COMPASS OF ACADEMIC LIBRARY MODERNIZATION

(CALM) REPORT

(2026)



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Compass of Academic Library Modernization (CALM) Report

（2026）

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Abstract

The *Compass of Academic Library Modernization Report (2026)* was jointly developed by Peking University Library, the Society for Academic Library of the Library Society of China, and the Institute of Informatization and Human Information Behavior at Peking University. Primarily employing the Delphi method, the study conducted four rounds of consultation with 56 senior experts from the academic library profession and the information resource management community across China. The consultation focused on major issues and corresponding solutions concerning the modernization of academic libraries over the next five years in nine areas: librarian workforce development, user relationships, resource development, service provision, cultural development, AI applications, core functions, external relationships, and internationalization. Based on expert consensus, the study identifies six strategic challenges facing academic library modernization and six development modes: high-quality, connotative, integrated, isomorphic, complementary, and leading-edge development. It further distills six overarching trends. The Report provides guidance for academic libraries in navigating change, clarifying their positioning and mission, and optimizing development models in this new stage. It also brings contemporary relevance to the theoretical framework for academic library modernization with Chinese characteristics and offers Chinese experience and insights to the development of global libraries.

Keywords

Academic Library Modernization; High-Quality Development; Connotative Development; Integrated Development; Isomorphic Development; Complementary Development; Leading-Edge Development; Compass Report

CONTENTS

01 INTRODUCTION

1.1 Research Background and Research Problems 01
1.2 Research Purpose and Significance 03
1.3 Research Content and Methodology 04
1.4 Research Process 05

02 RESULTS

2.1 Challenges and Solutions for Librarian Workforce Development 08
2.2 Challenges and Solutions for User Relationships 10
2.3 Challenges and Solutions for Resource Development 11
2.4 Challenges and Solutions for Service Provision 13
2.5 Challenges and Solutions for Cultural Development 15
2.6 Needs and Capabilities for AI Applications 16

2.7 Core Functions and Indispensable Roles of Academic Libraries in University Operations 18
2.8 External Relationships of Academic Libraries 20
2.9 Internationalization of Academic Libraries 22

03 CONCLUSION

3.1 Strategic Problems Facing Academic Library Modernization and Development Strategies for the New Stage 25
3.2 Overarching Trends in Academic Library Modernization for the Next Five Years 26
3.3 Research Limitations and Future Directions 31

References 33

04 APPENDIX

Appendix 1: List of Experts 35
Appendix 2: Profiles of Project Team Members 40
Appendix 3: Results of the Fourth-Round Survey 41



01

Introduction

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Introduction

The year 2026 marks both the beginning of China's 15th Five-Year Plan period and a critical juncture in the country's efforts to become an education powerhouse and achieve educational modernization by 2035. The *Compass of Academic Library Modernization Report (2026)* (hereinafter referred to as the "Compass Report 2026") is a collaborative initiative led by Peking University Library in partnership with the Society for Academic Library of the Library Society of China and the Institute of Informatization and Human Information Behavior at Peking University. Grounded in local practices and informed by expert insights, it provides a scientific assessment of the development trends shaping academic libraries over the next five years. It aims to guide academic libraries in navigating change, clarifying their positioning and mission, and optimizing their development models as they enter a new stage of modernization.

1.1 Research Background and Research Problems

China has entered a crucial stage in its efforts to build a great nation and advance national rejuvenation through modernization with Chinese characteristics. The *Outline of Plan for Building China into a Leading Country in Education (2024–2035)* calls for implementing the national education digitization strategy, leveraging AI to drive educational transformation, and systematically advancing the integrated development of education, science and technology, and talent[1]. The *15th Five-Year Plan for Educational Development*, issued in June 2026, further states that by 2030, substantial progress should be made toward building China into an education powerhouse, with a high-quality education system largely established. It also identifies digital and intelligent education and the "AI + Education" initiative as key priorities[2]. These national strategies require universities to further strengthen their capacity for independent talent development, original research and innovation, cultural preservation and innovation, international exchange and cooperation, and modernized governance. As centers of information resources, platforms for education, hubs of culture, and providers of distinctive academic services, academic libraries should proactively align their development with national strategies and university priorities. In contributing to the development of a high-quality education system, a learning society, and new quality productive forces, they should further clarify their functional positioning and the dimensions of their value.

