

Original Paper

The Impact of the Digital Divide on Older Adults' Use of Financial Elderly Care Services

Fengzhe Zhang

Harbin University of Commerce, Harbin, Heilongjiang 150028, China

Received: July 10, 2025

Accepted: July 26, 2025

Online Published: August 4, 2025

doi:10.22158/jepf.v11n3p139

URL: <http://dx.doi.org/10.22158/jepf.v11n3p139>

Abstract

With the digital transformation of financial services, the impact of the digital divide on older adults' access to financial elderly care services has become increasingly prominent. Based on the Technology Acceptance Model (TAM) and theories of social exclusion, this paper analyzes how the digital divide hinders older adults from effectively utilizing financial elderly care services. The study finds that the digital divide primarily manifests as barriers to access, insufficient digital skills, lack of age-friendly design, and psychological resistance, leading to information asymmetry, restricted decision-making, financial exclusion, and social isolation among older adults in financial service usage. To mitigate these challenges, measures such as age-adaptive technology design, policy support, family-based digital mentoring, and service optimization are proposed to enhance older adults' digital financial literacy and promote inclusive development of elderly care financial services.

Keywords

Digital divide, Older adults, Financial elderly care services, Technology Acceptance Model (TAM), Social exclusion

Introduction

In the digital era, financial elderly care services—such as pension inquiries, insurance purchases, and robo-advisory—are increasingly shifting to online platforms. However, due to limited technological adaptability, older adults face a significant digital divide, placing them at a disadvantage in accessing these services. The digital divide extends beyond device accessibility to include operational skills, information comprehension, and trust barriers, preventing older adults from fully benefiting from digital convenience and even exposing them to financial risks due to information asymmetry.

Existing research has primarily focused on the digital divide's impact on older adults' social interactions or healthcare, with limited analysis of its effects on financial elderly care services. This study

theoretically examines how the digital divide influences older adults' access to and use of financial elderly care services, employing the Technology Acceptance Model and social exclusion theory to elucidate its mechanisms. The research aims to provide theoretical insights for optimizing age-friendly financial services and enhancing digital inclusion for older adults, contributing to a more equitable and inclusive elderly care financial ecosystem.

1. Background of the Study

In the context of the rapid development of the digital economy, the digital transformation of financial services has become an irreversible trend, is gradually migrating to online platforms. However, due to the decline of physiological function, the limited acceptance of digital technology, and the high cost of learning, the elderly population is facing a significant digital divide in the process of adapting to this change. The digital divide is not only reflected in older people's inadequate access to smart devices (such as smartphones and computers) and the Internet, it is also characterized by a lack of digital skills, difficulty understanding complex financial interfaces and concerns about the safety of online financial services. This inequality in access and use of technology makes the elderly face many obstacles in accessing financial pension services, such as being unable to independently complete the necessary operations such as identity authentication and account binding, it is difficult to obtain the latest pension financial policy information in real time, and may even suffer economic losses due to operational errors or Information asymmetry. In addition, as the digital trend in financial services exacerbates the gap in the use of technology between older and younger generations, some older persons may be forced to rely on traditional offline channels, resulting in a limited range of financial products available to them, unable to fully enjoy the digital convenience and benefits. This phenomenon not only affects the financial rights and interests of the elderly, but also may further aggravate social inequality and make them more marginalized in the digital society. Therefore, it is of great practical significance to explore the impact of the digital divide on the use of financial pension services for the elderly in Sunac and to promote the construction of a digital inclusive pension system.

2. The Manifestations of the Digital Divide

2.1 Access Gap: Some Older Persons Lack Access to Smart Devices or Networks

The access divide is the most fundamental manifestation of the digital divide, and refers mainly to the barriers that older persons face in accessing digital equipment and network services. On the hardware side, a significant proportion of the elderly, especially in rural areas or low-income groups, are not yet equipped with smart devices such as smartphones and tablets. Even if you have a device, you often face problems such as poor performance of the device, old version of the system, and so on, it is difficult to support the latest financial applications to run. From the point of view of network access, some older persons are limited by their economic conditions or their living environment, and can not have stable access to high-speed internet, especially in remote areas, a problem that is further exacerbated by

inadequate network infrastructure. In addition, some of the elderly due to vision, hearing and other physical decline, Need special aids to use digital products, but the prevalence of such devices and the cost of use of new barriers. This lack of hardware and networking has led to the exclusion of older people from the digital financial services system and their inability to access basic financial services such as online pension inquiries and insurance purchases, it has to rely on a limited number of off-line channels, which severely limits its financial services availability.

