

A Review of Research on Foreign Public Library Services from a Resilience Perspective

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Abstract

Abstract: [Purpose/Significance] Examining foreign public library services from a resilience perspective can provide important reference for constructing adaptive service systems for public libraries within the resilient society framework. [Method/Process] Based on relevant foreign research literature, this study first expounds the theoretical foundations of public library participation in resilience building, then analyzes and summarizes the actions of public libraries in resilience construction, and finally proposes future research prospects. [Results/Conclusions] Public libraries constitute an indispensable component of resilient city construction; through concrete actions, they forge close connections with society and assist cities in developing resilience. Future research should further elaborate the theoretical framework of resilient society from an LIS disciplinary perspective, analyze the role positioning of public libraries in resilient city construction, construct adaptive service systems, strengthen empirical and contextual research, and concurrently emphasize internal organizational resilience building.

Full Text

Preamble

A Review of Foreign Public Library Services Research from a Resilience Perspective

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Abstract:

[Purpose/Significance] Exploring public library services abroad from a resilience perspective can provide an important reference for the future construction of an adaptive public library service system in the context of a resilient society. [Method/Process] Based on relevant foreign research literature, this paper first

explains the theoretical basis of public libraries' participation in resilience building, secondly analyzes and summarizes the behavior of public libraries' participation in resilience building, and finally puts forward future research prospects. [Result/Conclusion] Public libraries are an integral part of resilient cities, and they help build urban resilience by establishing strong connections with society through concrete actions. Future research should further elaborate the theoretical framework of resilient society from the perspective of LIS disciplines, analyze the role positioning of public libraries in building resilient cities, construct adaptive service systems, strengthen empirical and contextual research, and in this process also focus on internal organizational resilience building.

Keywords: Public Libraries; Community Resilience; Information Resilience; Cultural Resilience; Organizational Resilience

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In recent years, with population growth, environmental changes, and accelerated urbanization, cities as open complex systems face increasing probabilities of uncertain events and unknown risks. To address and withstand such risks, the 17 Sustainable Development Goals (SDGs) released by the United Nations in 2015 explicitly proposed to “make cities and human settlements inclusive, safe, resilient and sustainable” [1]. Since then, “resilient city” as a new urban development concept has become both a new model for addressing urban crises and a new direction for sustainable urban development under new circumstances. In 2020, the Fifth Plenary Session of the 19th CPC Central Committee first proposed “resilient city” [2] and incorporated it into the national “14th Five-Year Plan” strategic target system. Shanghai’s 14th Five-Year Plan also proposed to “jointly build a safe and resilient city” [3]. In June 2021, Shanghai hosted the 2021 Urban Risk Summit Forum on “Building a Safe and Resilient City,” and in October of the same year, Shanghai held the World Cities Day China Main Event and the first Global Conference on Urban Sustainable Development with the theme “Addressing Climate Change and Building Resilient Cities.” The successive release of policy documents and the convening of relevant international and domestic conferences demonstrate that enhancing urban resilience against risks has become an important component of national emergency management capacity system construction and sustainable development in the new era.

The outbreak of COVID-19 in 2019 and the catastrophic rainstorm in Zhengzhou, Henan on July 20, 2021 represent more intuitive tests of urban resilience. Resilience is the core capability of urban emergency and disaster management. Only by improving the resilience of urban systems can we effectively prevent “gray rhino” events and adequately respond to “black swan” events. Building resilient cities emphasizes whole-process, all-dimensional (across all fields), and whole-population participation. As a subsystem of the complex urban network, public libraries play important roles as literature and information centers, social education centers, and cultural dissemination windows [4]. In the construction of resilient cities and communities, public

libraries are not only tools for implementing resilient city development goals but also reliable mechanisms supporting the realization of resilient city strategic objectives [5]. During the “7.20” Zhengzhou catastrophic rainstorm in 2021, Zhengzhou Library remained open despite the storm, extending its operating hours for stranded individuals, thereby demonstrating from a practical perspective the library’s mission as a “social safe space” [6]. This shows that public libraries have tremendous potential in improving residents’ resilience literacy and participating in urban resilience building, yet current domestic academic and practical attention to libraries’ involvement in resilience construction remains low. In light of this, this paper introduces relevant foreign research on library resilience to provide a foundation for further theoretical exploration of public libraries’ role in promoting resilience and urban/community development.

