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Research on the Operation and Management of Digital Age-Friendly Services of Local Commercial Banks Driven by the Silver Economy

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Abstract

The normalization of population aging has given rise to a huge silver economy. The financial needs of the elderly are becoming increasingly digital, diversified, and security-oriented, making this a new track for the transformation and development of commercial banks. At present, the digital age-friendly services of local commercial banks in China generally suffer from problems such as surface-level transformation, imperfect operational system, weak risk control, and insufficient supply-demand matching. Digital age-friendliness has fallen into the dilemma of formal adaptation rather than ecological adaptation. This paper systematically analyzes the current operational status, core pain points, and causes of digital age-friendly services of local commercial banks, constructs an optimized operation system for digital age-friendly services that fits the actual development of local banks, and proposes precise, scenario-based, secure, and long-term operation and management paths.

Keywords

Silver Economy, Local Commercial Banks, Digital Age-Friendly Services, Service Operation and Management, Inclusive Finance

1. Introduction

For the clarity of research scope, this paper first defines core research concepts and customer segments. Local commercial banks in this study refer to city commercial banks, rural commercial banks, and rural credit cooperatives rooted in regional markets, which are distinct from national joint-stock commercial banks

and state-owned large commercial banks, with prominent regional service attributes, grassroots channel advantages, and targeted service capabilities for local resident groups. Digital age-friendly services refer to the inclusive financial service system formed by commercial banks relying on digital information technology, optimizing online and offline service channels, financial products, risk control mechanisms and service processes, to adapt to the physiological characteristics, cognitive habits and financial needs of elderly groups. The research objects of elderly customer segments are divided into three categories according to age, physical condition and asset level: the younger healthy elderly aged 60 - 75 with independent living ability and active financial management needs, the older disabled elderly aged over 75 or with limited mobility, and high-net-worth retired elderly with stable high assets and customized pension financial needs.

This paper adopts a normative research method based on structured literature review and policy document analysis to carry out research. First, it systematically sorts out domestic and foreign literature on silver economy, pension finance, and digital age-friendly inclusive finance, summarizes the current research progress and unresolved research gaps. Second, it combs and analyzes relevant policy documents issued by the People's Bank of China, the China Banking and Insurance Regulatory Commission and local financial regulatory authorities on financial age-friendly transformation and digital inclusive finance from 2020 to 2025. Third, it summarizes and refines the common operational status, typical pain points and inherent causes of digital age-friendly services of local commercial banks by integrating industry research reports released by banking industry associations and regional financial operation statistical data. On this basis, combined with the actual operational characteristics of local banks, this paper constructs a targeted optimization operation system and management path, ensuring the rationality and pertinence of the research conclusions and countermeasure suggestions.

Data from the Seventh National Population Census show that China's population aging process continues to accelerate, with both the scale and proportion of the rural elderly population increasing. Against this background, promoting the deep integration of the digital economy and the silver economy has become an important contemporary issue that responds to the needs of building an age-friendly society and advances the strategy of active aging. The integration of the digital economy and the silver economy is essentially a process of digital-intelligent development of the silver economy, covering multi-dimensional content such as digital technology, data elements, digital industries, and digital platforms, and promoting innovation in elderly-care services and the ecological restructuring of the elderly care industry. As a new-quality production factor, data plays a core engine role in the deep integration of the digital economy and the silver economy. Specifically, the integration of digital technology innovation and age-friendly transformation promotes the deep integration of the digital economy and the silver economy at the enterprise product level; the integration of collaborative networks and the elderly care industry chain promotes collaborative evolution at the industrial ecosystem level; and the cultivation of a resilient ecosystem of the digital

economy and flexible governance systems further strengthen institutional guarantees at the government governance level (He, Li, & Liu, 2025).The accelerated development of population aging has driven changes in social structure and economic growth models, while also creating space for the development of pension finance. However, as aging intensifies, traditional financial-regulatory models are difficult to adapt to the new characteristics and challenges of pension finance risks. Based on the process of pension finance activities and the main service targets, the article proposes corresponding prevention and management measures for pension finance risks in an aging society, constructs a pension finance risk governance system, and provides useful references for improving the risk resistance capacity of the pension finance system and the quality and efficiency of serving the real economy (Zhu & Lin, 2023). On this basis, this paper studies the operation and management of digital age-friendly services of local commercial banks driven by the silver economy.

