

Feedback-Oriented Path Design for Archival Public Digital Cultural Services in the Context of Information Cocoons

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Abstract

[Purpose/Significance] Under the impetus of the digital wave, the explosion of online information and recommendation algorithms have collectively spawned the “information cocoon” phenomenon, limiting the breadth of public information acquisition and the depth of cultural cognition, thereby posing a challenge to the value realization and long-term development of archival public digital cultural services. **[Method/Process]** Taking the “information cocoon” context as the analytical starting point, this study identifies prominent dilemmas in current archival public digital cultural services from three dimensions—supply, dissemination, and consumption—focusing on resource provision, content distribution, and user acceptance. **[Results/Conclusion]** Based on an analysis of the underlying causes, the study proposes a feedback-oriented path that strengthens government guidance and algorithmic regulation at the macro level while promoting collaborative optimization of supply-dissemination-demand at the practical level, aiming to break through the constraints of the “information cocoon,” reshape a service ecosystem balancing technology-driven and culture-oriented approaches, and provide theoretical support and practical reference for the innovative development of archival public digital cultural services.

Full Text

The Design of a Feedback-Oriented Path for Archival Public Digital Cultural Services in the Context of the “Information Cocoon”

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Abstract

[Purpose/Significance] Driven by the wave of digitalization, information overload and algorithmic recommendation have jointly fostered the emergence of the “information cocoon,” which restricts the breadth of public information access and the depth of cultural cognition. This phenomenon poses challenges to the value realization and long-term development of archival public digital cultural services. **[Methods/Process]** Taking the “information cocoon” as the analytical context, this study identifies the major challenges faced by archival public digital cultural services across three dimensions—supply, dissemination, and consumption—focusing on issues in resource provision, content distribution, and user acceptance. **[Results/Conclusion]** Based on an analysis of the underlying causes, the study proposes a feedback-oriented pathway that strengthens governmental guidance and algorithmic regulation at the macro level, while promoting coordinated optimization among supply, dissemination, and demand at the practical level. This approach aims to break through the constraints imposed by the “information cocoon,” rebalance technological drivers and cultural orientation, and provide theoretical and practical references for the innovative development of archival public digital cultural services.

Keywords: Information Cocoon; Archival Public Cultural Service; Digital Governance; Feedback-Oriented Path Design

Classification Number: G270

On November 12, 2024, the Cyberspace Administration of China and other departments jointly issued the *Notice on Launching the Special Campaign for “Clear and Bright: Governance of Typical Problems in Online Platform Algorithms,”* which explicitly calls for preventing the formation of “information cocoons,” enhancing the diversity and richness of pushed content, and strictly standardizing recommendation behaviors [1]. This policy orientation not only demonstrates the state’s high regard for algorithmic governance but also provides important practical insights for the digital development of public cultural services. Today, the explosive growth of online data and information, coupled with various platforms’ reliance on data collection, user profiling, and machine learning technologies, has enabled precise push notifications through recommendation algorithms. While this has alleviated information overload to some extent, the solidification of filtering mechanisms has gradually trapped users in “information cocoons.” This phenomenon not only weakens the breadth of public information access and the depth of cultural cognition but also subtly reshapes the landscape of social and cultural exchange. In the practice of archival public digital cultural services, the application of recommendation algorithms similarly presents a dual effect: on the one hand, it can accurately capture user interests and improve the utilization efficiency and dissemination effectiveness of archival resources; on the other hand, excessive reliance on personalized recommendations can easily lead to homogenization of information supply, undermining the

publicness and diversity of archival dissemination. Thus, how to harness the empowerment of intelligent technology while preventing the “bias-empowerment” effect and breaking through the constraints of the “information cocoon” has become an urgent issue that archival public digital cultural services must address.

