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Reflection on the Media Image Construction and Sustainable Development of "Silver-haired Knowledge Broadcasters"

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Abstract: This study analyzes 15 high-follower accounts on Douyin and finds that, through accessible knowledge translation, lifelong learning practices, and egalitarian discourse, these "silver-haired knowledge broadcasters" have constructed a composite media image, generating significant positive value at three levels: individual, knowledge dissemination, and socio-cultural. Specifically, they alleviate loneliness among the elderly, break down knowledge barriers, and build intergenerational bridges. At the same time, this group faces structural challenges, including rigid content narratives, weak topic timeliness, insufficient professional video production, difficulty adapting to algorithms, and a lack of user interaction. To address these challenges, the study proposes an optimization system across four dimensions—content innovation, technical enhancement, platform empowerment, and policy support—to promote the sustainable development of "silver-haired knowledge broadcasters," transforming them from a phenomenon into a normalized force and fully realizing their unique value in knowledge popularization and social cohesion.

Keywords: Silver-haired knowledge broadcasters; short video platform; media image; knowledge dissemination; active aging

Introduction

As the global population structure continues to deepen, Chinese society is experiencing an unprecedented scale of population aging. Against this macro backdrop, promoting "productive and learning engagement among the elderly" is not only a social issue concerning people's well-being but also a national strategy to activate "silver human resources" and address the aging challenge. The concept of "active aging" and the implementation of related policies provide important ideological guidance and institutional support for the elderly to transcend traditional roles as care recipients and participate more proactively in society and value creation. Meanwhile, the rapid rise of short video and social media platforms represented by Douyin has profoundly reshaped the landscape of information dissemination and knowledge production. The evolution of media technology is transforming knowledge dissemination from elite and academic to popular and everyday, making knowledge popularization possible. With their intuitiveness, interactivity, and low barriers, short videos have created new social learning scenarios, attracting a wide range of users, including the elderly. Amid this dynamic media ecology, a unique phenomenon—the "silver-haired knowledge broadcasters"—has emerged, sparking widespread social attention.

"Silver-haired knowledge broadcasters" refers specifically to elderly individuals who, despite having passed retirement age, actively embrace new media technologies and continuously engage in knowledge creation and sharing on short video platforms. This group includes retired professors fromm top universities, senior experts from research institutions, as well as skilled craftsmen and erudite cultural scholars. Unlike the stereotypical image of the elderly as disconnected from the digital age, and distinct from ordinary elderly bloggers focused on entertainment or daily life documentation, the core practice of "silver-haired knowledge broadcasters" lies in the systematic reproduction and dissemination of professional knowledge in short video formats. Leveraging their profound knowledge, unique narrative charm, and sincere sharing attitude, they have quickly gained significant attention and acclaim in digital spaces predominantly populated by young users. The collective award of "Touching China 2022 Person of the Year" to the "silver-haired knowledge broadcasters" serves as official recognition of the social value of this phenomenon. The emergence of "silver-haired knowledge broadcasters" carries multiple social implications. At the individual level, it represents a vivid practice for the elderly to realize self-worth and reintegrate into society. At the cultural level, it facilitates intergenerational knowledge flow and emotional dialogue, mitigating the divides potentially caused by the digital gap. At the societal level, it reshapes a positive, capable, and approachable new media image of the elderly, providing a living model for "active aging."

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Top-level design at the national strategy level further highlights the contemporary significance of this study. The Fifth Plenary Session of the 19th Central Committee of the Communist Party of China elevated active response to population aging to a national strategy. The "CPC Central Committee Proposal for Formulating the 15th Five-Year Plan for National Economic and Social Development" explicitly calls for "actively responding to population aging and improving policy mechanisms for the coordinated development of elderly care services and industries." This is not only an inevitable requirement for building on the outcomes of the 14th Five-Year Plan, but also key to achieving qualitative and efficient improvements in China's elderly care service development during the 15th Five-Year Plan period. The planning outline further emphasizes the need to "integrate active aging and healthy aging into the entire process of economic and social development," deepening the requirement to "embed the concepts of active aging and healthy aging into the entire process of economic and social development," establishing "promoting elderly support, engagement, and enjoyment" as fundamental governance goals. Critically, the plan proposes to "actively develop elderly human resources," "vigorously develop the silver economy, enrich age-appropriate products and elderly services," and "expand diverse job opportunities suitable for the elderly, deeply implement silver actions," explicitly extending the elderly's secondary social participation from the realm of social welfare to the core strategic category of human resource development.