1. Theoretical Foundations of Resilience

1.1 Resilience

The term “resilience” originates from the Latin words “resilire” and “resilio,” meaning “the material characteristic of bouncing back after setback.” The concept was first applied in mathematics and physics. Scholar Holling extended it to ecology to further understand ecosystems’ ability to maintain their original state when subjected to external disturbances [7], which later developed into the foundation of resilience theory in natural and social sciences. Although the term has different interpretations across various fields, most definitions emphasize resilience as “the ability to successfully adapt when faced with disturbances, stress, or adversity” [8].

Analogously, resilient individuals or societies are like rubber bands that can withstand pressure and return to their pre-stress level. However, if a rubber band is stretched too far or too frequently, it becomes difficult to return to its original position. If interventions are applied, even if restoration to the original state is impossible, a new state can be established. Therefore, resilience focuses more on adaptation and transformation rather than merely bouncing back.

Based on prior knowledge of expected system disturbances, resilience can be divided into general resilience and specific resilience [9]. Specific resilience addresses particular, sudden major events such as earthquakes, rainstorms, and tsunamis, which cause massive but short-term impacts requiring immediate intervention. General resilience refers to the capacity to handle unexpected events and general uncertainties, focusing on medium- and long-term risks such as climate change. Such events require long-term interventions to mitigate potential risks or vulnerabilities in social components, thereby building a more sustainable society [10].

Public libraries contribute to resilience through various aspects, encompassing both specific and general resilience. In the Toronto Public Library’s latest strategic plan (TPL’s Strategic Plan 2020-2024: Vital to Toronto -Building Success, Resilience and Well-Being for our City), it states that “the Toronto

Public Library will be recognized as a world-leading library that informs and inspires Toronto and its communities, making everyone more resilient, more knowledgeable, more connected, and more successful” [11]. Libraries are beginning to recognize their critical role in creating resilience, as their information and cultural activities around communities can strengthen community resilience as well as information- and culture-related resilience. Simultaneously, in responding to environmental changes, libraries are gradually leveraging their flexible organizational resilience. The following sections elaborate on the integration of different types of resilience with public libraries.

1.2 Community Resilience

Resilience assumes that we cannot plan for every event nor prevent every occurrence [12]. Therefore, community resilience is the capacity—assuming events are unpreventable—for communities to be equipped with resources and information to enhance their ability to anticipate threats, reduce vulnerability, respond when events occur, and recover from them [13]. Resilience should be regarded as a community condition that is created and built through processes.

Norris et al. proposed an adaptive capacity framework composed of economic development, social capital, information and communication, and community competence, providing a foundation for community prevention, response, and recovery [14]. Specifically:

Economic development relates to the living standards and healthy economic development of a particular region. On one hand, community development is constrained by socioeconomic levels, with economic resources providing the foundation for resilient community building. On the other hand, although disasters occur randomly, people living in poorer communities bear greater risks due to less infrastructure, organizational networks, and social support [12].

Social capital includes network structures, social support, and socio-psychological aspects such as “sense of community” and “place attachment” [8]. Social support considers not only having family and friends nearby willing to help but also relationships between individuals and their neighbors and broader community networks, including religious groups, schools, and community organizations [12]. Sense of community represents an attitude of connection (trust and belonging) with other members of a group or area [15]. Place attachment signifies an emotional connection between a person and their community or city, often forming the basis for residents’ efforts to revitalize their community or city [15]. “The assumption of community resilience is that people improve their communities through collaboration rather than independent work” [16], making social capital construction particularly critical for residents’ participation in community recovery.