2. Current Status of Digital Age-Friendly Service Operations of Local Commercial Banks under the Silver Economy

2.1. Service Layout Continues to Improve, with Two-Way Online-Offline Adaptation

Driven by both policy guidance and market demand, most local commercial banks have actively carried out digital age-friendly transformation in accordance with industry regulatory requirements and industry best practices (China Banking Association, 2024), and gradually built a financial service pattern featuring lightweight online services and warm offline services. Banks have carried out age-friendly transformation of mobile banking and launched exclusive service interfaces such as senior versions and care versions. By enlarging display fonts, simplifying page hierarchies, reducing marketing pop-ups, and adding voice navigation, they cater to the usage habits of the elderly; around high-frequency businesses such as transfers, payments, and account inquiries, they simplify operation paths and promote one-click access to core services. Some institutions have innovated special functions such as family accounts, remote assistance, and transaction risk reminders, which are verified by regional financial service monitoring data to reduce the basic operation threshold of elderly users to a certain extent, effectively lowering the digital operation threshold for the elderly. Offline, local banks fully leverage the local advantages of their branches, complete age-friendly transformations such as large-font displays and voice guidance on self-service equipment, and continue to retain traditional service channels such as manual counters and paper passbooks and deposit receipts. At the same time, they explore integrated service models such as “branch + senior university” and “branch + community station,” regularly offer smart elderly assistance classes, and carry out public welfare activities such as digital skills teaching and financial anti-fraud popularization for the elderly, taking into account both the business handling needs of elderly customers and the protection of their financial rights and interests.

2.2. Product System Initially Established, Silver-Haired Financial Scenarios Implemented

It is necessary to adapt to the diversified needs of the silver economy, local commercial banks have gradually moved beyond the limitations of a single savings business and, in combination with the characteristics of regional elderly customer groups, launched special products such as pension fixed deposits and pension subsidy collection and distribution. Some banks, based on the local elderly care industry, link with communities, elderly care institutions, and medical institutions to build embedded financial scenarios such as pension payments, health services, and home-based elderly care, promoting deep integration of financial services and elderly life and initially realizing the transformation from single financial services to comprehensive elderly care services.

2.3. Risk Prevention and Control Initially Optimized, Adapted to the Characteristics of Elderly Customer Groups

In response to the characteristics of the elderly, such as weak anti-fraud ability and insufficient risk identification ability, local commercial banks have optimized risk control operation models in a targeted manner, launching functions such as Secondary verification of large transactions, intelligent interception of abnormal transactions, anti-fraud risk pop-up reminders, and notification to children with authorization. At the same time, relying on offline branches, they carry out regular anti-fraud publicity, combining online early warning with offline manual work. Relevant industry data show that the optimized risk control mechanism has reduced the proportion of elderly financial fraud cases served by local banks year-on-year, but the risk prevention and control effect has obvious regional differences and instability, effectively reducing the risk of financial fraud for elderly customers and building a solid line of defense for age-friendly financial security.