In recent years, domestic research combining “information cocoons” with archival services has been relatively limited and mainly scattered across studies on related topics. Some scholars have pointed out that while AI-driven archival services enhance the intelligence level of information acquisition and utilization, algorithmic push mechanisms may further reinforce user preferences, induce the “information cocoon” effect, and thereby weaken the diversity and openness of archival information dissemination, limiting the expansion of public information horizons and the realization of public value [2]. Other scholars have analyzed the dual positive and negative impacts of “information cocoons” on archival culture dissemination from a user behavior perspective and proposed a collaborative solution path from the supply, intermediary, and demand ends to achieve balanced and open archival information services [3]. Internationally, searching the Web of Science Core Collection with keywords such as “information cocoon(s),” “echo chamber(s),” or “information bubble(s)” combined with “archival service(s)” has not yielded any studies directly focusing on the intersection of these topics. When the search scope is expanded, relevant foreign literature on “information cocoons” is mostly concentrated in fields such as political democracy, algorithmic recommendation, and information dissemination, with few specialized and systematic works combining “information cocoons” with archival services.

Overall, the academic community has conducted in-depth research on “information cocoons” from dimensions such as information dissemination, algorithmic mechanisms, and public opinion ecology, laying an important foundation for understanding information flow characteristics and cognitive mechanisms in digital society. However, introducing the “information cocoon” perspective into the field of archival public digital cultural services holds positive significance for exploring issues such as user attention allocation, cultural resource visibility, and the dynamic balance of archival public value. In view of this, and in conjunction with the national cultural digitization strategy and social development needs, this study examines the design of a feedback-oriented path for archival public digital cultural services from an archival science perspective, aiming to provide a new reference for optimizing and innovating archival cultural functions.

1.1 Information Cocoon

The concept of the “information cocoon” was first proposed by American scholar Cass Sunstein to describe the state in which the public confines itself to a limited information environment guided by personal interests [4]. Currently, academia mostly views it as a consequential concept, referring to the closed state at the cognitive, emotional, and attitudinal levels resulting from long-term information narrowing [5], mainly manifested in three effects: information narrowing, group polarization, and filter bubbles. Based on this understanding, the “informa-

tion cocoon” can be defined as a phenomenon in which individuals, constrained by their information preferences, social circles, or algorithmic technologies, are exposed to highly homogeneous information for extended periods, becoming enclosed in a self-created “cocoon” like silkworms. Its core characteristics are information singularity, viewpoint repetition, and cognitive closure.

Specifically, understanding the “information cocoon” requires grasping three key points: First, it refers to the outcome brought about by mechanisms such as algorithmic recommendation, manifested as the loss of cognitive diversity and the risk of social polarization, rather than individuals’ immediate information behavior. Second, personalized recommendation technology is a necessary condition for its formation. Sunstein emphasized that algorithms construct “personal profiles” to continuously push information users like while excluding heterogeneous information, thereby intensifying closure. Finally, human agency cannot be ignored. Individuals’ selective exposure, group belonging needs, and psychological mechanisms to avoid cognitive dissonance also play a role in generating the “cocoon,” so it cannot be simply attributed to technological determinism [6].

1.2 Archival Public Digital Cultural Services

The *Public Cultural Service Guarantee Law of the People’s Republic of China* defines “public cultural service” as “services provided by government-led, socially participatory efforts to meet citizens’ basic cultural needs, including public cultural facilities, cultural products, cultural activities, and other related services” [7]. With the development of digitalization and networking, the implementation of public cultural services has gradually extended from offline entities to digital spaces, making public digital cultural services an important form. As some scholars have noted: “Public digital cultural services are activity processes that use state finance as the main funding source, manifest in resource digitization, technological intelligence, networked dissemination, and ubiquitous service, aim to maximize public interests, maintain social fairness and justice, and cultivate noble public character, and provide high-quality digital cultural services to the public” [8]. Building on these perspectives and applying them specifically to the archival domain, this study defines archival public digital cultural services as a form of public digital cultural service that follows the principles of non-profit, sharing, and equalization, takes archival cultural resources as core content, and encompasses various service modes such as digital resource construction, dissemination and exhibition, interactive participation, and innovative extension. Its essence is to achieve the sharing, exchange, and reproduction of archival resources through digitalization and networking, providing support for social memory inheritance, cultural identity cultivation, and public value generation (as shown in Figure 1 [Figure 1: see original paper]). Specifically, the digital archival resources, virtual exhibitions, and services such as online access, knowledge push, and interactive education provided by archival public digital cultural services, once offered through public platforms, have extremely low marginal

costs for adding additional users and do not affect others' simultaneous enjoyment. This non-excludable and non-rivalrous characteristic makes them typical public or quasi-public goods, meeting the requirements of public digital cultural services.