However, existing research has mostly explored elderly media use or short video knowledge dissemination from macro-level communication and sociological perspectives. There remains a lack of systematic and integrated research on the unique group of "silver-haired knowledge broadcasters," who possess the dual identity of "elderly knowledge elites" and "new media content producers," specifically regarding what combination of characteristics and construction logic their media image presents, what structural tensions and endogenous challenges they face in their development, and how to guide them toward sustainable and healthy growth. Therefore, this study aims to comprehensively employ theories from communication studies, image studies, and related fields. Through in-depth analysis of the content, format, interaction, and discourse practices of representative "silver-haired knowledge broadcaster" accounts on Douyin, it systematically extracts and elucidates the core characteristics and construction mechanisms of their media image. On this basis, the study comprehensively evaluates the positive social value generated by "silver-haired knowledge broadcasters" and critically analyzes the practical challenges they face across multiple dimensions, including content production, technological adaptation, operational maintenance, and social recognition. Finally, the study seeks to propose actionable optimization strategies and development recommendations, offering theoretical references and practical guidance for the healthy growth of the "silver-haired knowledge broadcaster" group, the deepening of knowledge popularization, and the creation of an age-friendly digital society that supports productive aging.

In this paper, “sustainable development” for silver-haired knowledge broadcasters is operationalized along four interrelated dimensions: first, creator-level sustainability, referring to sustained creative participation while preventing mental burnout and maintaining the well-being of elderly creators; second, algorithmic sustainability, meaning stable content visibility and reasonable anti-marginalization capacity within platform recommendation mechanisms; third, knowledge-value sustainability, namely preserving professional credibility and knowledge quality amid platform-driven logics; fourth, social-value sustainability, which denotes the continuous capacity to deliver intergenerational dialogue and popular-education outcomes. These four dimensions jointly guide our subsequent analytical framework and optimization suggestions.

I. Main Methods and Sample Selection

This study focuses on the media image construction of "silver-haired knowledge broadcasters" on Douyin. The term "silver-haired knowledge broadcasters" originated from the 2022 Touching China Person of the Year awards by China Media Group, specifically referring to retired teachers who use the internet to impart knowledge. On March 4, 2023, 13 "silver-haired knowledge broadcasters," including academicians Wang Pinxian and Ouyang Ziyuan, professors Dai Jianye and Wu Yuren, as well as primary and secondary school teachers Tang Shouping and Yang Weiyun, received a collective award. The average age of this group was 77. In this study, "silver-haired knowledge broadcasters" are defined as individuals aged 60 and above, retired, who disseminate knowledge through short videos and live streaming.

Operationally, silver-haired knowledge broadcasters are further demarcated from ordinary elderly lifestyle or entertainment-focused bloggers: their core output is systematic knowledge popularization and professional interpretation rather than daily-life vlogging, comedy performance, or purely emotional sharing. To be included in this sample, accounts must satisfy all the following criteria: (1) primary content orientation is knowledge dissemination; (2) operated by retired individuals aged ≥60; (3) maintain stable long-term updating records; (4) accumulate high follower volume as public knowledge communicators. It should be noted that this purposive high-follower sampling yields a sample dominated by well-known institutional experts; non-celebrated skilled craftsmen or self-taught erudite cultural scholars with comparable large-scale followings are rarely observed on Douyin and are not represented in the current sample, forming an inherent sampling boundary.

For sample collection, this study first referenced the list of winners from the "Touching China 2022 Collective Award" for "silver-haired knowledge broadcasters," then conducted searches on Douyin using keywords such as "elderly knowledge creators," "elderly knowledge dissemination," and "elderly science popularizers." Simultaneously, the study browsed highh-viewership topics on the platform, such as #KnowledgeSharing (336.8 billion views),

#KnowledgeCreators (79.9 billion views), #PopularScience (55.33 billion views), as well as official accounts like "Douyin Science," "Douyin Knowledge," and "Learn on Douyin," to preliminarily identify relevant users. On this basis, the study employed snowball sampling through Douyin's recommendation mechanism, expanding the pool of elderly knowledge dissemination accounts via personalized homepage recommendations and the "people you may know" suggestions when following accounts. For final sample selection, to ensure representativeness and stylistic diversity, the study selected accounts with high follower counts and consistently updated content across different knowledge domains, ultimately including 15 sample accounts for analysis.