From an international perspective, the global library community is likewise undergoing

accelerated functional reconfiguration and technological transformation. The *IFLA Strategy 2024–2029*, released by the International Federation of Library Associations and Institutions (IFLA), sets out the vision of "sustainable futures for all through knowledge and information" and focuses on connecting global professional communities, demonstrating the value of partnerships, and strengthening libraries' capacity for transformation[3]. *The LIBER Strategy 2023–2027*, issued by the Association of European Research Libraries, emphasizes the development of engaged and trusted hubs of knowledge, the provision of forward-looking and advanced services, the advancement of open science, and the enhancement of librarians' capabilities[4]. The Association of College and Research Libraries (ACRL), in its *2026 Top Trends in Academic Libraries*, highlights issues including changes in policies and regulations, funding pressures, artificial intelligence, librarians' professional development, and environmental sustainability[5]. The UN's *2030 Agenda for Sustainable Development*[6] provides a clear policy framework for integrating libraries into global development process. As key custodians of the right to access information, libraries have an important role to play in advancing the implementation of the Sustainable Development Goals. These strategies and assessments of emerging trends offer valuable insights for the transformation and development of academic libraries in China. At the same time, while drawing on international experience, China's academic libraries should remain grounded in their own local contexts, institutional missions, and stages of development as they explore pathways toward modernization with Chinese characteristics.

During the 14th Five-Year Plan period, Peking University Library assembled a dedicated research team that brought together the collective insights of specialists from academic libraries and the library and information science community across China. The team developed and published a series of Compass of Academic Library Modernization (CALM) reports, including an overall trends report[7] and four thematic reports on librarian workforce development[8], user relationship management[9], resource-service integration[10], and information culture cultivation [11] respectively. Together, these reports provide a comprehensive account of the key dimensions of academic library modernization, development trends over a five-year period, and practical pathways. They have become important references for academic libraries of all types and at all levels in formulating development plans and optimizing service management, while laying a solid theoretical foundation for the high-quality modernization of libraries in China. As the 15th Five-Year Plan period begins, academic libraries face a new set of circumstances and tasks. Key problems—including which strategic issues in the modernization

of academic libraries require urgent attention and what overarching trends are emerging—call for collective expertise and in-depth research. Such inquiry will, in turn, help address a series of critical questions: What profound changes will academic libraries undergo? What major challenges will they encounter? How should they respond? Amid constant change, what will remain unchanged, or what must continue to be upheld? Answers to these questions will provide academic libraries of all types and at all levels with strategic guidance and practical pathways for action.

1.2 Research Purpose and Significance

The Compass Report 2026 employs scientific and standardized research methods to synthesize the practical experience, professional judgment, and forward-looking insights of experts from academic libraries and the information resource management community across China. It seeks to foster a shared problem awareness, common fundamental judgments, and actionable benchmarks across the sector,thereby enhancing strategic coordination within the library community; and provide guidance for academic libraries of all types and at all levels in strategic planning, service innovation, institutional transformation, and governance optimization. The Compass Report 2026 is a strategic and forward-looking report on trends in academic library modernization over the next five years. Its publication is significant in the following respects: (1) It will help academic libraries nationwide maintain their strategic focus, recalibrate their development positioning, and unleash their capacity for innovation at this new stage. It will also support institutional transformation and comprehensive advancement by enabling libraries to uphold fundamental principles while breaking new ground, thereby opening up new horizons for modernization. (2) It will enable academic libraries to play a greater role in modernization with Chinese characteristics the building of an education powerhouse. By clarifying the core functions and distinctive contributions of academic libraries to talent development, research innovation, cultural preservation, and governance modernization within their universities, it will further strengthen the strategic position and enhance recognition of their value in the modernization of higher education. (3) It will further enrich the theoretical framework for academic library modernization with Chinese characteristics. By addressing issues of long-term and universal significance to the modernization of academic libraries, it draws on expert insights to identify pathways for academic libraries to pursue connotative, isomorphic, integrated, complementary, and leading-edge development. These pathways will further