2 Dilemmas of Archival Public Digital Cultural Services in the Context of the “Information Cocoon”

From an evolutionary perspective, archival public cultural services have transitioned from traditional archive reading services to resource-open digital archive services, and then to intelligent push services in smart archives. While technology has expanded the breadth and depth of archival cultural services, it has also brought new dilemmas. Algorithmic push, while improving efficiency, may solidify user preferences and weaken the diversity and value that public digital cultural services should possess.

2.1 Supply Level: Deviation in Supply Orientation and Difficulty in Manifesting Service Value

The core objective of archival public digital cultural services should be to promote the realization of public cultural value and facilitate the inheritance and sharing of social memory through unique, comprehensive, and diversified resource provision. However, under the influence of the “information cocoon,” this supply logic has gradually been pulled by the attention economy and platform operation mechanisms, resulting in obvious orientation deviations.

First, service goals have shifted from public value to traffic metrics. Driven by big data and algorithmic logic, click-through rates, likes, and dissemination heat have become core standards for measuring service effectiveness, leading providers to increasingly chase popular interests and hot events in content selection, such as major festivals, historical anniversaries, and Olympic moments. While this orientation broadens the social reach of archival culture to some extent and enhances its dissemination timeliness and public accessibility, demonstrating the inclusive advantages of digital communication, it also causes archival services to slide toward an audience-preference-first rather than culture-guidance-first path, resulting in superficial and homogeneous content production [9]. Second, supply forms are increasingly becoming entertainment-oriented and fragmented. To cater to platform distribution mechanisms, archival cultural resources are often processed into lightweight, interesting short videos or information snippets. Although this form aligns well with users' digital consumption habits and can quickly attract attention, under the logic of fast consumption, the knowledge value and cultural value of archival resources are excessively compressed, greatly diminishing their educational function and capacity for in-depth dissemination. Finally, algorithmic recommendations reinforce immediate preferences, weakening the cultural guidance of archival public cultural services and leaving users immersed in fast-food digital consumption satisfaction.

2.2 Dissemination Level: Limited Dissemination Scope and Insufficient Visibility of Cultural Resources

In the traffic-driven digital era, traffic has become the core driver of attention capital. The deep connection between capital and media means that traffic growth drives the capture, storage, and diversion of attention, transforming public attention into a traffic landscape with economic value that is further commodified and capitalized [10]. Under this logic, platforms have effectively formed a traffic-based monopoly through the centralized allocation of attention resources.

In the information dissemination system dominated by traffic logic, archival information is inherently disadvantaged. Archival resources are often perceived by the public as political, historical, and professional, with content tending toward seriousness that struggles to effectively align with online users' preference for lightweight, interesting content. This disadvantage is further amplified in the operation of dissemination channels. The dissemination of archival public digital cultural services mainly relies on two types of channels: first, content creation platforms independently built by archival institutions, such as archive official accounts and portal websites, which, while ensuring content authority and professionalism, have limited dissemination radius and audiences concentrated among groups concerned with the archival field; second, content distribution platforms relying on social platforms such as Douyin, WeChat Channels, Kuaishou, and Weibo, which, driven by algorithms, reach a larger range of potential users but whose recommendation mechanisms tend to favor entertainment-oriented, fragmented content, leaving archival resources in a persistent "low-weight" state in the distribution system. Simultaneously, algorithmic filtering and interest preferences reinforce public information access barriers, making it difficult for archival cultural resources to enter users' information pools despite digital construction and open sharing driven by various levels of archives and public cultural institutions, due to the lack of traffic entry points.