Three core research questions guide this study: RQ1: What composite media image do silver-haired knowledge broadcasters construct on Douyin, and through what communication mechanisms is this image formed? RQ2: What structural dilemmas constrain the sustainable development of these knowledge-oriented elderly creator accounts? RQ3: What multi-dimensional optimization paths can support their sustainable development defined by creator well-being, algorithmic resilience, professional credibility and persistent social value?

This paper adopts qualitative-oriented thematic content analysis combined with a case-study approach. The unit of analysis includes two levels: account-level metadata (profile, self-introduction, overall positioning), and purposively sampled representative short-video texts for each account. We did not scrape the full corpus of every historical video. Instead, for each of the 15 selected accounts, 5–8 typical publicly available videos were selected for close textual reading and thematic coding. The data collection period ran from February 15 to March 10, 2026.

Our thematic coding book covers five analytical dimensions for sampled videos: (1) knowledge topic field; (2) narrative opening and overall narrative structure; (3) visual-aids application (blackboard, animation, props, caption design); (4) discourse address form and interpersonal rhetoric toward audiences; (5) audience-interaction settings in captions and comment zones. Given the interpretive qualitative design, formal inter-coder reliability testing with Krippendorff's α or Cohen's κ was not performed in this study. The thematic typology in Section II is generated via iterative grounded reading and constant comparison across sampled video materials.

No.	Name	Age	Profession	Account Name	Main Content	Followers
1	Ma Weidu	70	Collector, Founder of Guanfu Museum	Ma Weidu	Traditional culture knowledge sharing	12.093M
2	Dai Jianye	69	Professor, Central China Normal University	Dai Jianye	Engaging poetry interpretations	7.844M
3	Wu Yuren	75	Retired Physics Professor, Tongji University	Grandma Wu Who Doesn't Cram	Answering physics questions	5.454M
4	Zhang Zhaozhong	73	Military theorist, commentator	Coral Orange	Military knowledge popularization	3.281M
5	Li Meijin	66	Educational psychology expert	Li Meijin on Parenting	Parenting knowledge sharing	3.018M
6	Fu Peirong	74	Professor of Philosophy, National Taiwan University	Fu Peirong	Philosophy knowledge sharing	2.142M
7	Jin Yong	90	Chemical engineering expert, Academician of CAE	Jin Yong	Chemical engineering popularization	1.823M
8	Liu Jiaqi	84	Geologist, Academician of CAS	Grandpa Liu Jiaqi on Geology	Geology popularization	1.700M
9	Li Yinhe	73	Researcher, CASS	Li Yinhe	Sociology knowledge sharing	1.236M
10	Tang Shouping	63	Retired physics teacher	Daoli Xue Interesting Physics Experiments	Fun physics experiments	1.117M
11	Tian Lei	69	Retired middle school teacher	Grandpa Zhenghao's Little Classroom	Elementary math problem explanations	1.004M
12	Gao Kejian	78	National-level renowned TCM doctor	National TCM Doctor Mr. Gao Kejian	Health knowledge popularization	1.000M
13	Xu Zhuoyun	95	Academician of Academia Sinica	Xu Zhuoyun on History	History popularization	0.646M
14	Peng Kaiping	63	Professor, Tsinghua University	Professor Peng Kaiping	Psychology popularization	0.722M
15	Wang Pinxian	87	Academician of CAS	Wang Pinxian	Oceanan science	0.639M

No.	Name	Age	Profession	Account Name	Main Content	Followers
					popularization	

Table 1 Basic Information of Silver- haired Knowledge Broadcaster Accounts Note: Follower counts are snapshot data collected as of March 2026; follower numbers on Douyin fluctuate dynamically over time.

II. Media Image and Communication Characteristics of Silver- haired Knowledge Broadcasters

The silver- haired knowledge broadcasters are not a homogeneous group yet the public image they present in the media field coalesces into a series of distinctive and shared symbolic representations. This group has not simply transferred offline teaching scenarios online rather they have undergone a deep mediatization transformation shaping a composite and dynamically tension- filled new media image. Drawing on case analyses and content text analysis this study summarizes the characteristics of their media image into the following four core dimensions.

(1) Expert Knowledge Communicators: The Dual Coupling of Authority and Accessibility

The core foundation of the silver-haired knowledge broadcasters' media image lies in their accumulated professional knowledge capital, which forms the most stable "authoritative" aura in their media image. Unlike the sense of detachment often presented by traditional academic authorities, this group actively leverages the technological affordances of short video platforms to simplify and popularize professional knowledge, achieving an organic coupling of knowledge authority and communicative accessibility.