2.2 Skills Gap: Unfamiliarity with the Operation of Digital Devices and Fear of Technology

The skills gap is reflected in the ability of older persons to operate digital devices and technology acceptance. Most older persons are less exposed to modern digital technology in their pre-retirement work environment and lack systematic digital skills training. In the face of complex intelligent device operation interface, they often show obvious learning difficulties, such as can not remember the operation steps, difficult to understand technical terms. What's more, many older people have a deep-seated fear of new technologies, fearing that missteps could lead to equipment damage or financial losses. This "Technology anxiety" further inhibits their willingness to learn and use digital financial services. In practice, simple verification code recognition, face verification and other security verification links may become insurmountable technical barriers. In addition, frequent version updates and functional tweaks to financial applications also put the elderly under constant pressure to learn, leaving them in a passive state of "Catch-up technology". This lack of skills not only affects the use of basic functions, but also makes it difficult for older persons to identify risks such as financial fraud, increasing their psychological burden of using digital financial services.

2.3 Content Gap: Aging Design is Inadequate and Interface Complexity is Difficult to Understand

The content gap is mainly reflected in the existing digital financial services do not fully take into account the use needs and cognitive characteristics of older persons. Most financial applications are designed to the same standards as the mainstream user, with a dense interface element, complex functional hierarchies and a plethora of technical terms that impose a severe cognitive load on the elderly. The problems of small font, insufficient color contrast and complex interactive logic further magnify the difficulties of the elderly. Aging transformation is often superficial, simply magnify the font or simplify the color, but failed to fundamentally reconstruct the information architecture and Operation Process. Key operations lack clear voice guidance or video presentation, and error messages are too specialized to provide effective use support for the elderly. More seriously, many of the key provisions and risk alerts in financial services are presented in lengthy text forms that are beyond the ability of older persons to read and understand, leading to financial decisions that are not fully understood. This unfriendly design at the content level essentially constitutes technical discrimination against older users and excludes them from the target group of users of the service.

2.4 The Psychological Divide: Questioning the Safety of Online Financial Services

The psychological divide reflects the barriers older persons face in accessing digital financial services at the emotional and trust levels. The long-term formation of offline financial services habits, so that the

elderly on the virtual online transactions there is a natural lack of trust. They are generally concerned about the security of online payments, fear of personal information leakage, stolen funds and other risks. This sense of insecurity has been reinforced by various online fraud cases reported in the media, leading to a strong resistance among many elderly people to the necessary operations such as binding bank cards and setting payment passwords. Even if you complete the initial setup with the help of your children, you may be afraid of making a mistake when you go it alone. This kind of psychological barrier is also manifested in the misunderstanding and distrust of the digital financial products, such as the simple analogy between the WMP yield figure and the traditional bank deposit rate, and the difficulty in recognizing the risk difference. Some older people have even developed a psychological defense mechanism of “Digital exclusion,” actively refusing to use any online financial services. This deep-seated psychological barrier is more difficult to overcome than the technical one and requires systematic intervention from multiple dimensions such as product design, service process and user education.

3. Analysis of the Impact Mechanism

3.1 Barriers to Service Access

The digital divide poses a multi-level barrier to the access of older persons to financial services for the elderly. At the basic level, online financial services often use complex authentication methods such as biometrics and text message verification, which are easy for young people to operate, it has become an insurmountable technological threshold for the elderly. Face recognition, for example, the elderly often due to improper posture, poor lighting conditions and other reasons repeatedly failed authentication, and eventually give up the service application. The process of bank card information input and payment password setting involved in account binding is also daunting for the elderly due to the complicated interface switching and professional information prompting. The deeper impact is reflected in access to information services. Important changes in pension policies, changes in financial products and other information are mainly released through digital channels such as App push and wechat public accounts, the elderly have long been in an information blind spot due to their lack of digital skills. For example, after the digitalization of the pension system, many elderly people who do not have timely access to information continue to travel to and from bank outlets, not only wasting time and energy, but also may miss the deadline for applying for preferential policies. Such service access barriers create a vicious circle: operational difficulties lead to reduced willingness to use, which in turn further weakens digital skills and ultimately excludes older persons from the system of digital financial services.