Information and communication include responsible media, skills and infrastructure, credible information sources, and narratives. The effective utilization of information and communication is described as creating shared meaning and

understanding while providing members opportunities to express needs, perspectives, and attitudes [8]. Longstaff proposed that “a reliable source of information is the most important resilience asset any individual or group can have” [17]. Collectively sharing and narrating community disaster experiences after disasters enables members to experience “shared meaning and understanding,” facilitating identity formation and connection among members, which subsequently aids community recovery.

Community competence is defined as “a community that can effectively collaborate to identify community problems and needs, reach working consensus on goals and priorities, agree on ways and means to achieve agreed-upon goals, and effectively collaborate in required actions” [18]. This concept is based on collective action and decision-making, collective efficacy and empowerment. The former is a capacity dependent on social capital and communication, particularly problem-solving skills and creativity, while the latter bridges the gap between social capital and community competence. It can be said that social capital and information communication are prerequisites for achieving community competence.

The community resilience adaptive capacity framework provides researchers with a perspective for observing social problems, focusing attention on different aspects of data for analysis, thereby identifying how research subjects can enhance community resilience from various dimensions. In LIS research, Grace and Sen [19] view community resilience as a process composed of interconnected adaptive capacities. Since no previous research had directly connected public libraries with community resilience, researchers introduced the concept of sustainability to link resilience with libraries. Patin [20] subsequently verified how public libraries enhance community resilience across four adaptive capacity domains. She argued that public libraries are trusted institutions in communities that assist in disaster resistance and relief. Vårheim [21] noted that social capital is an important variable in community resilience theory and is equally important for public libraries. Non-discriminatory public institutions generate social capital by providing universal services that gain the trust of most people. Generally, communities with higher social capital can better cooperate to support post-disaster reconstruction. Therefore, as one of the most trusted public institutions, public libraries have the potential to create social capital. Most importantly, when communication networks fail during disasters, libraries provide internet access for communities, offering residents communication channels and serving as indispensable information and communication centers for communities, capable of carrying and promoting social capital development during and after disasters to enhance community resilience [12,22]. Based on past research, public libraries harbor tremendous untapped potential in community resilience building, and the adaptive capacity framework can provide different practical directions for public libraries’ participation in resilience construction.

2. Public Library Services Research from a Resilience Perspective

As public service institutions, libraries are subsystems of the social network system and important components of a resilient society, capable of playing their due role in resilience building at economic, social, and cultural levels [23]. Dudley proposed that “libraries are the pillars of resilient cities, foundational institutions for urban prosperity, and a force of reason, insight, wisdom, and inspiration” [24]. Public libraries can help users and communities experiencing emergencies become more resilient by providing information and resources for recovery or reconstruction, and can also help users cultivate resilience literacy in daily life. During this process, libraries continuously improve themselves and build library resilience. Whether through physical spaces or online channels, public libraries can become valuable support for a resilient society.

2.1 Community Resilience and Public Libraries

During disasters, public libraries actively participate in emergency management, spontaneously assuming various roles to support community and urban disaster recovery. Even without formal roles in disaster recovery efforts, public libraries regularly adjust their programs and services according to needs. This demonstrates that libraries are adaptive institutions and confirms that libraries can help build more resilient communities.