First, the video content of silver-haired knowledge broadcasters centers on professional knowledge in fields such as science, literature, and history, with clear disciplinary affiliations and systematic knowledge frameworks. Whether it is Academician Jin Yong explaining the mysteries of chemical science in an accessible manner or Professor Dai Jianye providing scholarly yet entertaining interpretations of Tang and Song poetry, their content is rooted in rigorous academic systems. Across sampled materials, most videos concentrate on science, literature, and history-related professional domains, which creates a clear positioning distinct from purely entertainment-oriented short- video content. Their commitment to professional expertise allows their traditional social identities—such as "professor," "scientist," and "expert"—to be carried over and validated in digital space, establishing an initial foundation of trust with their audience.

Second, auxiliary media elements such as captions and background music both align with the communication patterns of short videos and further enhance the credibility of knowledge dissemination. On one hand, carefully designed on-screen captions are not simple transcripts of spoken language but rather distillations of core knowledge points, explanations of specialized terms, and visual presentations of logical structures, effectively lowering the barrier to understanding for the audience. On the other hand, background music and sound effects that match the content theme accurately create the appropriate narrative atmosphere—such as using somber music for tragic historical events or lighthearted or suspenseful sound effects for wondrous scientific phenomena—thereby enhancing the content's impact and memorability. More importantly, this group commonly uses blackboard writing, diagrams, animated simulations, and simple physical props for demonstration teaching. For example, "Daoli Xue Interesting Physics Experiments" uses a household glass and water to demonstrate the principle of light refraction. Such "de-elevated" visual symbols transform abstract scientific principles into tangible, perceptible visual texts, increasing communicative affinity while further consolidating their media image as "reliable knowledge explainers."

(2) Active Retirees: The Embodiment of Active Aging Through Media Practice

The media image of silver-haired knowledge broadcasters completely breaks society's stereotypical view of the elderly as "conservative, passive, and declining," vividly embodying the core meaning of active aging. This group not only undertakes the function of knowledge transmission but also redefines the lifestyle of the elderly from the position of active agents, becoming both practitioners and promoters of the active aging concept.

First, through their media practice, silver-haired knowledge broadcasters break negative stereotypes of the elderly, showcasing the vitality and continuous learning ability of later life. In media representations, they often appear spirited, quick-minded, and articulate, demonstrating robust vitality and enthusiasm for knowledge. They do not avoid their age identity, often using self-deprecating expressions such as "post-80s elder" (referring to those over 80) to dissolve age anxiety, instead turning age into a symbol of experiential capital and composed demeanor. This media image stands in sharp contrast to the common portrayals of the elderly as "vulnerable" and "cared for" in mainstream media. More importantly, this group actively learns new media skills such as video shooting, editing, publishing, and user interaction. Their practical stance of "lifelong learning" itself constitutes powerful media content, intuitively demonstrating the adaptability and subjective agency of the elderly in responding to the changes of the times.

Second, through technological empowerment, they achieve social reintegration. Joining short video platforms and creating content is essentially an active act of social participation and reintegration by the elderly. Silver-haired knowledge broadcasters are not passive recipients of new media technology but active technology users and domesticators. Through knowledge creation and sharing, this group rebuilds strong connections with the social system, particularly building intergenerational communication bridges with younger generations. Their accounts become media vehicles that cross the digital divide, allowing them to gain social role recognition and a sense of value belonging as they output knowledge value and contribute social capital, completing a positive identity transformation toward being "social value creators."

(3) Advocates of Humanistic Values: Building an Equal Discourse System and Emotional Resonance

Compared with a one-dimensional model of knowledge indoctrination, silver-haired knowledge broadcasters place greater emphasis on infusing humanistic care into the process of knowledge dissemination, and their media image exhibits strong humanistic qualities. This group abandons the condescending, lecturing posture of traditional knowledge authorities and uses discourse strategies to build equal, affable intergenerational dialogue relationships.

At the level of discourse expression, silver-haired knowledge broadcasters mostly adopt a gentle and guiding narrative style, often using terms like "students" and "friends" to build emotional connections, and using invitational and conversational expressions such as "let us explore together..." or "one might further consider whether this view holds..." to create a patient and guiding communication context, effectively dissolving intergenerational psychological barriers. Taking Professor Dai Jianye's interpretation of ancient poetry as an example, he often combines the life circumstances and historical backgrounds of poets, using empathetic narration to make the emotional experiences of ancient writers tangible and relatable. This "gentle and thorough" narrative paradigm dissolves the power hierarchy in traditional teacher-student relationships, creating an intimate communication situation similar to intergenerational storytelling or dialogue among the wise, significantly narrowing the psychological distance with young audiences.