3.2 Financial Exclusion Risk

The digital divide is pushing older people into financial exclusion. Under the trend of all-round digitization of financial services, traditional offline outlets are shrinking, service windows and manual service time are shrinking, forcing the elderly to adapt to digital service mode. However, their lack of digital skills has severely limited their ability to choose financial products: they can not use mobile banking to compare yields on different products, and they can not understand the terms and conditions

of online insurance, more can not be through intelligent investment and other emerging tools for asset allocation. This exclusion is not only reflected in product selection, but also reflected in the gap between the service experience. Digital channels often offer better rates, proprietary wealth management products, and an easier approval process, older people who rely on offline channels are forced to accept higher service costs, fewer product choices and longer lead times. For example, some banks have introduced high-yield retirement wealth management products that are limited to mobile phone banking customers, directly excluding older people who are not good at digital operations from quality financial services. This kind of institutional exclusion aggravates the old people's weak position in the financial consumption, and makes them in a more disadvantageous position in the aspect of maintaining and increasing the value of pension assets.

3.3 The Quality of Decision-making Declines

The digital divide has significantly reduced the quality of financial decision-making among older persons. In terms of access to information, older persons are limited by their digital skills and have difficulty collecting and comparing information on financial products through multiple channels, and decision-making is often based on limited and potentially outdated sources of information. For example, when choosing a pension product, most older people can only rely on one-sided insurance broker and can not independently consult the product manual and compare the terms and conditions of different companies. In terms of information understanding, even when relevant information is available, complex financial terms, probabilistic statements of benefits and implied risk factors are beyond the comprehension of most older persons. More seriously, the digital divide makes older people at high risk for financial fraud. Fraudsters exploit the vulnerability of the elderly to digital literacy by forging official apps and sending phishing links. Due to a lack of awareness of digital security, older people are more likely to click on unknown links, leak verification codes, or even follow the instructions of fraudsters to complete the transfer operation. According to relevant statistics, the elderly encounter financial fraud cases, more than 60% is through digital channels. This decline in the quality of decision-making not only results in direct economic losses, but also leads to a deep fear of digital finance, further reinforcing the barriers to use.

3.4 Increasing Social Segregation

The social segregation effect of the digital divide in the field of financial services is particularly significant. As financial services become more reliant on digital channels, older people who are unable to adapt to this change will feel a strong sense of social alienation. In the family scenario, younger members are adept at using mobile phones for banking, while older people still have to go to bank outlets, a generational difference that reinforces older people's sense of being "Out of touch". At the social level, digital financial services have become mainstream today, the elderly who still rely on traditional services are regarded as "Alien", and this labelling further deepens their sense of social marginalization. A more far-reaching impact is the widening gap between generations in their ability to manage wealth. The younger generation can make full use of digital tools for pension planning, asset allocation, while the elderly group is affected by the digital divide, pension financial management capacity continues to

weaken. This gap is not only reflected in the current use of services, but also affects the inter-generational transmission of wealth and old-age security. When the entire financial services system of society is designed around a digital primitive, older people who do not use smart devices are effectively denied the right to participate equally in modern financial life, this social segregation may eventually evolve into structural age discrimination that threatens the social integration and quality of life of older groups.

