide a theoretical basis and practical reference for addressing the challenges of aging and building an inclusive digital society.

2. Current situation and challenges of Chengdu's digital silver economy

2.1. Overview of the development of Chengdu's digital silver economy

Chengdu's digital silver economy has developed rapidly in recent years, with smart elderly care, health management, cultural entertainment, and financial services emerging as the main sectors. From 2019 to 2024, the market size surged from 18.2 billion yuan to 61.2 billion yuan, with a compound annual growth rate of 27.6%. As of September 2024, the total number of enterprises related to Chengdu's digital silver economy exceeded 3,450, an increase of 23.2% compared to 2023. Among them, the proportion of high-tech enterprises rose to 42.7% (from 38.4% in 2023), covering 12 segmented industrial chains such as intelligent aging-adapted hardware research and development and health care big data platforms, forming a full-chain industrial cluster integrating "technology research and development - scenario application - ecological services" ^[2].

When participating in the digital economy, the elderly in Chengdu face the problem of the digital divide, which is mainly reflected in three aspects: access, usage, and innovation. First, in terms of access ^[3], the proportion of elderly people in Chengdu with smart devices increased from 62.4% in 2019 to 78.6% in 2024, but the access rate among the elderly in rural areas is still less than 65.3%. Moreover, there is a significant gap between elderly people with different income levels. Second, in terms of usage, there is a large intergenerational gap between the elderly in Chengdu and middle-aged and young people in mastering digital skills. Data shows that their success rate in operating complex functions is only 42% of that of middle-aged and young people. Finally, in terms of innovation, the elderly rarely participate in the optimization of digital products and service innovation. **Table 1** shows that only 3.2% of digital product research and development processes consider feedback from elderly users ^[4].

Table 1. Digital divide index of different age groups of the elderly in Chengdu, 2023

Age group	Access index	Usage index	Innovation index	Comprehensive index
60–69 years old	0.72	0.56	0.24	0.51
70–79 years old	0.58	0.41	0.15	0.38
Over 80 years old	0.36	0.25	0.07	0.23

2.2. The value of the digital silver economy in promoting active innovation among the elderly

In promoting the development of the digital silver economy, Chengdu has established a multi-level policy support system to provide institutional guarantees for the role transformation of the elderly. Starting from 2020, Chengdu

has successively issued several policy documents, including Chengdu Smart Elderly Care Industry Development Action Plan (2020–2025), Chengdu Guidelines for the Construction of Elderly-Friendly Communities, and Chengdu Action Plan for Promoting the Integration of the Elderly into the Digital Society. These documents together form a complete policy framework covering industrial development, community construction, and digital participation. An important feature of policy innovation is the combination of “bottom-up” and “top-down” design methods. Through mechanisms such as establishing elderly participation committees and silver-haired think tanks, the elderly can express their opinions in policy formulation. By the end of 2023, 183 communities in Chengdu had established elderly participation committees. This approach makes policies more precise and more in line with the actual needs of the elderly ^[4].

3. Path for reconstruction of the elderly’s role from the perspective of digital silver economy

3.1 Contribution to urban economic development

The economic development of Chengdu and the entire Chengdu-Chongqing urban agglomeration has gained new momentum due to the redefinition of the elderly’s role. The smart elderly care sector continues to lead the way, with investment scale exceeding 23.5 billion yuan in 2024, accounting for 38.4% of the total market size (compared to 33.5% in 2023), and the coverage rate of 5G + AI elderly care monitoring systems rising to 65%. The health management segment is accelerating its upgrade, with a market size of 18.9 billion yuan (accounting for 30.9%), and the volume of remote medical consultations surging by 82% year-on-year. Cultural entertainment and financial services together contribute the remaining 30.7%, among which elderly cultural and tourism consumption increased by 41% year-on-year, and the penetration rate of age-appropriate financial products reached 34% ^[5].

A notable phenomenon has emerged in Chengdu’s economic development: elderly entrepreneurs and “silver elites” have begun to make their mark. Among the elderly aged 65 and above in Chengdu, 8.6% have embarked on entrepreneurial ventures, creating over 35,000 jobs (**Table 2**). Additionally, many “silver KOLs” use live-streaming platforms to sell agricultural products, generating annual sales exceeding 450 million yuan and injecting new vitality into the development of rural e-commerce. Moreover, the increased consumption power of the elderly has driven changes in industries such as health and elderly care, cultural tourism, etc. New consumer sectors like smart health devices and elderly-friendly tourism products have seen annual market size growth rates exceeding 25%, providing crucial support for high-quality economic development ^[6].