It is worth noting that the communication practice of silver-haired knowledge broadcasters is not limited to transmitting subject knowledge but also carries the functions of value output and lifestyle guidance. By sharing their own life journeys of "living and learning until old age," this group turns the concept of "lifelong learning" into a concrete practical demonstration. The curiosity for knowledge and sustained enthusiasm for exploring the world that they display in their video content constitute a unique symbol of personal charm. This media image transcends the functional positioning of mere "knowledge transmitter" and rises to become a role model with spiritual leading value, providing positive motivation for the thirst for knowledge and enterprising spirit of audiences of all ages.

III. Problems and Challenges in the Development of Silver-haired Knowledge Broadcaster Accounts

While the "Silver-haired Knowledge Broadcasters" phenomenon delivers remarkable positive social value, its sustained and sound development still faces structural challenges spanning content creation, technical application, operation, and management. Essentially, these challenges stem from the inherent tensions between the characteristics of this group and the technical logic, communication rules, and cultural tone of short-video platforms. This directly determines whether they can break through development bottlenecks and achieve long-term viability.

(1) Challenges in Content Creation: Dual Constraints of Rigid Narration and Lack of Innovation

Content serves as the core link connecting "Silver-haired Knowledge Broadcasters" with audiences. When translating their professional expertise into content tailored for short-video scenarios, they are trapped by rigid content formats and insufficient innovative momentum, which undermines communication efficiency and viral potential.

First, rigid narrative styles fail to adapt to platform communication rhythms. The short videos of these senior creators largely adopt the linear narrative of traditional classroom teaching with rather fixed expressive forms. Such straightforward storytelling, lacking plot twists and emotional ups and downs, runs counter to the short-video ecosystem defined by fast pacing, strong appeal, and concise presentation. It easily leads to audience fatigue and fails to grab viewers' attention within the crucial "first three seconds" of a video. Though some creators attempt to open videos with suspense, the subsequent content lacks plot reversals and dramatic conflicts to build a fully immersive narrative. This monotonous narrative model clashes with young audiences' demand for fast-paced, interactive, and twist-rich content, greatly limiting the potential for wider dissemination.

Second, outdated topic selection results in weak innovation. An analysis of their content shows that most topics are confined to their specialized fields. While this guarantees in-depth and professional knowledge sharing, the content rarely ties in with online trends and popular culture. Few videos offer professional interpretations of current events, leaving the content time-insensitive and less discussable, so they cannot leverage trending topics for viral spread. Meanwhile, content homogenization has become prevalent: creators within the same field tend to adopt similar perspectives and explanation methods, with a shortage of continuous creative ideas and format upgrades. As audiences lose their initial curiosity and grow weary of repetitive content, creator accounts inevitably see stagnant follower growth. Therefore, how to make knowledge content more engaging, relatable and innovative while maintaining academic rigor has become a key issue to address in content creation.

(2) Challenges in Technical Application: Deficient Production Skills and Poor Algorithm Adaptation

Technology underpins the audiovisual presentation and efficient dissemination of knowledge. Restricted by age, energy, and professional backgrounds, senior creators struggle with video production skills and platform algorithm adaptation, which compromises viewing experience and content reach.

First, uneven video production quality due to limited professional skills. Most "Silver-haired Knowledge Broadcasters" have no professional training in audio-visual communication. Advanced age also makes it difficult for them to master shooting and editing techniques. Many self-produced videos suffer from shaky footage, improper lighting, unclear audio, and monotonous camera work. Unlike young creators who widely use diverse transitions, dynamic graphics, and animation, their videos appear plain and even rough in presentation. Such flaws not only spoil the viewing experience but also weaken the appeal and credibility of knowledge content. While this down-to-earth style may enhance affinity in certain cases, upgrading production quality is essential for long-term communication effectiveness.

Second, poor adaptation to platform algorithms hinders traffic acquisition. Short-video platforms rely heavily on algorithm-based content distribution, which prioritizes metrics such as completion rate, interaction rate, and share rate.

Knowledge-based videos tend to be longer and information-dense, which observable evidence and prior research suggest may lead to relatively low completion rates. Their academic tone also differs from the colloquial and entertaining style favored by algorithms, which may lead to inaccurate content tagging and reduced recommendation priority. In addition, these senior creators seldom tap into traffic sources such as trending topics and platform challenges, and lack systematic skills for optimizing titles, cover images, and hashtags. Consequently, high-quality knowledge content is confined to existing follower groups and fails to reach broader audiences—a dilemma where good content cannot gain due exposure.

