

Challenges and Responses: A Comparison of Management Dilemmas and Development Strategies of Public Libraries in China and the United States in Serving Digitally Disadvantaged Groups

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Abstract: This paper focuses on the service management for digitally disadvantaged groups in Chinese and American public libraries. Utilizing a comparative analysis method, it explores the differences and dilemmas between the two countries in terms of policy support, resource allocation, service models, and librarian training. The research finds that the United States has established a relatively comprehensive legal guarantee system and diverse funding channels, but recent federal policy fluctuations pose risks to project sustainability. Although China has made significant progress in equalizing services, it still faces structural challenges such as insufficient institutional guarantees and uneven resource allocation. Based on the comparative analysis, this paper proposes strategic suggestions including establishing a four-dimensional support system of "Law-Resources-Technology-Personnel" and promoting a "Digital Inclusion Partnership" model, aiming to provide references for Chinese public libraries to improve services for digitally disadvantaged groups.

Keywords: Public Libraries; Digitally Disadvantaged Groups; Digital Inclusion; Management Dilemmas; Service Strategies; Sino-US Comparison

1. Introduction

With the acceleration of global digitalization, the digital divide has become one of the most prominent social equity issues in the information age. UNESCO points out that nearly 3 billion people worldwide are still in a state of "digital poverty," unable to effectively access digital resources and services. In this context, public libraries, as hubs for the aggregation,

dissemination, exchange, and sharing of knowledge and information, bear the social responsibility of providing information services, ensuring information equity, and narrowing the digital divide. Digitally disadvantaged groups refer to those who are at a disadvantage in accessing and utilizing digital resources due to factors such as age, education, economy, geography, or physical and mental disabilities. Sociological research finds that limitations in the ability to absorb knowledge and information, coupled with a lack of access channels, are the root causes of the disadvantaged status of these groups. In China, such groups mainly include laid-off workers, employees of struggling enterprises, urban and rural impoverished populations, the elderly, people with disabilities, among ten categories; while the United States focuses more on low-income families, ethnic minorities, rural residents, etc. This study adopts a Sino-US comparative perspective due to the representativeness of both countries in digital inclusion practices: the United States has built a multi-level service system through programs like the Federal Depository Library Program and the Broadband Technology Opportunities Program ; China promotes service equalization through initiatives like the Public Cultural Service System Demonstration Zones and the Digital Library Promotion Project. The 2025 incident where the Trump administration's cancellation of the Digital Equity Act caused Connecticut libraries to lose \$20 million in funding highlights the significant impact of policy fluctuations on digital inclusion projects, while China faces the structural challenge of transitioning from "passive service" to "capacity empowerment."

Through literature analysis, policy comparison, and case studies, this paper conducts a systematic comparison from three dimensions: development history, management dilemmas, and response strategies, aiming to reveal the commonalities and specificities of practices in both countries and provide path references for service innovation in Chinese public libraries.

2 .The Concept and Demand Characteristics of Digitally Disadvantaged Groups

2.1. Conceptual Evolution and Definition

The concept of "disadvantaged groups" evolves dynamically with social changes. Before the 1960s, terms like "the deserving poor" were often used; from the 60s to the 80s, "disadvantaged groups" became the mainstream term; after the 90s, influenced by social exclusion theory, concepts like "socially excluded groups" were used more frequently. In the field of library services, disadvantaged groups mainly refer to those marginalized due to limited information access capabilities, also known as information disadvantaged groups, i.e., groups who cannot use or have difficulty using modern digital library services for various reasons. In library services, a frontline of knowledge empowerment, the concept of "disadvantaged groups" takes root, precisely pointing to those cruelly marginalized due to limited information access capabilities, also termed information disadvantaged groups. Its specific meaning is profound and extensive: broadly referring to all groups who cannot effectively utilize or face significant barriers in utilizing library services due to complex factors such as economic constraints, limited education, physical or cognitive disabilities, lack of digital skills, linguistic and cultural barriers, geographical isolation, or even specific social discrimination. The vast chasm in information access capability not only makes them

struggle in the knowledge economy but also confronts invisible walls in political participation, cultural integration, and social connection.