2.3 Consumption Level: Aggravated Group Differentiation and Weakened Social Efficacy

Cultural consumption is a process of knowledge growth, innovation, and sublimation. In his "public sphere" theory, Jürgen Habermas pointed out that public space should become a platform for equal exchange and rational dialogue among social members, achieving the construction of social consensus and generation of public value through open information sharing and diversified dialogue [11]. However, the consumption practice of archival public digital cultural services under the "information cocoon" effect runs counter to this ideal vision.

First, consumption behavior tends toward passive narrowing. Under the dominance of algorithmic recommendation logic, users' ways of accessing archival content shift from active exploration to passive acceptance, with information acquisition gradually limited to algorithmically preset interest boundaries. The

result is that users develop a “path dependency,” remaining immersed in homogeneous archival resources for extended periods and lacking expansive understanding of diverse information. Second, this passive narrowing further leads to the differentiation and isolation of consumer groups. Users are divided into multiple small circles with high internal identification based on differentiated information diets, lacking exchange and dialogue space between them and forming a pattern similar to cultural islands. Finally, when consumption patterns become solidified into a closed circle structure over the long term, public cultural identity becomes difficult to consolidate.

3 Causes of Dilemmas in Archival Public Digital Cultural Services in the Context of the “Information Cocoon”

Archival public digital cultural services possess both publicness and professionalism, and their operation in the digital dissemination environment is inevitably shaped by both algorithmic logic and user consumption logic. In the context of the “information cocoon,” the service dilemmas presented by this digital ecology have multidimensional and superimposed causes. Accordingly, this section systematically analyzes the causes of dilemmas in archival public digital cultural services from three dimensions: structural relationships, technical mechanisms, and user psychology.

3.1 Structural Misalignment Between Service Supply Models and Platform Distribution Models

The fundamental goal of public cultural services is to meet society’s common cultural needs, with effectiveness typically measured by service quality, quantity, public satisfaction, and participation. Under this framework, the normative value orientation of archival public cultural services is to achieve the unity of balance and diversity—that is, to ensure the public’s right to equitable access through equalized supply on the one hand, and to respond to the differentiated needs of different groups through diversified content on the other. However, the balance and diversity of supply are often constrained by technical means and platform logic, making ideal goals difficult to fully realize. For example, archival institutions systematically display archival cultural content through digital resource acquisition, collection catalogs, thematic databases, and virtual exhibitions. This holistic supply characteristic reflects the professionalism and publicness of archival institutions but also determines that their dissemination rhythm is relatively stable and content update cycles are longer. In contrast, platform distribution logic is built upon algorithm-driven attention competition, emphasizing content immediacy, fragmentation, and user stickiness, cutting content into fragments that match individual immediate interests through precise push and fragmented distribution. While this operational mechanism improves information acquisition efficiency, it essentially forms a personalized filter based on user profiles. Consequently, the tension between the two logics continuously intensifies: the supply side attempts to promote archival resources as public

goods 普惠性地推向社会全体 (universally to the entire society), while platforms tend to transform them into information consumer goods for selective feeding targeting specific preferences. The result is not only the marginalization of archival resources in the dissemination process but also the public' s difficulty in forming systematic historical cognition, diluting the public cultural value of archives. Furthermore, this misalignment 无形中加剧了数字文化鸿沟 (invisibly aggravates the digital cultural divide), automatically excluding groups insensitive to archives or with low digital literacy from services, ultimately weakening the social cohesion function that public cultural services should possess.