This situation reflects the risk of algorithmic marginalization facing silver-haired knowledge broadcasters. Platform algorithms tend to reward fast-paced, high-completion, highly-emotional content. Knowledge-heavy senior-produced videos are structurally disadvantaged under such distribution rules. Although we cannot access Douyin's private backend analytics to measure exact visibility metrics, existing platform-studies literature has documented similar structural bias against knowledge-oriented senior creators. Without targeted algorithmic adjustment or official channel support, even high-value knowledge outputs risk being trapped within small existing fan circles.

(3) Challenges in Operation and Management: Mismatched Tone and Inadequate Interaction Mechanisms

Systematic operation and management are vital to sustain the vitality of creator accounts. "Silver-haired Knowledge Broadcasters" show obvious deficiencies in long-term planning, user engagement and adaptation to platform culture, hindering their sustainable development.

First, academic discourse clashes with platform culture, creating communication barriers. Mainstream short-video platforms like Douyin and Bilibili are dominated by young users, who favor lighthearted, humorous, empathetic and internet-style content. Nevertheless, many senior creators stick to formal, academic language filled with jargon, without simplifying or rephrasing terms for general audiences. This disconnect raises comprehension barriers, fails to strike an emotional chord with young users and undermines the effective delivery of knowledge.

Second, incomplete interaction mechanisms lead to low fan loyalty. A solid community and active user interaction are cornerstones for lasting account vitality, yet these senior creators invest little in audience engagement. For instance, most videos lack descriptive captions, missing opportunities to highlight key knowledge and encourage interaction. Observable comment-zone evidence suggests that replies to audience questions are often delayed or irregular for many of these accounts, and there are no regular segments such as Q&A or comment reviews to boost audience participation and sense of belonging. This one-way communication model makes it hard to build a loyal fan base. It also prevents creators from identifying audience demands via feedback, slowing down content iteration and optimization.

IV. Healthy Optimization Tips for Senior Knowledge Live Stream Accounts

Facing multiple structural challenges in the course of development, the "Silver-haired Knowledge Broadcaster" group must build a systematic optimization system across dimensions such as content production, technology application, platform support, and user interaction in order to achieve sustainable development. Based on the preceding in-depth analysis of their current development status and core dilemmas, this study proposes the following targeted and actionable strategies for healthy development.

(1) Content Optimization Strategy: Synergistic Advancement of Vertical Deep-Diving and Innovative Expression

Content is the fundamental source of the core competitiveness of silver-haired knowledge broadcasters. The logic for optimizing it should focus on a dynamic balance between professional depth and communicative innovation, enhancing communication efficiency and audience stickiness through the renewal of content formats and narrative models.

At the vertical field level, the core principle of "content is king" should be adhered to. Leveraging their own deep professional knowledge reserves, they should conduct in-depth exploration within their areas of expertise, avoiding the homogenization trap caused by blindly chasing hot topics. On the one hand, they can promote the serialized development of knowledge content, breaking down systematic professional knowledge into logically coherent thematic series—such as Professor Dai Jianye's collection of interpretations of Su Shi's poetry or Academician Wang Pinxian's series on deep-sea exploration. These practices not only cultivate users' sustained viewing habits and create a "binge-watching" effect but also systematically construct knowledge maps, thereby reinforcing the professional depth of the content and user stickiness. On the other hand, they should create personalized IP identifiers, highlighting unique research perspectives, academic experiences, or expression styles. For example, a marine geologist might focus on interpreting the evolutionary history of the South China Sea, while a physicist might concentrate on explaining interesting physics phenomena in daily life. By deeply integrating the core achievements of their personal academic careers with the knowledge dissemination context, they can form difficult-to-replicate differentiated labels and build core competitive advantages.

Secondly, while adhering to professionalism, they must actively adapt to the communication logic of short videos to enhance content appeal and diffusion, specifically regarding narrative innovation and the integration of hot topics. First, advance suspense-driven introductions and narrative structure innovation, breaking away from traditional linear, flat storytelling. Use questioning or unveiling techniques at the beginning of videos to create suspense, such as "What is the intelligent core of ChatGPT?" or "The scientific logic behind a thousand-year historical mystery?" to quickly capture user attention. In narrative structure, draw on classic paradigms like "question-exploration-answer" or "phenomenon-misconception-principle" to enhance plot rhythm and narrative tension. Second, achieve an organic combination of hot topic grafting and youth-oriented expression. Actively integrate professional knowledge with social hot spots and

popular culture—for example, interpreting the scientific settings in popular films and TV works, or explaining the underlying professional principles behind cutting-edge technology news. This integration strategy not only enhances the timeliness and approachability of the content but also effectively breaks down circle barriers, reaching a wider range of potential audiences.