The identification and service of information disadvantaged groups in the library field vividly reflect social exclusion theory at the micro-practice level. It reveals that in an era where information is power, inequality in knowledge access has become a key variable exacerbating and solidifying social stratification. The terminological journey from "the deserving poor" to "information disadvantaged groups" is not just a history of discourse change but a history of progress in society's continuous deepening understanding of the core dimensions of fairness and justice and the ongoing precise analysis of marginalization mechanisms. Each conceptual evolution marks the expansion of social cognitive boundaries and the growth of possibilities for institutional response, paving the cognitive foundation for building a more inclusive knowledge-sharing community.

Table 1. Main Categories of Digitally Disadvantaged Groups and Their Information Needs Characteristics

Category	Typical Groups	Main Obstacles	Core Information Needs
Physically Disadvantaged	Elderly, Visually Impaired, Physically Disabled	Physical decline, lack of assistive devices	Large-print resources, voice navigation, accessible facilities
Socioeconomically Disadv.	Low-income, Unemployed, Migrant Workers	Lack of digital devices, cost burden	Free internet access, computer training, employment information
Geographically Disadv.	Remote Rural Residents	Weak network infrastructure	Mobile library services, offline digital resources
Culturally Disadv.	Low-educated, Ethnic Minorities, New Immigrants	Lack of digital literacy,	

2.2. Analysis of Information Demand Characteristics

In the current era of global information deluge, the information needs of digitally disadvantaged groups exhibit distinct specificities, and their access paths are fraught with difficulties. In-depth analysis of these demand characteristics is the foundational prerequisite for constructing an effective support system. The information needs of digitally disadvantaged groups show clear particularities: Content needs: Focus on survival and development information, such as employment, healthcare, social security policies, etc., differing from the academic and cultural needs of general users. Medium preference: Low-income groups rely more on free public terminals, the elderly prefer a combination of print and digital methods, and the visually impaired need voice conversion systems. Access channels: Community libraries are the main channel, but service coverage in rural areas is less than 30%, creating "secondary exclusion." Benny Solberg, Service Director of the Hartford Public Library, pointed out: "The digital divide leaves many without the opportunity to become proficient with computers and technology. We provide help because I think of all the things I do using a computer, and if people lack these skills, we must ensure they have the opportunity to learn." This reveals the core value of libraries in digital inclusion. The of information needs and the of access for digitally disadvantaged groups are a prism

reflecting the fairness of the information society. Libraries, as public spaces where tradition and modernity converge, find their modern value beyond book lending embodied in becoming key actors against "digital exclusion" and promoting substantive social justice through professional services and inclusive . Every successful skills training session, every effective information delivery, adds bricks and tiles to building a more equal and resilient digital society.

3. Comparison of Service Development History and Current Status between China and the US

3.1. Comparison of Development History

Table 2. Comparison of the Development History of Digital Disadvantaged Group Services in Chinese and American Public Libraries

Period (Years)	Major US Developments	Major Chinese Developments
1960-1980	Library Services Act extends services to rural areas; FDLP covers US	Public library service system initially established, but not focused on disadvantaged groups
1990	E-Government Act promotes gov't info digitization; "Digital Inclusion Initiative" launched	Developed regions like Shanghai, Shenzhen explore services for special groups
2000-2010	BTOP program invests \$4 billion in public computer centers	Regulations on Open Government Information clarify library's legal role
2010-Present	Digital Navigator system popularized; Trump cancels Digital Equity Act (2025)	"Digital Library Promotion Project" implemented; Hangzhou Library "admitting beggars" incident sparks social attention

Services for disadvantaged groups in US public libraries began during the Great Depression in the 1930s. After the passage of the Library Services Act in 1964, services were formally extended to groups like rural residents. China started later; systematic related services only began after 2000 as society paid more attention to issues concerning disadvantaged groups.

3.2. Multi-dimensional Comparison of Current Service Status

Table 3. Multi-dimensional Comparison of Current Services for Digitally Disadvantaged Groups in Chinese and American Public Libraries

Comparison Dimension	US Practice	Chinese Practice	Main Gaps
Legal Guarantee	Federal laws like FOIA, E-Gov Act provide support	Local regulations like Public Library Law, OGI Regs	Lower legal hierarchy, weaker binding force
Resource Coverage	Per capita funding \$35.7; one library per 25,000 people	Per capita funding ¥12.6; one library per ~450,000 people	Significant gap in resource density
Service Content	Digital literacy training, e-gov services,	Basic reading services, simple	Insufficient intervention depth

	career cert. support	computer training	
Staffing	Professional librarians require MA + certification; Digital Navigator positions	Professional librarians <40%; mostly part-time services	Low level of specialization

Regarding legal guarantees, the US established a legal system centered on the Freedom of Information Act (1966) and the E-Government Act (2002), explicitly stating "the right of citizens to obtain information from government libraries." Although China's Regulations on Open Government Information (2007) require "governments at all levels to set up government information in public libraries," the lack of implementation rules and accountability mechanisms leads to difficulties in policy.