3. Core Pain Points in the Operation and Management of Digital Age-Friendly Services of Local Commercial Banks

3.1. Product Operations: Severe Homogenization, Insufficient Refined Adaptation

Age-friendly financial products of local banks generally suffer from severe homogenization, weak innovation capacity, and a lack of tiered operations. Most banks' age-friendly products are merely simple renaming of ordinary deposits and wealth management products, without refined design based on the age, income, and needs of elderly customer groups. The supply of differentiated products for younger healthy elderly people, older disabled elderly people, and retired high-net-worth elderly people is seriously insufficient. At the same time, product operations emphasize promotion over optimization and lack a dynamic optimization mechanism based on user data. The elderly group's most concerned needs for safety, stability, and low risk have not been deeply implemented. Special services such as high-end pension wealth management, pension inheritance finance, and

long-term pension planning remain blank, making it difficult to adapt to the diversified and high-quality financial needs of the silver economy.

3.2. Channel Operations: Formalized Online, Fragmented Offline

Channel operations are a prominent shortcoming of digital age-friendly services, mainly reflected in two pain points: formalization online and fragmentation offline. Different from the standardized and mature online age-friendly service system of large state-owned banks, most local banks' age-friendly transformation is still limited to surface-level interface adjustments such as font enlargement and interface simplification, without matching the cognitive and usage habits of the elderly from the underlying logic. There are common problems such as insufficient accuracy of voice navigation recognition, hidden function entrances, lengthy operation chains, and limited coverage of terminal model adaptation. In addition, there is a lack of exclusive manual customer service channels for the elderly online, making it difficult for elderly people to quickly obtain manual support when operations are blocked, further aggravating the elderly's resistance to digital services and resulting in a low actual usage rate of age-friendly applications. Offline, local bank branches have not yet established unified operating standards for age-friendly services. Elderly assistance and convenience services, digital public welfare classes, and door-to-door convenience services are mostly phased and temporary activities and have not formed a normalized and institutionalized operating system. Employees in some grassroots branches have weak awareness of age-friendly services, and their professional service capabilities need to be improved. They lack both communication methods suitable for the elderly and the ability to teach digital literacy, causing offline warm age-friendly services to be superficial and limited in effectiveness.

3.3. Customer Group Operations: Extensive Maintenance, Insufficient Mining of User Value

Local commercial banks generally lack a refined operation system for silver-haired customer groups, and customer group management remains in the traditional model. Firstly, user portraits are missing. Most banks have not used big data technology to integrate data such as age, assets, behavioral habits, and financial needs of elderly customers, making it impossible to achieve precise stratification, precise services, and precise marketing. Secondly, user maintenance is passive. Services are mostly provided after customers actively consult or handle business, lacking mechanisms for proactive return visits, demand surveys, and service follow-up, and customer stickiness cultivation is insufficient. Thirdly, value-added services are missing. They focus only on basic financial business and ignore the needs of the elderly for life services, emotional services, and knowledge services. Value-added services such as smart elderly assistance, anti-fraud popularization, and pension consulting are not systematic, making it difficult to form differentiated competitive advantages.

3.4. Risk Control Operations: Imperfect System, Imbalance between Security and Service

Age-friendly risk control operations currently face a polarization problem of excessive control and capacity absence, and it is always difficult to achieve a dynamic balance between service security and convenience. Firstly, in order to avoid the risk of financial fraud involving the elderly, some banks have set up redundant and cumbersome transaction verification processes. Multiple cross-verifications and rigid strict limits greatly reduce the operational convenience of elderly users, departing from the original intention of convenient age-friendly services. Secondly, the adaptability of intelligent risk control models to elderly scenarios is insufficient. The risk identification accuracy for typical scenarios such as high-frequency small-amount consumption, family-directed transfers, and fixed pension-related payments among elderly groups is relatively low, and invalid interceptions and false interceptions occur frequently. At the same time, the ability to identify and warn against new types of telecom fraud and disguised pension wealth management scams is insufficient, and there are obvious risk control loopholes. In addition, the risk control operation system lacks a dynamic iterative update mechanism and cannot simultaneously adapt to new fraud methods and continuous changes in elderly users' transaction behavior, leaving an obvious shortcoming in long-term security guarantee capacity.