Table 2. Contribution of the reconstruction of the elderly’s role to Chengdu’s urban economy (2020–2024)

Indicator	2020	2021	2024	Annual average growth rate
Silver economy market size (trillion yuan)	3.2	4.3	5.8	16.1%
Number of jobs created by elderly entrepreneurship (10,000 people)	1.8	2.6	3.5	18.2%
Sales of “silver KOLs” (100 million yuan)	1.2	2.8	4.5	39.1%
Market size of smart health devices (100 million yuan)	35.6	58.3	89.7	26.0%
Revenue of age-appropriate tourism products (100 million yuan)	28.4	41.2	71.6	26.1%

3.2. Enhancement of social inclusion and intergenerational integration

The social inclusion and intergenerational integration in Chengdu have been significantly enhanced due to the reconstruction of the elderly’s roles. Elderly individuals have transformed from passive users of digital technology

into active participants in innovation, which has notably increased their interactions with young people and greatly reduced communication barriers ^[7]. In 2024, 58.3% of the elderly in Chengdu participated in intergenerational community activities, 21.5 percentage points higher than in 2020. Additionally, 76.4% of the elderly reported that they could maintain daily contact with their children and grandchildren through digital tools, which has significantly alleviated intergenerational gaps. Furthermore, the increased initiative of the elderly in the digital field has changed people's stereotypes about them. The recognition rate of Chengdu citizens regarding the elderly's "progressive with the times" trait reached 72.6%, an increase of 26.3 percentage points compared to 2019 ^[5].

Today's elderly are no longer just staying at home to enjoy their leisure. More and more elderly people are embracing the digital economy and collaborating with young people on innovations. Examples include community shared medicine cabinet mini-programs and intelligent regulators for square dance noise, which are both considerate and practical. There are 526 such "veteran-led" entrepreneurial teams across the city. In 4 out of every 10 community councils ^[8], one can see elderly people wearing reading glasses and earnestly putting forward suggestions. The satisfaction of neighborhood residents has also improved, like adding a "lubricant to daily life." Aunt X said, "Even quarrels in the corridor have decreased." This truly reflects the saying, "Having an elderly person in the family is like having a treasure!"

3.3. Improvement of the elderly group's quality of life

The digital transformation strategy implemented in Chengdu has significantly increased the elderly's digital participation. This strategy has also improved the quality of life of the elderly through clear role positioning, with enhancements evident in multiple aspects, including material life, physical and mental health, social participation, and self-actualization ^[2]. A 2022 survey by the Chengdu Municipal Working Committee on Aging showed that elderly individuals who received digital skills training and actively participated in the digital silver economy had a life satisfaction rate 32.7% higher than those who did not participate. Meanwhile, their depression incidence decreased by 24.3%. These changes indicate that the elderly are adopting more scientific approaches to health management, expanding their social circles, and achieving a more fulfilling sense of self-worth ^[9]. More notably, through active participation in innovation, the elderly are no longer regarded as a social burden but as a resource with productivity and creativity. This role transformation has directly improved their mental health and self-esteem ^[10].

Table 3. Comparison of quality of life of Chengdu's elderly population before and after role reconstruction (2019–2023)

Evaluation indicators	Before role reconstruction (2019)	After role reconstruction (2023)	Change rate (%)
Life satisfaction (1–5 points)	3.2	4.1	+28.1
Self-rated good health (%)	42.7	65.3	+52.9
Social participation rate (%)	31.5	63.8	+102.5
Rate of learning new skills (%)	15.2	58.7	+286.2
Weekly social activities	1.3	3.5	+169.2
with income sources (%)	22.4	41.9	+87.1
Good mental health (%)	56.3	72.8	+29.3
Effective chronic disease management rate (%)	48.5	76.2	+57.1

Data source: Chengdu Municipal Working Committee on Aging, Chengdu Elderly Quality of Life Assessment Report, released in 2023, which provides relevant data and information.

4. Conclusion

Against the backdrop of the digital silver economy in China's mega-urban agglomerations, the role of the elderly group in Chengdu has undergone changes. They have transformed from passive recipients to active innovators. The study found that the transformation of the elderly's role is an important way to cope with population aging and a key to promoting the sustainable development of urban agglomerations^[11]. The case of Chengdu shows that enhancing digital literacy, improving social support networks, and combining policy guidance with market-driven forces can effectively stimulate the potential of the elderly group. The elderly have changed from people who passively use digital technologies to those who actively participate in innovation^[10].

Chengdu has established a multi-collaboration mechanism, including government guidance, market leadership, social participation, and the elderly as the main body. This model provides reference experience for other mega-urban agglomerations such as Beijing, Shanghai, and Guangzhou. Future research needs to pay more attention to the internal differences among the elderly group, the collaborative development between urban agglomerations, and the improvement of the digital governance system^[12]. These efforts will more comprehensively support the transformation trend of the elderly's role and help China's mega-urban agglomerations achieve innovation-driven and high-quality development in the context of aging.

Disclosure statement

The authors declare no conflict of interest.

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