In terms of service content, US public libraries have formed a three-tier support system: Access layer: Free computers and WiFi. Capability layer: Digital literacy workshops. Application layer: Contextualized support for e-government, online healthcare, etc. China still focuses on basic reading services. Although the case of Hangzhou Library allowing beggars entry was praised as the "warmest library," it also reflects a lack of systematic empowerment measures.

4. Comparative Analysis of Management Dilemmas

4.1. Policy and Funding Dilemmas

The US faces challenges due to discontinuous federal policies. The Trump administration's cancellation of the Digital Equity Act in 2025 directly caused Connecticut libraries to lose \$20 million in funding, forcing the Digital Navigator program to halt. State Librarian Deborah Shander stated: "These cuts are heartbreaking... Libraries have long been the leaders in this type of activity." Although local governments to compensate through litigation or alternative financing, the funding gap is difficult to fill quickly. China has a problem of "mismatched central-local responsibilities": the central government advocates for service equalization, but 70% of funding for grassroots libraries relies on local finances, leading to resource scarcity in underdeveloped regions. Simultaneously, mechanisms for social force participation are underdeveloped, with corporate donations accounting for only 3.2% of total funding, far lower than the 21% diverse funding ratio in US libraries.

Cause analysis: The deep-seated reason for the policy volatility predicament in the United States lies in the political ecosystem of party rotation under its federal system. The policy priorities of different ruling parties vary greatly, making long-term social investment projects such as digital inclusion vulnerable to political cycles. The root cause of the "mismatch of responsibilities between the central and local governments" in China lies in the unclear division of fiscal powers and the imperfect transfer payment system. Economically underdeveloped regions have weak self-owned financial resources, making it difficult to support continuous investment in digital services. The predicaments of the two countries jointly reflect the contradiction between the strong public nature of digital inclusion projects, the long investment payback period and the short-term profit-seeking nature of social resources.

Effect evaluation: Policy and financial predicaments have had a significant negative impact on the sustainability of services in both countries. The case in the United States shows that a sudden interruption of federal funds has led to the halt of mature projects, the breakage of service chains, the loss of upfront investment, and the damage of user trust. Due to unstable funds, grassroots libraries in China find it difficult to deepen their service content, mostly remaining at the basic access level and struggling to transform into "capacity empowerment", which limits the improvement of service efficiency. The assessment indicates that the lack of a stable and predictable long-term investment mechanism is the core bottleneck restricting the high-quality development of digital inclusive services.

4.2. Resource Allocation and Technology Application

On the landscape of services for the digitally disadvantaged, resource allocation and technology application constitute foundational support and are also core challenges currently faced by libraries globally. Imbalance in this dimension profoundly affects the realization of information equity. Understandably, digital resource accessibility is a core challenge. The US, through the BTOP program, provided subsidies for high-speed broadband in public libraries, enabling speeds of 1Gbps in metropolitan libraries, but rural areas still suffer from speeds below 100Mbps. China faces a more severe urban-rural gap: Eastern urban libraries are generally equipped with electronic reading rooms, while 40% of computers in Western county-level libraries have exceeded their service life. There is a significant gap in assistive technology application. Section 508 of the US Rehabilitation Act mandates accessibility for federally funded projects; libraries are commonly equipped with screen readers, voice input devices. In China, only 15% of provincial libraries have computers for the blind, with almost none at city/county levels. Resource allocation and technology application are not just about hardware upgrades but also a practical test of "information as a basic human right." When an elderly rural person can smoothly watch a remote medical course, when a visually impaired youth can independently check civil service recruitment notices—the qualitative change in these micro-scenes is the true measure of digital civilization. As regulators of social equity, libraries must build a solid inclusive foundation within this technological revolution.