(1) Economic Development

In special periods, impoverished communities have weaker risk resistance capacity. Researchers believe that the main opportunity for libraries to help enhance community resilience during such times is providing free access to technological resources [12]. Libraries can help users build resilience when in difficulty by providing useful access in a non-discriminatory and friendly manner. On one hand, disaster-affected users utilize libraries’ free internet to search for, access, and utilize information; on the other hand, economically disadvantaged individuals need to use libraries’ technological resources to apply for post-disaster economic assistance and insurance claims from institutions. Libraries also provide training on filling out application forms for users and small businesses to ensure they can successfully obtain reconstruction funds [20,25]. Second, although public libraries are open to the public free of charge, fees are still required for overdue books or lost materials. During disasters, libraries 酌情 consider waiving fees and provide free charging, free printing, and other services [12]. Additionally, economically backward communities often have older infrastructure, making them more vulnerable during disasters. Library buildings are typically constructed according to safety codes, making them more resilient when facing disasters. To ensure “everyone has their own space” [12], libraries serve as social shelters during disasters, accommodating readers unable to leave and nearby stranded personnel during events, and serving as shelters for displaced populations after disasters [20], providing wireless networks, power, hot water, simple meals, and rest areas for disaster victims [26]. They also function as public, safe, and free

office spaces for the community, providing office supplies, meeting rooms, and other assistance for users and institutions [20,25].

Under normal circumstances, researchers propose that libraries can help their communities become resilient and prepare for the future by identifying key trends affecting the workforce, understanding who they help and harm, and designing services to maximize benefits and reduce burdens [27].

(2) Social Capital

Social capital relates to whether people stay or leave, with those more connected to their community feeling greater attachment. Post-disaster reconstruction requires more collective work and participation, and communities with higher social capital can cooperate more effectively. Trust is regarded as an important measure of social capital [28]. Social capital creation mainly involves two approaches: social and institutional methods. From a social perspective, most contact between social groups reduces prejudice and increases trust, unless the contact is involuntary and threatened by the other party [29]. From an institutional perspective, clean public institutions that treat all citizens equally generate trust within and between social groups [30].

As institutions that create social networks and are highly trusted by citizens, libraries serve as third places that can become venues for social interaction that increase social capital. During disasters, libraries remain open normally, acting as community supporters [31,32], providing spaces for community members to gather and serving as activity bases for volunteer institutions and organizations. They act as therapeutic services, with librarians reporting disaster situations to community members, helping them cope with post-disaster trauma, and providing needed emotional support. They help people find family members, jobs, apartments, and shelters for their pets [20,31]. Users consequently develop attachment and trust toward libraries, thereby enhancing social capital. In daily life, libraries contribute to social capital creation from institutional and social perspectives by conducting various cultural activities that attract residents to participate and exchange, strengthening connections and trust among residents.

(3) Information and Communication

Information and communication include responsible media, skills and infrastructure, reliable information sources, and public narratives. On one hand, libraries serve as community information disseminators [33,31], striving to spread the latest and most reliable information to institutions and the public. During disasters when community communication equipment is damaged, libraries become the primary information source for the entire community. Community members often choose to go to libraries for information, and even information from various emergency agencies converges there, making libraries a central information source [12,20]. In addition to providing daily needed information, some libraries update crisis maps and provide online resources explicitly related to current disasters [33,34]. Furthermore, some libraries use social media to cooperate with communities. Before disasters, libraries mainly push daily information, but during disasters they primarily push disaster-related information and forward

disaster-related tweets from various government and non-governmental organizations to community members in their social networks, ensuring members access reliable information [22].

On the other hand, libraries actively perform their functions as collection builders and managers [35]. Disaster stories as narratives are part of information and communication, possessing “shared meaning and understanding” [8]. Community members’ shared understanding of reality helps form a sense of place and connection, thereby influencing resilience [36]. Landau and Saul wrote about their experiences after 9/11 and concluded that community recovery partly depends on collectively telling stories about the community’ s experiences and responses to the disaster [37]. As public living rooms, libraries provide residents with a space to tell community stories after disasters, can collect narrative materials, organize writing activities for children to document disaster stories, or cooperate with local media to collect and organize pictures and news stories from media coverage during events. By collecting disaster memories, libraries can support community rehabilitation and residents’ emotional recovery, further generating community consciousness, while also preserving community experiences for future generations. Additionally, disaster stories belong to national collective memory, and libraries have a mission to collect, build, and inherit disaster memory data.