Furthermore, it is necessary to maintain a reasonable balance between commercialization and professional credibility for silver-haired knowledge broadcasters as they seek long-term sustainability. Proper commercial cooperation can provide financial support for equipment upgrading and team assistance, alleviating the personal energy burden on elderly creators. Nevertheless, over-commercialization risks eroding public trust: inappropriate paid product placement, over-promotion, or distorted knowledge interpretation for commercial benefits may damage their core media image as authoritative knowledge communicators. Therefore, senior knowledge creators should stick to professional bottom-lines when accepting commercial collaborations, prioritize knowledge quality over commercial returns, and maintain transparent disclosure of commercial partnerships to audiences.

(2) Technology Enhancement Strategy: High-Quality Production and Efficient Use of Visual Symbols

The presentation quality of audiovisual language directly affects the efficiency and effectiveness of knowledge dissemination. The core goal of technological enhancement is to reduce the audience's cognitive load, optimize the viewing experience, and achieve efficient transmission of professional knowledge.

At the video production level, there is no need to pursue complex special effects; the focus should be on ensuring and optimizing basic viewing quality. By improving fundamental technical capabilities, the creators demonstrate their respect for both content and audience. On the one hand, solidify basic production skills: systematically learn to use simple mobile editing software like CapCut (Jianying)g) to achieve stable images, balanced lighting, clear audio, and accurate subtitles. Such basic improvements significantly enhance the viewing experience and the professional texture of the content. On the other hand, make good use of platform-built tools and templates. Fully utilize convenient tools and standardized templates provided by short video platforms, such as stickers, textual graphics, transition effects, and smart dubbing. These tools are easy to use and low-cost, effectively enhancing the rhythm and visual richness of videos, making them more aligned with the aesthetic and communication characteristics of short videos.

In terms of using visual symbols, fully leverage their knowledge "translation" function to lower the audience's threshold for understanding abstract knowledge. First, strengthen the use of explanatory visual symbols. For abstract and complex professional concepts, use visual methods such as dynamic charts, diagrams, animations, and live-action shots to provide concrete demonstrations. For example, display dynamic plate movement maps when explaining geological structures, or use simple animated demonstrations to illustrate physics principles, transforming abstract knowledge into intuitive and perceptible visual texts, thereby improving the efficiency of knowledge transfer. Second, appropriately incorporate functional visual symbols. Reasonably use internet meme stickers and fun bullet screen terms familiar to younger audiences. For instance, pop-up text like "Key Point" or "Take Notes" at core knowledge points, and match suitable meme stickers in humorous scenarios. This "intergenerational dance" of visual symbols effectively narrows the psychological distance with young audiences, enhancing the content's fun and "internet-savvy" feel.

(3) Platform and Policy Support Strategy: Algorithm Adaptation and Building an Inclusive Environment

The healthy development of the silver-haired knowledge broadcaster group cannot be achieved without the coordinated support of the short video platform ecosystem and the macro-policy environment. An inclusive environment suitable for their development should be built through platform traffic support and policy guidance.

At the level of platform algorithm adaptation and traffic acquisition, creators should proactively study and adapt to platform communication rules and actively seek official traffic support. On the one hand, deepen the understanding and adaptation of algorithm recommendation logic. Optimize video titles, cover designs, and tag settings to improve the accuracy of keyword matching, thereby enhancing the algorithm's ability to identify and recommend content. At the same time, guide viewers to complete interactive behaviors such as likes, comments, shares, and full watch time through content optimization. Such interaction data are core indicators for algorithm distribution of recommendation weight, significantly boosting the content's dissemination momentum. On the other hand, actively participate in official platform campaigns. Proactively join vertical channels such as Bilibili's "Knowledge Zone" or Douyin's "Knowledge Science Popularization," and participate in platform support projects like "DOU Knowledge Plan" or "Knowledge Creator." Engage in content co-creation with official accounts such as "Douyin Science Popularization" or "Douyin Great Learning," leveraging the official platform's authoritative endorsement and traffic support to achieve scaled growth in influence.