3.5. Deficiencies in Customer Data Governance and Privacy Protection

In the process of digital age-friendly service operation, local commercial banks generally have imperfect data governance and privacy protection mechanisms for elderly user portraits and behavioral data mining. First, the user data authorization mechanism is not standardized. Most banks lack targeted informed authorization procedures for elderly groups with weak digital awareness, and fail to clearly inform the scope, purpose and retention period of user data collection. Second, there is a problem of excessive data collection, which does not adhere to the data minimization principle, and collects redundant behavioral data and sensitive personal information unrelated to financial services. Third, the data access control system is loose, with no hierarchical authority management for front-line service personnel, technical operation and maintenance personnel, and management personnel, bringing risks of elderly user data leakage and unauthorized use. Fourth, the user data correction and withdrawal mechanism is missing. Elderly users cannot independently query, correct wrong personal data or apply for data deletion and authorization cancellation, lacking effective privacy protection channels.

4. Causes of the Core Pain Points in the Operation and Management of Digital Age-Friendly Services of Local Commercial Banks

Firstly, there is a deviation in operational cognition and concept, and strategic positioning lags behind. At present, most local banks have a limited understanding of

the value of digital age-friendly services, generally defining them as a passive compliance task for implementing industry policies rather than a core development opportunity to empower the transformation and upgrading of retail business and tap the dividends of the silver economy. In actual operations, an obvious structural misunderstanding has formed, one-sidedly focusing on explicit short-term work such as the deployment of smart devices and hardware facility renovation, while ignoring long-term deep cultivation work such as the construction of age-friendly service systems, user experience optimization, and in-depth customer group operations.

Secondly, core resource endowments are limited, and digital support capacity is insufficient. Restricted by their own operating scale and financial strength, local banks have obvious shortcomings in resource investment in the digital age-friendly track. On the one hand, professional digital technology talent reserves are lacking, and capabilities in independent scientific and technological research and development, system iteration, and intelligent operation and maintenance are weak; on the other hand, digital transformation is highly dependent on third-party outsourcing institutions and has not formed a technical system of independent research and development, independent optimization, and independent iteration. It cannot support the construction of refined, intelligent, and personalized age-friendly operation models for silver-haired customer groups, and it is difficult to adapt to the diversified digital service needs of the elderly.

Thirdly, the supporting institutional system is imperfect, and a long-term operation mechanism is missing. At present, local banks have not yet established a standardized operation system suitable for digital age-friendly services, and overall service implementation lacks normative basis, assessment constraints, and capacity support. There are neither unified age-friendly service processes, service standards, and service specifications, nor corresponding performance assessment, supervision and evaluation, and reward and punishment incentive mechanisms. At the same time, the special training system for frontline service personnel in age-friendly services is absent, resulting in a vicious cycle in which service quality has no yardstick, operational effects have no assessment, and personnel capabilities have no improvement. This ultimately causes digital age-friendly services to become a mere formality and prevents normalized and long-term implementation.

Fourthly, the integration of ecological scenarios is low, and service coverage is relatively single. Most local banks' digital age-friendly services are limited to their own scenarios such as offline branches and online apps, lacking deep linkage and resource integration with external entities such as local elderly care communities, elderly care institutions, medical institutions, and convenience service platforms.

5. Optimization Paths for the Operation and Management of Digital Age-Friendly Services of Local Commercial Banks under the Silver Economy

5.1. Reshape Operational Concepts and Anchor Long-Term Development Positioning

Local commercial banks need to completely change the passive-adaptation opera-

tional mindset, upgrade digital age-friendly services from a policy task to a core strategy, deeply cultivate the local silver-finance track, and rely on geographical, customer-group, and branch advantages to build differentiated competitive barriers. They should establish the core operational concepts of inclusive adaptation, safety first, long-term operation, and ecological empowerment, abandon formalized and surface-level transformation ideas, focus on the real needs of elderly customer groups, balance digital convenience and elderly adaptability, financial innovation and service security, and use refined operations to tap the value of the silver economy, achieving a two-way unity of social benefits and economic benefits.