(4) Community Competence

Community competence concerns organized community and institutional action and their capacity to make decisions and improve communities, requiring libraries themselves to have flexibility and reflective and problem-solving abilities. While it appears that libraries provide various emergency services for users and communities during disasters, these are actually extensions of libraries’ daily services [12]. This precisely confirms libraries’ flexibility and demonstrates their community competence. Library flexibility relies more on their own resilience building, which will be elaborated in the section on public libraries and organizational resilience.

2.2 Information Resilience and Public Libraries

(1) Information Resilience

The concept of information resilience originated from a foreign study on health knowledge dissemination among refugees. Prior to this, Hersberger [38] introduced the resilience concept into library and information science research to help librarians understand how to “better serve users experiencing stress or negative life impacts,” thereby improving users’ information resilience.

The essence of information resilience is the ability to use information to locate, adjust, and reconstruct during uncertain or crisis periods [39]. Information resilience emphasizes the role of information and information practices in resilience processes. In Lloyd’ s research, information resilience is built through collective coping activities and is the result of pooling. Pooling refers to people

with limited literacy or language skills gathering together to share information, enabling them to access needed information and support their decision-making. Pooling activities represent a collective coping strategy and the foundation for building information resilience.

Lloyd [40] subsequently expanded the concept of information resilience by viewing resilience as a quality. From an information-centered perspective, the ability to address knowledge gaps and uncertainties, adopt information literacy practices to access need-related information, construct new information landscapes, and rebuild social networks can all be called information resilience [40]. The capacity to accept, access, and use information during adversity or uncertain periods—that is, to implement information literacy practices or effectively process information—is regarded as a key indicator of a person’s adaptive capacity [40]. Simultaneously, social capital was introduced as a theoretical concept for understanding how resilience is created through social networks. Public libraries can be viewed as safe and equitable venues supporting information resilience training, providing targeted information, resources, and training to meet user group needs for developing information literacy practices.

(2) Information Resilience and Public Libraries

The concept of information resilience provides a perspective for studying how public libraries support the daily learning needs of specific populations. For groups needing to adapt to entirely new and complex information environments, they require not only an equitable venue to access information but also assistance from that venue to cultivate information resilience and support their transition into new information environments. Successful transition depends on their level of information resilience. Lloyd [40] views information literacy as a form of social practice to examine health literacy [41], a social practice involving interactions between people and sociomaterial and sociocultural assemblages in new information environments. Through mediation by others, resettled refugees can build their health information landscapes, identify various ways of understanding information, and enable access to information related to their health and the structure of their health information environment. However, collective collaborative activities develop through close connections, and members may develop the same information base. Therefore, scholars believe weak ties may be more advantageous when seeking health information because they transcend strong tie foundations and may provide unique perspectives or information [42]. In cultivating resilience literacy, public libraries exist as a weak tie, serving as users’ information base. Although public libraries possess large amounts of usable, high-value textual information, specific groups limited by language and literacy skills cannot use the resources libraries provide and require further work by libraries. First, identify the types of information specific groups may need; second, select the most effective information delivery methods based on their minimum language and literacy abilities, such as using graphic and video methods to disseminate health information to refugees.

The above research mainly relates to the role of public libraries in disaster and

refugee information literacy programs. In other studies, although not directly addressing information resilience, findings indicate that “librarians’ assistance to users in accessing government information is crucial for those not proficient in English reading and speaking or computer use” [43]; public libraries have great potential not only to maintain their position as community information centers but also to become citizen engagement centers in the public domain that combat misinformation, promote open government data, and foster civic participation [44]. Therefore, the concept of information resilience is not only targeted at specific groups and events but emphasizes more its role as an internal force that helps users and communities adapt and respond to unexpected changes in daily life.