4. Theoretical Explanation

4.1 Technology Acceptance Model (Tam) Perspective: Perceived Lack of Usefulness and Ease of Use Hinders Adoption

Technology Acceptance Model (Tam) provides an important theoretical framework for understanding the barriers to the adoption of digital financial services for the elderly. According to the model, user acceptance of technology mainly depends on two key dimensions: Perceived Usefulness and Perceived Ease of Use. In the case of the older population, there are significant gaps in perceived usefulness: first, most older persons have established a stable model of offline financial services and have limited awareness of the practical utility of digital alternatives; second, the low-frequency nature of pension financial services (such as pension payments, insurance renewal, etc.) reduces the urgency of using digital channels; It is often difficult for the elderly to establish an effective relationship between abstract digital functions and specific needs for old-age care. In terms of perceived ease of use, older adults face greater challenges: complex operational processes that exceed their cognitive load capacity, technical terminology that creates barriers to understanding, and rapid iterative interface design that creates continuous learning pressure. Notably, external variables (such as age, experience, etc.) in the TAM model show a specific effect in the older population: with age increasing, the natural decline of fluid intelligence (the ability to solve new problems) is at odds with the rapid evolution of digital technology, and limited use of experience makes it difficult to develop sufficient behavioral control. Together, these factors have led to a significant “Technology delay” in the adoption of digital financial services among older adults, which means that the transition period from cognition to acceptance to skilled use is significantly prolonged, there are even permanent use disorders.

4.2 Social Exclusion Theory: Digital Exclusion Leads to Multidimensional Barriers to Social Participation

Social Exclusion Theory provides a macro perspective for analyzing the Social impact of the digital divide. The theory holds that social exclusion is a multi-dimensional dynamic process, and digital exclusion is becoming a new mechanism of social exclusion. In the area of financial services, the digital exclusion of older persons manifests itself in three mutually reinforcing dimensions: the economic dimension, the lack of access to digital financial instruments has led to their exclusion from market-based benefits such as preferential interest rates and proprietary products, exacerbating economic weakness; in the service dimension, the decline of offline channels has forced older people to either adapt to digital services, in the social relationship dimension, the lack of digital skills hinders the intergenerational

transfer of financial knowledge and weakens the social support network. This exclusion is cumulative in nature: it may initially be characterized by difficulties in using individual services, but gradually evolves into systemic barriers to participation as the digital transition deepens. More significantly, digital exclusion has a cross-cutting effect with other forms of exclusion, such as age exclusion and spatial exclusion: older people in rural areas face the twin pressures of inadequate digital infrastructure and the withdrawal of financial services outlets; Low-income older persons suffer from a combination of difficulties in acquiring equipment and inadequate skills in use. The theory of social exclusion reveals that the digital divide is not only a technology access problem, but also an unequal distribution of rights to social participation, with the ultimate result being a structural disadvantage for older persons in terms of access to financial well-being.

4.3 Life Cycle Theory: The Contradiction between the Decline of Learning Ability in Old Age and the Speed of Technical Iteration

Life Course Theory (LCT) explains the intrinsic mechanism of digital adjustment difficulty in the elderly from the perspective of development. The theory emphasizes that cognitive abilities, learning patterns and social roles change regularly with age. In terms of cognitive ability, older people's crystallographic intelligence (empirical knowledge) remained relatively stable, while fluid intelligence (the ability to process new information) declined significantly, this asymmetry makes it more dependent on existing experience rather than new knowledge learning. In technology adaptation, the elderly generally adopt the strategy of "Selective optimization compensation": priority to maintain the necessary life skills, and limited cognitive resources to the most urgent adaptation needs. However, the digitisation of finance is fundamentally at odds with this adaptation: on the one hand, the speed at which technologies such as authentication evolve from passwords to fingerprints to face recognition is outpacing the pace at which older people learn; On the other hand, the professionalism and risk of financial services require users to maintain continuous learning. This contradiction is particularly acute in the post-retirement role transition period: after leaving the workplace environment, access to technology has declined dramatically, while society's expectations of the technical capabilities of the elderly continue to rise. Life cycle theory pays special attention to the influence of historical background on the age group: the lack of digital enlightenment education in the growing up experience of the current elderly group forms a deep "Digital generation gap". Such intergenerational differences can not be completely overcome by individual efforts, and society needs to compensate for the adaptation challenges brought about by the life cycle through institutional design, such as extending the technology transition period and providing intergenerational learning support.