5.2. Optimize Product Operations and Achieve Tiered and Precise Adaptation

It is necessary to build a tiered, differentiated, and distinctive age-friendly product operation system to break the homogenization dilemma. Relying on big data technology, build accurate portraits of elderly users and stratify and classify customer groups according to age, health status, asset scale, risk preference, and demand scenarios. For older and disabled elderly groups, focus on optimizing basic financial products with low thresholds, high security, and minimalist operations, and improve supporting mechanisms such as family agency, remote assistance, and door-to-door services; for younger healthy elderly groups, launch products such as prudent pension wealth management, pension savings, and small-amount pension credit to meet their wealth preservation and appreciation needs; for high-net-worth elderly customer groups, create customized services such as pension wealth inheritance, pension trusts, and high-end pension consulting.

5.3. Improve Channel Operations and Build a Full-Channel Service Closed Loop

It is important to promote deep age-friendly transformation of online channels, abandon surface-level transformation, and focus on optimizing underlying functions based on the operational pain points of elderly users, to continuously simplify the senior-version interface of mobile banking, streamline redundant functions, optimize voice-navigation recognition accuracy, adapt to old-device models, and add functions such as direct manual lines for customers over 70 years old, one-click help, and remote-video assistance, so as to achieve manual fallback for complex businesses. It is important to establish a normalized operation-and-maintenance mechanism for online channels, regularly optimize system vulnerabilities, update operation guidelines, and push age-friendly teaching content. Standardize offline-channel operations, formulate branch age-friendly service operating specifications, service processes, and assessment standards, and regularly carry out employee age-friendly-service training to improve employees' abilities in digital teaching, elderly communication, and anti-fraud guidance, to solidify mechanisms for smart elderly-assistance classes, community-stationed services, and door-to-door convenience services to achieve normalized and institutionalized elderly-assistance ser-

vices, to break down data barriers between online and offline, realize the interconnection and sharing of user needs, transaction records, and service records, and build a closed-loop operation model of convenient online operations, offline fallback guarantees, and full-process linked services.

5.4. Refine Customer Group Operations and Deeply Cultivate the Value of Silver-Haired Users

It is suggested that it should establish a full-cycle silver-haired customer group operation system and realize the transformation from "passive service" to "proactive maintenance." Relying on digital technology, build exclusive management ledgers for elderly customers, accurately record basic customer information, financial needs, service records, and risk characteristics, and achieve personalized and targeted precise services. Establish a normalized customer return visit mechanism, regularly follow up on elderly customers' service experience, collect demand suggestions, and promptly solve service pain points. Enrich the value-added service system, link with communities, senior universities, medical institutions, and elderly care institutions, integrate resources such as pension consulting, health checkups, public welfare lectures, and cultural and entertainment activities, create a comprehensive service ecosystem of Finance, Life and Orderly-care, to enhance elderly customers' loyalty and sense of belonging, and deeply tap the long-term value of silver-haired customer groups (Chen & Shi, 2026).

5.5. Upgrade Risk Control Operations and Balance Security and Service Efficiency

It is suggested that it should build an intelligent and humanized risk control operation system adapted to elderly customer groups and solve the problem of imbalance between security and convenience, to optimize intelligent risk control models, and according to the transaction characteristics of elderly groups, optimize risk control rules for scenarios such as high-frequency small-amount payments, family transfers, and pension subsidy collection, reducing invalid interception rates; for new types of pension fraud, upgrade anti-fraud identification algorithms to accurately identify abnormal transactions, transfers to strangers, and false wealth management transactions, and achieve real-time warning and intelligent interception. Establish a tiered verification mechanism, simplify processes for routine small-amount transactions, and implement manual Secondary verification for large-amount and unfamiliar transactions, taking into account both convenience and security. At the same time, regularly carry out online and offline anti-fraud popularization to enhance the risk prevention awareness of elderly groups, and build a comprehensive risk control operation system of Intelligent Early Warning, Manual Fallback and Publicity Empowerment.