2.3 Cultural Resilience and Public Libraries

One of the social functions of public libraries is to protect human cultural heritage. IFLA’ s “Disaster Risk Response: Libraries and the Sendai Framework” released in April 2018 states that “libraries have a responsibility to protect our cultural heritage and make it accessible to the public to inform and inspire future generations.” The framework strongly focuses on the cultural heritage and cultural resilience of individuals, communities, and nations, and considers libraries as a key link in cultural resilience [45]. Some scholars believe that actively saving cultural heritage is a requirement of history and human civilization progress and an unshirkable responsibility of libraries [46].

Cultural resilience research can be divided into three aspects: social-ecological theory perspective [47,48]; social psychology perspective [49]; and cultural heritage activities and organizational perspective [50,51]. From the cultural heritage perspective, cultural resilience is defined as the capacity of a cultural system (composed of cultural processes of related communities) to absorb adversity, cope with change, and continue developing [51]. Cultural heritage activities conducted through voluntary organizations (e.g., historical societies) and cultural heritage institutions (e.g., museums) can establish and consolidate local cultural identity, which promotes local cultural resilience and contributes to building community resilience [50]. According to the cultural heritage institution perspective on cultural resilience, cultural heritage can support people’ s collective identity and evoke their sense of place and belonging. As important institutions protecting cultural heritage, libraries are well-positioned to build cultural resilience. However, few studies currently directly examine public libraries’ contribution to cultural resilience, with only some content reflected in literature. For example, during the Islamic State (IS) occupation of Mosul, local library staff, students, and ordinary citizens risked their lives to save thousands of precious books and other priceless cultural heritage, and these saved properties are now helping them rebuild their community and preserve history [52].

2.4 Organizational Resilience and Libraries

Organizational resilience can be understood as a process involving different types of related tasks or capabilities before and after disruptive events occur to organizations [53]. Organizational resilience emphasizes more internal library construction. Kanyangale and Njoloma propose that regardless of the type or degree of adversity, predictive capacity and good preparation before adversity occurs are hallmarks of library resilience [54].

(1) Cultivating Librarians' Resilience Literacy

Resilience is a comprehensive capability arising from the interaction of individual, organizational, and relational capacities, which are key not only to predicting and responding to adversity but also to adapting to it [54]. To build their own organizational resilience, libraries need to balance internal elements, among which librarians, as the bearers of library work, are the critical link. Kanyangale and Njoloma [54] found in interviews that Mzuzu University Library had a rigid structure that severely hindered librarians' emergency autonomy. Culture is a key factor in shaping organization members' resilience-oriented values and behaviors [55]. The disaster preparedness items libraries prepare reflect organizational awareness of disaster risks, but this awareness alone is insufficient to create a resilience culture. A culture that turns a blind eye to risk is not the foundation for positive organizational resilience. Libraries need to strengthen their risk prediction capabilities and risk management spirit, regularly conduct risk education and training, instill risk responsibility awareness in librarians, and incorporate the cultivation of resilient librarians and libraries into library service tenets. Libraries must make their organization members resilient, enabling them to stay ahead of changes to survive and develop. Additionally, librarians should exercise subjective initiative, continuously accumulate professional knowledge and related skills, implement "lifelong learning," and lay a solid foundation for resilience development.

(2) Improving Library Flexibility

Affected by emergencies, libraries experience tremendous changes in short periods and need both flexibility and resilience. Flexibility refers to being open to and responding to changes, possibly adopting different approaches to solve a common problem. Flexibility is part of resilience. Scholars propose that libraries need to implement change management—that is, to think beyond the current state, understand past states, and comprehend how they arrived at the present state [56]. They should incorporate the concept of two-way decision-making into the change management process, pre-thinking during decisions: "How can we reverse this decision?" and "What impacts might this decision have that could cause us to cancel it?" The process of building resilience also relies on standardizing workflows to facilitate flexible and swift crisis response.