3.2 Asymmetric Information Flow and Institutional Lag

In July 2025, the China Internet Network Information Center (CNNIC) released its 56th *Statistical Report on China' s Internet Development*, showing that as of June, China' s internet user base reached 1.123 billion, with an internet penetration rate of 79.7% [12]. Against this backdrop, obtaining information through algorithmic channels has become society' s main information dissemination method. The dissemination path of archival public digital cultural services increasingly relies on content intelligent distribution platforms. Archival institutions and information websites, represented by the National Archives Administration and *China Archives News*, undertake the creation and aggregation of original and authoritative content, constituting content creation platforms; while short video platforms and social media serve as content intelligent distribution platforms, precisely scheduling how information reaches users through big data and recommendation algorithms. Objectively, leveraging distribution platforms has indeed expanded the dissemination scope of archival information to some extent, with successful “circle-breaking” cases effectively enhancing the social influence of archival public cultural services. For example, the Huangshi Municipal Archives carefully produced the short video series *Exploring Precious Archives—Modern History of Huangshi Behind the Archives*, transforming dry and rigid archival resources into 通俗鲜活的内容 (accessible and vivid content), enabling the public to easily read archives and touch history through short video formats [13]. On the one hand, content creation platforms rely on intelligent distribution platforms to enhance social visibility and influence; on the other hand, archival institutions have almost no intervention or control rights over platforms' algorithmic models. The systematic and holistic content provided by archival institutions is unidirectionally captured and reprocessed by platforms, with information flow presenting significant asymmetric characteristics, while push logic is completely subject to algorithmic mechanisms. This causes the original intention of technological “empowerment” to evolve into the reality of “bias-empowerment” in practice. Meanwhile, in the development of archival public digital cultural services, relevant institutional norms and evaluation mechanisms are relatively lagging, having not yet formed effective regulations targeting digital platform algorithmic bias and public service value protection. The lack of institutional-level correction and guidance results in insufficient discourse power and adjustment space regarding platform logic in service practice, thereby

deepening the weakening of publicness and professionalism goals.

3.3 Superimposed Effects of User Choice Preferences and Cognitive Comfort

The formation of “information cocoons” stems not only from technological facilitation but is also deeply rooted in users’ inherent psychological mechanisms and choice preferences. This self-selection behavior driven by individual psychology constitutes the internal cause of the “cocoon” effect. From a cognitive perspective, to reduce information processing burdens and maintain psychological comfort, individuals instinctively tend to access information consistent with their existing cognitive frameworks and avoid heterogeneous content that may trigger cognitive dissonance. In archival information consumption, this mechanism directly manifests as users’ active selection of entertaining and simplified content and avoidance of complex archival resources with depth and criticality. Simultaneously, when algorithms capture users’ stable preferences for homogeneous content, they further reinforce the supply of such content. Consequently, users’ choice psychology and algorithmic operational logic superimpose and jointly compress the diversity of archival information, causing services to fall into an interest-oriented internal circulation and systematically aggravating the solidification of “information cocoons.”

4 Design of a Feedback-Oriented Path for Archival Public Digital Cultural Services in the Context of the “Information Cocoon”

The optimization of archival public digital cultural services should not be limited to one-way supply but should construct an ecology of two-way circulation and mutual nourishment. To this end, coordinated advancement is needed from both macro-level institutional guidance and micro-level service practice (as shown in Figure 2 [Figure 2: see original paper]) to reshape the open structure and social efficacy of archival public digital cultural services.

[Figure 2: see original paper]

4.1 Macro-Level Guidance Dimension

Under the influence of “information cocoons,” relying solely on institutional or platform operations cannot break through information barriers and cultural cognitive limitations. Government guidance and institutional guarantees are needed to coordinate supply-demand relationships and value orientation.

4.1.1 Guiding the Dynamic Balance Between Public Cultural Values and Social Needs From a macro perspective, the deep logic of public cultural services is not simply resource supply but a governance practice that uses culture to shape social order and guide social values. The key lies in achieving dynamic

balance between public cultural value guidance and social needs orientation, making cultural construction both ideologically leading and responsive to social reality.

First, archival public digital cultural services should adhere to correct orientation and strengthen the leading role of mainstream values, establishing the core position of mainstream values in resource construction and content dissemination [14]. Currently, China' s *Public Cultural Service Guarantee Law*, *Opinions on Promoting High-Quality Development of Public Cultural Services*, and *Opinions on Promoting the Implementation of the National Cultural Digitization Strategy* all emphasize that public cultural services should be guided by advanced socialist culture with Chinese characteristics, supported by socialist core values, and promote the creative transformation and innovative development of excellent traditional Chinese culture. Archival institutions should proactively play a cultural guidance role, strengthening the public attributes and ideological depth of archival content on digital platforms, organically integrating socialist core values with social reality needs, and incorporating mainstream values into the public' s daily life in more accessible and appealing forms to ensure they are not submerged by traffic logic in the digital dissemination ecology.