5.6. Improve Data Governance and Privacy Protection Mechanisms for Elderly Customers

To standardize the digital operation of elderly customer portraits and data min-

ing, local commercial banks need to build a full-process data governance and privacy protection system based on the principles of informed consent, data minimization, hierarchical authorization, and traceable supervision. First, optimize the user informed authorization mechanism. Design simple and easy-to-understand data authorization guidelines suitable for elderly groups, clearly inform the scope, purpose, storage cycle and sharing objects of data collection, and adopt one-click confirmation and manual reminder authorization methods to ensure the autonomy of elderly users' data rights. Second, implement data minimization management, strictly screen collected user data, prohibit the collection of irrelevant sensitive personal information, and reduce the risk of data leakage. Third, build hierarchical data access control, set different operation authorities for data query, download and use according to post responsibilities, form data operation logs and realize full-process traceability. Fourth, improve the data correction and withdrawal mechanism, open exclusive data service channels for elderly users, support independent query, error correction and deletion of personal data, and allow users to cancel data authorization at any time, effectively protecting the data security and privacy rights and interests of elderly customers.

5.7. Improve the Guarantee System and Consolidate the Foundation for Long-Term Operations

It is suggested that it should improve the four-dimensional guarantee system of institutions, talent, assessment, and technology to support high-quality operation of age-friendly services. At the institutional level, it is important to issue management measures, service standards, and emergency mechanisms for digital age-friendly service operations to standardize the full-process service flow; at the talent level, form exclusive age-friendly service teams and regularly carry out special training in digital technology, service etiquette, anti-fraud knowledge, and elderly psychology to build professional operation and maintenance teams; at the assessment level, incorporate age-friendly service quality, user satisfaction, and elderly assistance service effectiveness into employee performance assessments to force service quality improvement and efficiency enhancement; at the technology level, increase local scientific and technological research and development investment, appropriately introduce digital talent, and rely on regional resources to build lightweight and highly adaptable age-friendly digital systems, get rid of outsourcing dependence, and achieve independent service optimization and long-term operation.

6. Conclusion

To sum up, the rapid development of the silver economy provides a new opportunity for the retail transformation of local commercial banks. Digital age-friendly services are not only a policy requirement of financial inclusion but also a key path for local banks to deeply cultivate their local areas and build differentiated core competitiveness. At present, China's local commercial banks still have deep-

seated problems in the operation and management of digital age-friendly services, such as product homogenization, superficial channels, extensive customer group maintenance, and insufficient risk control adaptation. The core causes lie in lagging operational concepts, insufficient resource support, missing institutional systems, and weak scenario integration. This paper constructs a systematic optimization system for the operation and management of digital age-friendly services from six dimensions: concept, product, channel, customer group, risk control, and guarantee. Different from previous studies that only focus on service model optimization, this paper further supplements data governance and privacy protection mechanisms for elderly financial services, forming a more comprehensive and operable long-term operation system. In view of the limitations of normative research, future research can combine empirical data and questionnaire surveys to quantitatively verify the implementation effect of various optimization measures, so as to further improve the scientificity and pertinence of the research conclusions.

Author Contributions

Conceptualization, Gao Qian Wei and Chen Xiao Tun; methodology, Gao Qian Wei; software, Gao Qian Wei; validation, Gao Qian Wei and Chen Xiao Tun; formal analysis, Gao Qian Wei; investigation, Gao Qian Wei; resources, Gao Qian Wei; data curation, Gao Qian Wei; writing—original draft preparation, Gao Qian Wei; writing—review and editing, Chen Xiao Tun; visualization, Gao Qian Wei; supervision, Chen Xiao Tun; project administration, Gao Qian Wei; funding acquisition, Gao Qian Wei. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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