Furthermore, Patin found during research that libraries mostly consider disasters from a localized perspective, thinking about how to respond to smaller, local events but often lacking planning for broader, extreme events [20]. With-

out advance preparation plans, institutional staff may be unable to provide timely support for libraries, thereby affecting their ability to help the outside world. Therefore, libraries need to develop risk response plans that should be formulated in a graded and phased manner to achieve preparedness for any eventuality and ensure continuity of library business operations. Plan implementers are generally librarians, so the most important aspect is regularly educating and training staff to ensure their capabilities. All library staff must also be empowered with absolute authority during crisis periods to ensure they possess not only sufficient emergency and protection knowledge but also can take autonomous actions reasonably and legally. Autonomous action is a mechanism that assigns responsibility, capability, motivation, and legitimacy to individual actions of all library employees to ensure existing library protection mechanisms can respond fully and promptly [57]. Immediate response and recovery actions after disasters aim to prevent maximum losses.

(3) Building Library Solidarity Networks

A solidarity network is a contractual network composed of two or more institutional/organizational partners who agree to provide each other with professional emergency support services in case one institution is affected by an event beyond its expected capacity and cannot respond in a timely manner [58]. Solidarity networks include a multilateral network of institutions and organizations that can be similar, such as libraries and cultural institutions like museums, archives, and art galleries, or related government agencies such as fire departments, police, and neighborhood committees. The service content provided by partners within solidarity networks is negotiated and determined by participating institutions. Solidarity network construction may enhance risk awareness and strengthen library resilience, accelerate community and cultural integration, and help libraries establish genuine “library-government-community partnerships.”

3. Future Research Prospects

Resilient communities involve not only improvements in material conditions of the broader environment but should also consider resilience building of various elements comprising the community. Current research has comprehensively elaborated on the broad range of services provided by public libraries after public emergencies and presents numerous classic service cases, laying a foundation for further research expansion. However, certain deficiencies remain: First, from a disciplinary research perspective, only the library and information science field currently regards public libraries as essential service resources in post-disaster recovery and reconstruction, while lacking systematic and comprehensive research on the functional or role positioning of public libraries in resilient community construction, resulting in limited societal understanding of the roles libraries can play. Second, from a resilience building cycle perspective, current research mainly focuses on libraries’ participation in mid- and post-crisis recovery and reconstruction work, with less exploration of whole-process resilience building. Third, from a crisis category and scope perspective, research on libraries’ re-

silience building services for specific natural disasters is more common, while studies on general resilience are fewer. Fourth, current research emphasizes static investigation and analysis of public libraries' services for urban resilience recovery under single-disaster scenarios. Therefore, this paper argues that future research can be expanded and deepened in at least five aspects:

3.1 Further Elaborating Community Resilience Theoretical Framework from an LIS Perspective

Through reviewing relevant literature, discussions on public libraries as essential service resources in post-disaster recovery and reconstruction are confined to library and information science literature while being noticeably excluded from the main body of disaster sociology and emergency management literature. Resilient community construction requires not only hardware facility design, planning, construction, and management but also attention to improving individual residents' resilience literacy, fostering resilient communities, and cultivating resilient culture. As important components of the public cultural service system, public libraries are crucial venues for disseminating knowledge and culture to the public and important windows for spiritual civilization construction. Future library and information science scholars should focus on re-examining resilient city theoretical research from a library and information science perspective, integrating concepts such as information resilience, cultural resilience, and resilience literacy that are of concern in this field into the resilient community theoretical framework, laying a foundation for theoretical improvement and development while providing theoretical basis for libraries' participation in resilient community construction.

First, using information resilience as an entry point, enrich theoretical and practical research on the information and communication dimension in community resilience building. As one of the adaptive capacities for community resilience building, current research on information and communication mainly focuses on planning, layout, and construction of communication infrastructure hardware to enhance resilience. However, information needs, information behavior, and other aspects from the library and information science field are highly relevant to libraries enhancing community resilience but have not been mentioned as important aspects of community resilience theory. Future research should strengthen the re-examination of community resilience theory from a library and information science perspective, introducing theories such as information literacy and information behavior, and constructing coupling mechanisms between libraries and resilient community building from support, interaction, and integration dimensions.