At the level of policy guidance and age-friendly transformation, a supportive environment for the digital participation of the elderlyver-haired population should be built from a macro perspective. On the one hand, strengthen policy guidance and positive incentives. Incorporate the "silver-haired knowledge broadcaster" phenomenon into the policy framework of active aging and lifelong learning. Promote typical cases and issue special commendations to stimulate more highly educated elderly individuals to actively contribute their knowledge and wisdom using new media platforms. On the other hand, promote the deepening of age-friendly transformations on short video platforms. Encourage platforms to optimize interaction design for elderly creators. For example, launch specialized tools like "Silver-haired Creation Assistant," provide simplified editing templates, and set up professional operation teams to offer one-on-one guidance. Lower the creation threshold for the silver-haired group from the perspectives of technical tools and service support.

Conclusion

Under the dual background of short video technology reshaping the knowledge dissemination ecosystem and the deepening implementation of active aging strategies, the "silver-haired knowledge broadcaster" group—possessing the dual attributes of elderly knowledge elites and new media content producers—has become a striking phenomenon in the digital space, blending warmth and depth through their unique identity characteristics and innovative communication practices. Through content analysis and case studies of 15 representative accounts on the Douyin platform, this research systematically sorts out their media images as "professional knowledge disseminators, active doers, and advocates of humanistic sentiment." Rooted in profound learning, they couple knowledge authority with universal accessibility; through a lifelong learning attitude, they concretize the essence of active aging; and by using equal, approachable expressions, they build intergenerational emotional bridges. Their communication practices release significant positive value in helping the elderly group achieve social reintegration and self-fulfillment, breaking down knowledge barriers to promote universal access, and fostering intergenerational integration and transmitting positive social energy.

At present, their sustained and healthy development still faces multiple structural challenges. In content production, rigid narrative models and insufficient timeliness in topic selection lead to a lack of innovation. In technological application, inadequate professionalism in video production and weak adaptation to platform algorithms affect communication effectiveness. In operation and management, a disconnect between academic language and platform tone, coupled with imperfect user interaction mechanisms, constrains fan loyalty. The essence of these problems lies in the inherent tension between the academic creation logic of elderly knowledge elites and the dissemination rules of short video platforms, as well as the consumption preferences of young audiences. If not resolved, this tension will hinder their transformation from a phenomenal presence to normalized operation. To promote the long-term, sustainable development of "silver-haired knowledge broadcasters," it is necessary to build a multi-governance system that combines individual improvement and external collaboration. At the individual level, they must maintain their professional foundation, promoting vertical deep-diving and hot topic integration as well as narrative innovation in content, strengthening basic production skills and the use of visual symbols in technology, and optimizing discourse expression and interaction mechanisms in operation. At the external level, platforms need to optimize recommendation algorithms for knowledge-oriented content, set up special support channels, and deepen the transformation of age-friendly creation tools. All sectors of society should discard age biases and promote typical cases. Relevant government bodies need to incorporate them into the active aging policy framework, providing resources and incentives. Only when individuals and external forces form a synergy can the light of wisdom of "silver-haired knowledge broadcasters" continue to shine, fully releasing the knowledge value of the elderly population and making digital space a bridge for intergenerational knowledge sharing. This is not only about the quality of life and self-fulfillment of millions of elderly people in their later years, but also about the implementation of active aging strategies, the advancement of universal knowledge access, and the maintenance of intergenerational harmony, while guarding against risks brought by excessive commercialization.

Limitations of this study Several important limitations should be acknowledged. First, our purposive sample consists only of high-follower, mostly institutionally credentialed retired experts on Douyin; this elite-sample bias means findings cannot be generalized to lesser-known silver-haired knowledge creators, including self-taught craftsmen or folk cultural scholars. Second, this research draws on cross-sectional video text analysis without longitudinal tracking data, so we cannot observe long-term account evolution across multiple years. Third, we have not conducted semi-structured interviews with creators or their operating teams; many observed platform-related challenges are inferred from textual and public-evidence rather than primary creator self-reports. Fourth, all empirical materials are collected exclusively from the Douyin platform; conclusions may not directly transfer to other short-video platforms such as Bilibili, Kuaishou, or WeChat Channels without further comparative research. Finally, we lack access to platform-backend algorithms and traffic analytics data, constraining our capacity for quantitative measurement of algorithm marginalization effects. Future research may address these gaps through mixed-method designs combining creator interviews and multi-platform comparative sampling.

In the future, as the development system continues to improve, "silver-haired knowledge broadcasters" will surely play an even greater role in the wave of digital civilization, providing a warm and wise practical model for building an age-friendly digital society and a lifelong learning society, and infusing lasting and profound momentum into knowledge dissemination and social construction in the digital age.

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