Cause analysis: The root cause of the uneven distribution of resources and technology lies in the historical imbalance in regional economic development and the differences in public service supply models. Although the United States is generally prosperous, the market-driven logic of infrastructure investment leads to a low cost-benefit ratio for broadband construction in remote areas and insufficient private capital investment. During China's rapid urbanization process, resources are prioritized towards cities and eastern regions, and the issue of the urban-rural dual structure persists in the digital domain. The insufficient application of assistive technologies is attributed to the absence of mandatory national standards, the narrow market of related industries, and the budgetary limitations of library procurement. The fundamental reason lies in the failure to regard "accessibility" as a basic prerequisite and legal requirement for digital services.

Effect evaluation: The gap between resources and technology directly leads to significant differences in service coverage and quality. Metropolitan libraries in the United States can offer high-speed networks and advanced auxiliary equipment close to commercial

ones, effectively supporting deep digital applications. However, rural users are confronted with basic connection obstacles, creating a situation where "access is a bottleneck". The equipment generation gap and service disconnection between the eastern and western regions of China, as well as between urban and rural areas, have raised the threshold for digital disadvantaged groups to access key information services such as online government affairs and telemedicine, exacerbating information inequality across regions. The effect evaluation shows that the failure to bridge the resource and technology gap has greatly reduced the potential role of libraries in promoting digital inclusion.

4.3. Service Efficacy and Librarian Capacity

Table 4. Comparison of Management Dilemmas in Serving Digitally Disadvantaged Groups in Chinese and American Public Libraries

Dilemma Type	US Manifestation	Chinese Manifestation	Common Root Cause
Policy Dilemma	Project interruption due to party change	Implementation deficiency due to local fiscal weakness	Lack of long-term guarantee mechanism
Technical Dilemma	Insufficient rural broadband coverage	Difficulty updating outdated equipment	Uneven infrastructure
Service Dilemma	Insufficient advanced digital skills training	Services remain at basic access level	Unclear empowerment orientation
Talent Dilemma	Imperfect professional cert. for Navigators	Librarians lack skills for special groups	Absence of professional training 机制 (mechanism)

Although US libraries have established a Digital Navigator system, librarians lack training capacity in emerging technologies like AI and data privacy. A staff member from a Connecticut library admitted: "We help people use computers every day, but have other duties and can only provide limited help." China faces more basic professionalization challenges: the proportion of professional librarians is less than 40%, and there is a lack of service standards for special groups, resulting in services staying at the stage of "allowing entry" rather than enhancing digital capabilities.

Cause analysis: The reasons for the predicament of service efficiency and librarian capabilities are multi-faceted. The problems in the United States partly stem from the generalization of librarians' responsibilities, the unclear role positioning of digital navigators, and the lack of a continuously updated training system for emerging technologies such as AI and data privacy. The challenges in China are more fundamental. The root causes lie in the widespread absence of special group service courses in library science professional education, the incomplete vocational continuing education system, and the insufficient weight of soft service skills and the effectiveness of services for special groups in professional title evaluation. Both countries are jointly confronted with the institutionalized challenge of transforming "serving special groups" from moral advocacy into a core professional competence.

Effect evaluation: The direct manifestation of insufficient service efficiency is the slow improvement of users' digital capabilities. Digital skills training in American libraries mostly remains at the basic operational level, making it difficult to cope with the increasingly complex digital environment (such as AI applications and privacy protection), which limits the depth of empowerment. Most Chinese services have failed to go beyond the primary stage of "providing venues and equipment", and offer limited support for users' transition from "access" to "proficient application", making it difficult to achieve the goal of digital inclusion. The shortcomings of librarians' capabilities directly affect the service experience and the establishment of user trust. Especially when dealing with groups with cognitive impairments or cultural adaptation difficulties, the lack of professional support may result in services failing to reach those who need help the most. The assessment indicates that the professional competence of librarians is a key variable influencing the transformation of services from "formally accessible" to "substantially effective".

5. Comparison of Development Strategies and Innovation Paths

5.1. Comparison of Institutional Design Strategies

In constructing a digital inclusion service system, institutional design acts like the steel framework of infrastructure, determining the sustainability and fairness of services. The US and China exhibit evolutionary logics in their institutional structures, reflecting deep differences in political systems and cultural traditions. The US adopts a three-tier "Law-Policy-Standard" architecture: Law layer: The E-Government Act clarifies libraries' government information service function. Policy layer: The National Telecommunications and Information Administration issues Digital Inclusion Guides. Standard layer: The American Library Association formulates Guidelines for Library Services to Disadvantaged Groups. China exhibits a characteristic of "Central Guidance - Local Exploration," such as Guangdong Province's Service Standards for Disadvantaged Groups in Public Libraries, which special groups into 7 categories and sets different service standards, but national laws are still lacking. Future efforts need to promote the formulation of implementation rules for the Public Library Law, clarifying the fiscal responsibility for digital inclusion.