enrich the theoretical framework of academic library modernization while contributing Chinese experience and wisdom to the global library development.

1.3 Research Content and Methodology

This study takes as its starting point the significant changes that academic libraries may undergo over the next five years, as well as the aspects that are likely to remain unchanged. It conducts a systematic assessment across multiple dimensions, including the key elements, technology applications, functional positioning, external relationships, and internationalization of academic libraries. Specifically, the study examines the challenges facing five key elements—librarians, users, resources, services, and culture—and corresponding solutions for the next five years; the application needs and governance of artificial intelligence, particularly LLMs and AI agents; the core functions of academic libraries and their indispensable roles in university operations; the relationships between academic libraries and relevant stakeholders in society; and the key areas of consensus and pathways for advancing academic library internationalization. Drawing on expert consensus in these areas, the study identifies overarching trends in the development of academic libraries and further analyzes potential modernization pathways for libraries of different types and with different developmental foundations.

Based on a review of relevant literature, the study primarily employs the Delphi method to solicit expert input on key issues concerning the modernization of academic libraries. Textual and statistical analytics are also conducted to examine expert opinions.

(1) Literature review. The research team conducted an extensive review of international reports on trends in the library field, relevant domestic studies, and policy documents. On this basis, it compiled a digest of development trends in international academic and research libraries, together with a list of domestic reference materials.

(2) Expert consultation (Delphi method). The research team consulted 56 senior experts from the academic library profession and the information resource management community across China. The consultation process was conducted under strict anonymity. Four rounds of consultation were conducted over a period of seven weeks. The first and second rounds used open-ended questions, while the third and fourth rounds employed structured questionnaires. Further details are provided in the "Research Process" section below.

(3) Textual analytics. The research team manually indexed and analyzed the experts'

responses from the first two rounds. LLMs including DeepSeek, Zhipu AI (Z.ai), ChatGPT, and Gemini were used for validation and supplementary analysis to ensure that the findings fully captured the range of expert opinions.

(4) Statistical analytics. Following a comparative study and with reference to relevant findings[12], the research team employed binomial tests to measure the degree of expert consensus. With 50% specified as the null-hypothesis proportion and the significance level set at $\alpha = 0.01$, the selection rate for each option was tested to determine whether it differed significantly from 50%. Expert opinions were then classified into three categories: a selection rate significantly above 50% was classified as highly concentrated; a rate significantly below 50% as a minority view; and a rate not significantly different from 50% as relatively concentrated.

1.4 Research Process

The study was conducted over a four-month period and proceeded as follows:

From April 20 to June 9, 2026, the newly-established research team held in-depth discussions on the study's purpose, methodology, and content. Focusing on the core issues surrounding the development of academic libraries over the next five years, the team formulated the questions for the first round of expert consultation. At the same time, it conducted a literature research and compiled reference materials for experts.

From June 10 to June 24, 2026, the research team conducted the first round of expert consultation and analyzed the responses. A total of 82 questionnaires were distributed, of which 44 were returned, representing a response rate of 53.66%. The team manually indexed and synthesized the expert opinions. Based on the experts' shared concerns, it identified a number of questions requiring serious consideration as academic library modernization enters a new stage. These questions formed the basis of the second-round questionnaire, which comprised seven open-ended questions.