Second, the diversity and variability of social needs should be fully attended to. Archival public digital cultural services need to accommodate differences among groups, regions, and cultural levels to form a more inclusive cultural supply structure. The concept of a "people-centered" cultural development view should be established, promoting cultural expression and participation rights of social members, so that the public cultural service system can maintain overall value direction consistency while responding to individual cultural needs.

4.1.2 Improving the Algorithmic Regulation System to Achieve the Return of Publicness in Cultural Services From international experience, algorithmic regulation has become a core issue in digital governance. Article 22 of the EU' s General Data Protection Regulation (GDPR) first proposed the "right to explanation for automated decision-making," requiring data controllers to fulfill obligations such as data cleaning, pre-review, and post-intervention in automated processing, granting data subjects the right to question and explain, and initially constructing algorithmic review and individual relief mechanisms [15]. The Digital Services Act (DSA) requires large platforms to disclose the main parameters and operational mechanisms of their recommendation systems, obligating platforms to explain the algorithmic basis for content push to users and granting users the right to intervene in and autonomously choose content recommendation rankings [16]. China' s *Regulations on the Management of Algorithmic Recommendations for Internet Information Services* also proposes establishing algorithmic filing, classified and graded management, and social supervision systems [17]. These institutional experiences provide important references for exploring algorithmic governance in the archival field.

Based on these experiences, the government should lead the construction of an

algorithmic governance system with public attributes. On the one hand, an algorithmic transparency mechanism should be established, regularly disclosing recommendation logic, content screening standards, and algorithmic parameters to ensure public 知情权 (the right to know) about information distribution mechanisms. On the other hand, algorithmic evaluation and ethical review mechanisms should be introduced to assess the social impact of algorithms from dimensions such as diversity, fairness, and publicness, preventing the alienation of technical logic from public value. Through institutionalized algorithmic supervision and responsibility constraints, it is possible to ensure that archival digital dissemination returns to its essential functions of cultural dissemination and social education while guaranteeing user experience and precise content push, promoting openness, balance, and healthy flow in the public digital cultural space.

4.2 Practice Operation Dimension

Under the support of macro-level policies and institutional guarantees, the implementation effect of archival public digital cultural services still depends on specific practical operations. The practice operation dimension focuses on the collaborative interaction among service supply, information dissemination, and public demand, aiming to transform institutional guidance into implementable operational mechanisms.

4.2.1 Supply Side: Optimizing Production Mechanisms and Promoting Co-Creation and Symbiosis of Archival Content First, the content production model should be improved to construct an open co-creation ecology. Under the influence of the “information cocoon” effect, one-way archival content supply models can easily cause narrow information circulation and insufficient dissemination efficacy. Therefore, archival public digital cultural services urgently need to shift toward a production ecology centered on open collaboration and diversified co-creation. One, strengthen the construction and operation of archival content creation platforms to form a stable content creation ecology. In this process, on the one hand, the periodicity and continuity of content updates should be ensured through content update plans to maintain long-term user attention. For example, the Douyin account of Beijing Satellite TV’s *Archives* program has nearly 4 million followers and nearly 40 million likes, forming a continuous output rhythm that satisfies audience expectations and strengthens platform algorithms’ exposure tendency toward its content, ensuring archival content’s visibility in information flows. On the other hand, long-term user attention should be maintained to build stable user expectations and brand stickiness. Two, expand social participation channels to stimulate public co-creation vitality. Archival institutions should regard the public as important participants in the content ecology, attracting social forces to participate in archival resource development and dissemination through incentive mechanisms and interactive design. For example, to absorb broad social forces to improve archival resources, the U.S. National Archives and Records Admin-

istration launched the “Citizen Archivist” project in December 2011, featuring a special column on its homepage. After understanding relevant policies, users can register online to participate in archival information resource management and development practices such as tagging, archival description, and transcription. The project has achieved tremendous success since its launch and won the 2012 “Best Government Innovation Practice of the Year” award for effectively improving public-government agency relations [18]. Another example is the “Who’s Best at Archival Cultural Creativity” themed voting activity jointly organized by the National Archives Administration and Guangming Net, which invited the public to vote on archival documents they most wanted to see developed into cultural and creative products, based on 15 Chinese archival documents included in the Memory of the World Register. Through interactive and interesting methods, this activity organically combined public interest with archival resource development, enhancing both the social attention and cultural dissemination power of archival resources and providing new sources of inspiration and dissemination paths for archival content creation, promoting symbiotic co-creation between archival institutions and the public [19].