5.2. Innovative Practices in Resource Integration

A multi-party cooperation model is a core US experience: Government-Society Cooperation: The Queens Public Library partners with the city government to build "Digital Inclusion Centers" providing professional digital certifications. Cross-boundary Innovation: Chicago Public Library partners with Microsoft to open "Innovation Labs," training low-income youth in programming skills. China has recently explored a "Library + Social Institution" model, such as Guangzhou Library co-building a visually impaired reading room with the Disabled Persons' Federation, but the depth of cooperation is insufficient. The Yangtze River Delta region's "Digital Inclusion Partnership" plan is worth promoting: libraries partner with telecom companies to provide free data packages, and community service centers are responsible for user training, forming resource complementarity.

5.3. Service Transformation Strategies

Addressing service efficacy, both countries explore hierarchical service models: Access Layer: The US Public Computer Centers via BTOP; China promotes the "Digital Library Promotion Project." Capability Layer: The US develops "DigitalLearn.org" online courses; Shanghai Library creates "Silver Age Digital Classes." Empowerment Layer: Washington Central Library offers "Digital Startup Incubation"; Shenzhen Yantian District Library offers "Cross-border E-commerce Training." The key difference lies in: The US focuses more on e-government service integration, with libraries acting as offline hubs for social security applications, tax filing, etc.; while China emphasizes cultural services, underdeveloping developmental functions.

5.4. Librarian Training Mechanisms

Table 5. Comparison of Development Strategy Systems for Digital Disadvantaged Group Services in Chinese and American Public Libraries

Strategy Dimension	US Innovative Measures	Chinese Exploratory Practices	Suggested Optimization Direction
Institutional Design	Federal-State legislative synergy; ALA professional standards	Pilot local service standards	Enact national Digital Inclusion Law
Resource Integration	Establish "Library-Enterprise-Community" funding pools	Government procurement of service projects	Develop social impact bonds
Technology Application	Mandatory accessibility standards; AI-assisted systems	Mobile service vehicles; digital resource packages	Develop aging-friendly interactive platforms
Talent Cultivation	Digital Navigator certification system	Librarian continuing education credit system	Establish special service qualification certification

The US enhances librarian capacity through professional certification systems, e.g., California requires librarians serving special groups to earn an additional 15 continuing education credits. China has begun exploring a "credit bank" system, e.g., Zhejiang Library incorporates librarian training into the cultural talent evaluation system, but a national standard has not yet been formed.

6. Conclusion and Suggestions

6.1. Research Conclusion

This study reveals key findings through systematic comparison: Policy sustainability is an advantage of the US model, but political intervention risks project disruption, while China faces the structural contradiction of central-local responsibility distribution; Service philosophy differs significantly: The US focuses on building an "empowerment-social integration" chain, while China remains in the stage of "resource supply-opportunity

fairness"; Technology application requires two-way complementarity: China can learn from US accessibility standards, and the US needs to learn from low-cost solutions like China's mobile services. Services for digitally disadvantaged groups have transcended traditional library functions, becoming social governance infrastructure. As the Connecticut librarian said: "Digital equity is not just about being connected, but also about people being comfortable using the technology and being fully included in the digital environment".

6.2. Suggestions for China's Development Path

Based on comparative research, this study proposes a "Four-dimensional Support System": Institutional Layer: Promote the revision of the Public Cultural Service Guarantee Law, adding a dedicated chapter on "Digital Inclusion," clarifying service standards and funding proportions. Resource Layer: Establish a "provincial coordination - county implementation" fund-sharing mechanism, set up a National Digital Inclusion Fund to attract social capital. Technology Layer: Develop aging-friendly digital platforms, promote "5G + Mobile Libraries" to solve rural coverage challenges. Talent Layer: Establish a "Digital Service Librarian" qualification certification, incorporate special group service capability into professional title evaluations.

It is particularly important to note that innovative service models are key to breakthroughs: Promote "community-embedded" micro-libraries, partner with human resources departments to develop linking "digital skills - vocational certification," transforming libraries from information resource providers to digital capacity enablers. Ultimately, build a digital inclusion ecosystem with Chinese characteristics, centered on rights equity, opportunity equality, and capacity development.

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