Second, using resilience literacy as an entry point, expand the development space for libraries' participation in and integration with society. Resilience literacy, as an important component of public comprehensive literacy, has been repeatedly emphasized by researchers as a crucial entry point for public libraries' participation in resilient city building. From an information resilience perspective,

what capabilities does individual public resilience literacy include and what characteristics does it have? How can public libraries integrate resilience literacy cultivation concepts using public information literacy and digital literacy cultivation pathways as entry points? How can public libraries focus on innovating resilience literacy education activities and developing new service projects? These questions should become major concerns for future library and information science experts and scholars.

Finally, using cultural resilience as an entry point, deeply explore the intrinsic value of cultural heritage and promote its sustainable development. Cultural heritage is the spiritual foundation for cultural resilience formation, but current library research mostly focuses on material-level protection and inheritance of cultural heritage, mainly manifested in cultural heritage digitization practices. Future research should emphasize spiritual-level cultural heritage protection and inheritance, exploring how public libraries can achieve sustainable utilization of cultural heritage, demonstrate the spiritual power inherent in cultural heritage, and disseminate the intangible knowledge contained in cultural heritage to meet urban demands for heritage value and achieve sustainable development of cultural heritage.

3.2 Research on Role Positioning Framework of Public Libraries in Resilient Community Construction

Through literature review and discovery, the general public has limited understanding of libraries' roles in resilience building. This is largely attributed to inadequate publicity of library services and lack of clear designated roles for libraries in resilience building. Current research has conducted scattered discussions on public library functions during and after disasters through case analysis, but systematic research on the functional or role positioning of public libraries in resilient community construction is scarce.

Therefore, future research can conduct comprehensive investigations of stakeholders including library leaders, librarians, superior management departments, emergency prevention and control departments, and community management institutions based on role cognition and role expectation theories, thereby developing role positioning and implementation mechanisms for public libraries oriented toward resilient community construction. Simultaneously, a role positioning framework for public libraries in resilient community construction can be formed, and targeted service plans and projects can be developed and innovated based on thorough understanding of community and user needs.

3.3 Research on Adaptive Service Systems of Public Libraries in Resilient Community Construction

Current research focuses more on specific resilience during disaster periods and less on general resilience in daily life. Therefore, it is necessary to conduct holistic research and discussion on public libraries' contributions and roles in the

entire process, all types, and multiple levels of resilient community construction from strategic, systematic, comprehensive, and global perspectives. Future research can take specific resilience for major disasters and general resilience for future risk prevention as premises, and based on resilience building cycles and levels, build a public library service framework with pre-crisis preparation, mid-crisis emergency response, and post-crisis recovery as the horizontal axis, and individual resilience literacy at the micro level, resilient communities at the meso level, and urban resilient culture at the macro level as the vertical axis, thereby constructing a dynamic, differentiated adaptive service system that monitors whole-process, all-dimensional needs.

3.4 Strengthening Empirical and Contextual Research in Methodology

Current research emphasizes static investigation and analysis of public libraries' community resilience recovery service status under single-disaster scenarios. Given the diversity and unpredictability of disasters and the diversified characteristics of community resilience, more empirical and contextual research is needed in the future on the broad processes through which public libraries contribute to general and specific resilience, such as understanding specific information needs before and after crises and clarifying role positioning of different types and regional libraries. This will help public libraries determine what service types and content they should provide in resilient communities according to local conditions, timing, and crisis circumstances.

3.5 Focusing on Internal Organizational Resilience Building of Libraries

For libraries to become main forces in resilient community construction, they should focus on their own resilience building. Future research can treat library resilience as a prerequisite for participating in community resilience building. On one hand, libraries need to demonstrate their continued legitimacy by maintaining sustainable development through demonstrating innovation, flexibility, and adaptability to complex environments. On the other hand, only when libraries themselves are secured and become resilient institutions can they continue to support communities in achieving resilience building goals.

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

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