Second, supply content quality should be enhanced to balance knowledge and interest. The professional depth and aesthetic appeal of content itself also influence the dissemination breadth and social impact of archival digital cultural services. Specifically, high-quality supply of archival content can be advanced through two paths: professional knowledge transformation and innovative expression.

Professional knowledge transformation means taking archival professional knowledge as the core support in content creation, screening and refining the historical information, cultural significance, and social value contained in archival documents to make them conform to digital dissemination contexts and public understanding habits. For example, short video dissemination is characterized by “short, surprising, and fast,” requiring creators to transform complex historical archival content into easily understandable knowledge units based on profound knowledge reserves and re-present them through life-oriented and scenario-based narrative strategies, thereby lowering user cognitive thresholds and enhancing content affinity. Taking the video *Searching for Cats by Maps: Museum Cats from Qing Palace Cat Registers* from the Imperial Archives’ WeChat Channels as an example, the creator keenly captured the resonance between archival resources and modern pet culture, combining Qing palace cat archives with cartoonized visuals and real museum cat images. This approach maintained the authenticity and professionalism of archival knowledge while stimulating public interest in an interesting way, successfully achieving a balance between knowledge and interest and enhancing the attractiveness and recognition of archival culture dissemination [20].

Innovative expression means expanding the expressive space and cultural reach of archival content dissemination through cross-boundary integration, knowledge aggregation, and technological empowerment. One, promote cross-

boundary integration and IP co-creation. Relying on the cultural heritage of archival resources, explore deep linkages with fields such as film and television, gaming, education, and cultural creativity, embedding archival elements into diverse carriers to form digital cultural products with “circle-breaking effects.” For example, the Sichuan Provincial Archives created the nation’s first virtual archival culture IP digital humans “Dang Xiaojiang” and “Dang Xiaohe,” disseminating archival knowledge through anthropomorphic and interesting methods, naturally integrating archival culture into public life and becoming new cultural symbols that youth groups are willing to accept [21]. Two, strengthen knowledge aggregation and scene reconstruction. Through thematic planning and content reorganization, break the fragmented presentation of archival resources and construct systematic knowledge graphs, immersive digital exhibition halls, and interactive storylines, balancing entertainment with enhanced knowledge value [22]. Three, deepen expression innovation and technological empowerment. Using new technologies such as digital narration, virtual reality (VR), and interactive visualization, promote interesting and immersive expression of archival resources, enabling users to achieve knowledge absorption and cultural identification in relaxed interaction, thereby constructing a two-way feedback mechanism for archival culture dissemination and promoting continuous innovation and value regeneration in archival content supply.

4.2.2 Dissemination Side: Improving Algorithmic Governance and Strengthening Platform Public Responsibility On the one hand, algorithmic recommendation mechanisms should be optimized. The key to optimizing recommendation mechanisms lies in enhancing information diversity and algorithmic transparency. First, information diversity weights should be introduced into recommendation models, enabling users to access more cross-domain and cross-cultural archival resources through setting heterogeneous content ratios and cross-topic push mechanisms to avoid content narrowing. Second, a recommendation explanation mechanism can be constructed to enable users to understand the logic and basis of algorithmic choices, thereby enhancing user autonomy and trust. With dual guarantees of diversity and explainability, algorithmic recommendations can truly achieve the function of promoting knowledge expansion rather than limiting cognitive boundaries.