5. Suggestions

5.1 Service Providers: Develop Ageing-friendly Interfaces and Retain Traditional Service Channels

Financial institutions should put aging adaptation into the core of product design, and build a digital service system that truly conforms to the cognitive characteristics and usage habits of the elderly. In the

aspect of interface design, we need to break through the simple font magnification mode and do deep aging reconstruction: adopt the high contrast color scheme to ensure the visual clarity; simplify the operation process, focus the core functions within the three-level menu; add step-by-step guidance and operation demonstration video, reduce the cost of learning. More importantly, it is necessary to establish a “Digital-human” collaborative service model, set up one-button call service function in key operation nodes, and realize the seamless connection between digital channels and human services. Financial institutions should also retain the necessary traditional channels of service, including the rational placement of offline outlets, the maintenance of dedicated telephone service lines, the provision of paper statements and other alternatives. For the elderly and special groups, the establishment of Home Service booking mechanism to ensure access to services. At the product level, a simplified version of financial products for the elderly should be developed, with less complex terms, more emphasis on core interests and a risk assessment buffer mechanism. At the same time, it is necessary to establish a continuous aging iterative mechanism, through the feedback group of elderly user experience to regularly optimize the service process. This all-round aging transformation is not only the care for special groups, but also an important strategy for financial institutions to fulfill their social responsibilities and expand the silver hair market.

5.2 At the Policy Level: Digital Literacy Training and the Establishment of Support Mechanisms

Government departments should integrate the promotion of the digital literacy of the elderly into the basic public service system and build a multi-level digital empowerment support network. In terms of the training system, it is necessary to establish a trinity teaching network of “Community-retirement institution-university for the aged”, develop special courses for financial services, and adopt the teaching mode of small class and repeated practice, focus on the training of practical skills. In terms of policy support, digital skills training could be linked to basic services such as pension payments and incentives could be established; and special subsidies could be set up to support the purchase of smart terminal equipment and network costs for older persons. In terms of helping mechanism construction, it is suggested that every community should be equipped with Digital Service Commissioner, and digital service posts should be set up in public service places such as banks and hospitals to provide real-time operational guidance for the elderly. The Supervision Department should issue the standard of aging-friendly financial services, force financial institutions to protect the basic service rights and interests of the elderly, and establish a rapid response mechanism for complaints. At the same time, we should promote the establishment of cross-sectoral cooperation platform, integration of civil affairs, finance, industry and information technology and other parties resources to form policy synergy. Special attention needs to be paid to rural and low-income elderly groups, through mobile education vehicles, remote video guidance and other means to achieve service degradation. Such institutionalized digital inclusion not only enhances the financial capacity of older people, but is also an important infrastructure investment in response to population ageing.

5.3 Family Support: Encouraging Inter-generational Digital Feedback

Family digital back-feeding is the most direct and effective way to bridge the digital divide among the elderly, and it needs to establish systematic social support system to promote this process. It is suggested that the awareness and ability of the young generation to help the elderly master digital skills should be cultivated through the channels of community publicity and school education. “Digital back-feeding” incentive schemes could be designed to give participating families incentives such as tax breaks or public service incentives. In practice, it is suggested that “Scene teaching” method should be adopted to avoid abstract skill training, which is based on actual needs such as pension inquiry and medical payment. To establish a sustainable back-feeding mechanism, such as a regular weekly “Family Digital Day”, with young members to assist the elderly to complete various digital operations, and in the process to impart safety knowledge. The community may organize “The digital family” the appraisal activity, creates the good intergenerational interaction atmosphere. For the elderly living alone, “Digital volunteers” can be developed in pairs to help projects, matching college students or community volunteers to provide regular guidance. It is particularly important to develop the digital security awareness of the elderly, through the family scene of the risk simulation exercise to enhance their ability to identify fraud. This kind of intergenerational knowledge transfer can not only solve the problem of technology use, but also enhance the emotional connection of families and build a new intergenerational relationship in the digital age. All sectors of society should create an enabling environment for family digital feedback, such as the development of specialized family learning courses, the design of financial management tools for inter-generational collaboration.

5.4 Technical Design: Enhancement of Accessibility Features such as Voice Interaction

Technological innovation should aim at lowering barriers to use, not raising technical barriers. According to the characteristics of the elderly, fintech enterprises need to focus on the development of natural interaction technology: the development of intelligent voice assistant, support dialect recognition and fuzzy semantic understanding, to achieve “Verbal hands-free” operation experience; To explore alternative interaction methods such as gesture control and facial expression recognition to reduce complex input requirements. In the process of safety verification, we should optimize biometrics technology to improve the accuracy of facial features and voiceprint features recognition, and develop multi-modal combination verification scheme to balance safety and convenience. The “Progressive disclosure” principle can be adopted in the interface design, and the information density and function complexity can be adjusted dynamically according to the user's proficiency. It is suggested to set up a senior user experience laboratory and invite typical users to participate in product testing to ensure that the technical design really meets the needs. At the same time, attention should be paid to the integration of assistive technology, such as hearing aids, reading glasses and other assistive devices compatible adaptation. Data Services, children can be developed remote monitoring function, in order to protect privacy under the premise of allowing relatives to see large transactions alert. These technological innovations should not be limited to a single application, but should result in full-stack aging solutions

covering hardware, operating systems, and application software. Real digital inclusion is achieved by making it easier for older people to enjoy equal access to fintech dividends.