On the other hand, platform self-regulation should be strengthened to balance commercial interests and public responsibility. As the core carrier of information dissemination, platforms are not only algorithm operators but also important responsible subjects for public cultural dissemination. Internal supervision and self-restraint mechanisms should be promoted. First, through diversified recommendation indicators and balanced content distribution mechanisms, platforms can be guided to consider cultural value while ensuring click-through rates. Second, user feedback channels and public supervision mechanisms should be improved to ensure content distribution can reflect diversified social needs. On this basis, platforms should proactively assume social responsibility, incorporating

archival cultural content into high-quality content systems to form a dynamic balance between commercial interests and public value. In recent years, some platforms have begun exploring value-oriented optimization of content ecology. For example, Douyin's "Featured Mode" establishes clear content quality evaluation standards and recommendation mechanisms, guiding algorithms to prioritize the distribution of content with knowledge, cultural, and social value, enabling marginalized vertical fields and niche cultures to gain more exposure opportunities. This model's practice demonstrates that platforms can completely promote the visibility of high-quality cultural resources while maintaining traffic activity. For archival public digital cultural services, if such mechanisms can be referenced and archival content can be included in platforms' high-quality content pools, achieving enhanced cultural visibility through algorithmic support and traffic tilt, it will not only help broaden the social reach of archival dissemination but also help construct a content ecology where commercial logic and public cultural missions run parallel.

4.2.3 Demand Side: Enhancing Public Literacy and Cultivating Diversified and Open Cognition

First, cultivate public digital literacy to enhance information screening and utilization capabilities. The public is often limited by existing interests and platform recommendations, lacking autonomous information screening and critical judgment abilities. Therefore, feedback-oriented path design needs to take enhancing public digital literacy as the core objective. On the one hand, education on information acquisition, screening, and evaluation capabilities should be strengthened, guiding the public to develop abilities to distinguish truth from falsehood and screen value in diversified information environments. On the other hand, archival institutions and education departments can help the public master methods for searching, analyzing, and utilizing archival resources through digital literacy training, archival utilization workshops, and information education courses. As digital literacy continuously improves, the public can actively break away from algorithmically set narrowing tracks to achieve broader information acquisition and knowledge construction.

Second, break inherent cognitive comfort zones through concept guidance. The "information cocoon" effect is not only a technical phenomenon but is more deeply rooted in the public's psychological cognitive mechanisms. People tend to access information consistent with their positions and reject or ignore heterogeneous content, thus falling into cognitive comfort zones. To break this limitation, the public's open consciousness and diversified cognition need to be shaped through value guidance and cultural dissemination. One, archival institutions can use digital exhibitions, themed education activities, and cross-cultural narratives to combine archival resources with social hotspots, historical reflection, and cultural diversity, stimulating public interest and reflection on heterogeneous information. Two, dissemination platforms and media should proactively assume social responsibility, promoting the formation of a public opinion atmosphere that encourages open exchange and diversified dialogue. Three, critical thinking

and cross-boundary vision cultivation should be emphasized in education systems and public cultural services, helping the public recognize the importance of accessing diversified information. Through continuous concept guidance, the public can gradually break away from cognitive inertia and form open, inclusive, and diversified thinking patterns, thereby truly achieving the feedback effect of archival public digital cultural services.

In the context of the “information cocoon,” the development of archival public digital cultural services faces both new opportunities brought by technological empowerment and practical challenges of algorithmic bias and value alienation. To achieve sustainable development of archival culture dissemination, the key lies in adopting a “feedback-oriented” path design to construct a service ecology where technological drivers and cultural orientation are mutually balanced. Through government-led institutional guarantees, innovative practices of archival institutions, and active public participation, cyclic interaction can be formed across multiple levels of supply, dissemination, and consumption, promoting archival public digital cultural services to return to their authentic mission of cultural dissemination and social education.

Future archival public digital cultural services should not only be platforms for digital resource supply but should become important spaces for promoting social memory sharing, cultural identity construction, and citizen knowledge growth. Only on the basis of breaking technological closure and reshaping value balance can archival resources undertake the era’s mission of national cultural memory inheritance and public cultural innovation.

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Nie Yunxia: Topic formulation, framework construction, paper revision and finalization.

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Note: Figure translations are in progress. See original paper for figures.

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