Conclusion

The impact of the digital divide on the use of financial services for the elderly is a social issue that can not be ignored in the digital era. With the overall digital transformation of financial services, the elderly are facing increasingly severe risk of financial services exclusion due to multiple barriers such as technical access, operational skills, psychological adaptation. This not only limits the effective access to pension financial resources, but also may exacerbate social inequality and affect the quality of life in old age. From the perspectives of technology acceptance model, social exclusion theory and life cycle theory, this paper systematically analyzes the mechanism of digital divide, it also puts forward multiple countermeasures, such as appropriate aging reform, policy support, family back-feeding and technological innovation. The solution to this problem requires the concerted efforts of the government, financial institutions, technology enterprises, families and communities, we should also safeguard the financial rights and interests of the elderly through the system. In the future, with the deepening of the aging and the continued promotion of digital, building an inclusive pension financial service system will become an important task of social development. Only by truly bridging the digital divide can we ensure that all older persons have equitable access to the convenience and well-being brought about by digitization, and realize the vision of a harmonious society with a secure and secure life for the elderly.

References

- Chen, Y. H., & Xu, S. (2020). The Formation Mechanism of Financial Exclusion for Older Adults in the Digital Era. *Jiangsu Social Sciences*, (5), 67-75.
- China Research Center on Aging. (2020). *Survey Report on the Digital Divide Among Older Adults in China*. Beijing: Social Sciences Academic Press.
- Czaja, S. J., et al. (2019). The Digital Divide: Barriers to Technology Use for Older Adults. *Gerontology*, 65(6), 699-709. <https://doi.org/10.1093/acrefore/9780190236557.013.401>
- Fang, M. L., et al. (2022). Age-Friendly Banking in the Digital Era: Barriers and Solutions. *Journal of Aging Studies*, 60, 101004.
- General Office of the State Council of China. (2020). *Implementation Plan on Effectively Addressing the Difficulties of Older Adults in Using Intelligent Technologies*. Policy Document.
- Heart, T., & Kalderon, E. (2013). Older Adults: Are They Ready to Adopt Health-Related ICT? *International Journal of Medical Informatics*, 82(11), e209-e231. <https://doi.org/10.1016/j.ijmedinf.2011.03.002>
- Helsper, E. J. (2021). The Aging Digital Divide: A Framework for Research and Policy. *New Media & Society*, 23(5), 1-18.

- Neves, B. B., et al. (2018). Digital Technology and Older People: Beyond Digital Divides. *Sociology Compass*, 12(6), e12585.
- OECD. (2021). *Bridging the Digital Gender Divide: Inclusive Policies for Aging Populations*. Paris: OECD Publishing.
- Peine, A., et al. (2021). Digital Aging: Infrastructure, Governance, and Practices. *Science, Technology & Human Values*, 46(5), 977-1002.
- People's Bank of China. (2021). *China Inclusive Finance Development Report: Special Topic on Financial Services for the Elderly*.
- Selwyn, N. (2004). The Information Aged: Older Adults' Exclusion from Digital Technologies. *Journal of Computer-Mediated Communication*, 10(2), JCMC1026.
- Vaportzis, E., et al. (2017). Older Adults' Perceptions of Technology and Barriers to Interacting with Tablet Computers. *Gerontology & Geriatric Medicine*, 3, 1-10.
<https://doi.org/10.3389/fpsyg.2017.01687>
- World Bank. (2020). *Digital Financial Services and the Elderly: Opportunities and Risks*. Washington, DC.
- Zhou, X. H. (2021). Generational Differences and Digital Feedback: Family Support Pathways for Older Adults' Financial Digitalization. *Sociological Studies*, (2), 56-70.