From June 25 to July 13, 2026, the research team conducted the second round of expert consultation and analyzed the responses. Fourteen additional experts were invited to participate in this round. A total of 58 questionnaires were distributed, of which 49 were returned, representing a response rate of 84.48%. Through manual indexing, supplemented by LLM-assisted validation, the team refined, subdivided, and consolidated the second-round expert opinions to develop the third-round questionnaire. The questionnaire comprised nine structured multiple-response questions. All response options were derived from expert

opinions, and respondents were asked to select three to five options for each question, with an open-ended option provided for additional input.

From July 14 to July 19, 2026, the research team conducted the third round of expert consultation and compiled the questionnaire statistics. A total of 56 questionnaires were distributed, of which 52 were returned, representing a response rate of 92.86%. Based on the third-round questionnaire, the team incorporated supplementary expert comments as new response options, removed options that had not been selected, and arranged all options in descending order of their selection rates to present the distribution of expert consensus more clearly. The resulting fourth-round questionnaire comprised nine structured multiple-response questions, with respondents again asked to select three to five options for each question.

From July 20 to July 31, 2026, the research team conducted the fourth round of expert consultation and analyzed the questionnaire data. A total of 52 questionnaires were distributed, of which 49 were returned, representing a response rate of 94.23%. The results showed a high degree of consistency in the rankings of expert selection rates across response options between the third and fourth rounds, indicating that expert opinions had stabilized and largely converged. The consultation process was therefore concluded.

From August 1 to August 31, 2026, the research team went through the report-writing stage. Following multiple rounds of discussion, revision, and review, the report was finalized.



02

Results



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Results

Based on four rounds of surveys, the study identifies expert opinions on major issues and corresponding solutions for the modernization of academic libraries over the next five years, covering nine key areas: librarian workforce development, user relationships, resource development, service provision, cultural development, AI applications, core functions, external relationships, and international engagement. The following sections provide a detailed analysis of the expert consensus based on the nine questions and corresponding response options in the fourth-round questionnaire.

2.1 Challenges and Solutions for Librarian Workforce Development

2.1.1 Challenges for librarian workforce development

Regarding the challenges that academic libraries may face in librarian workforce development over the next five years, expert opinions were highly concentrated on two options (worded consistently with the options in the fourth-round questionnaire; the same applies below): **(1) Librarians' competency profiles failing to keep pace with emerging needs.** The traditional competency framework of librarians, centered on acquisitions, cataloging, circulation, reference services, and conventional disciplinary services, is structurally misaligned with the emerging capabilities required in the digital and intelligent era, including data governance, AI applications, disciplinary intelligence analysis, and full-cycle research support. **(2) A decline in the number of librarians.** Staffing quotas for academic libraries continue to tighten. At the same time, factors such as the profession's limited appeal and the lack of incentive policies have reduced the willingness of talented professionals to pursue careers in libraries and accelerated the loss of key personnel.

Expert opinions were relatively concentrated on four options: **(1) Division of responsibilities failing to meet the needs of emerging services; (2) Risk of AI replacing traditional library positions; (3) Gaps in the talent pipeline; and (4) Inadequate mechanisms for librarians' career development (e.g. limited promotion opportunities and outdated performance evaluation systems).** Traditional system of library positions does not adequately support the staff mobility and deployment required by emerging services. Services such as citation and index searching and the circulation of information resources are contracting under the impact of AI. The loss of existing staff, combined with an insufficient

supply of high-quality talent, is increasing the risk of gaps in the talent pipeline. Limited promotion opportunities and outdated performance evaluation systems have also constrained librarians' career development and progressively weakened their intrinsic motivation. A minority of experts also identified frequent changes in library leadership, which may impede long-term planning, and a declining sense of professional identity among librarians as challenges.

2.1.2 Solutions for librarian workforce development

Regarding solutions for librarian workforce development, expert opinions were highly concentrated on three options: **(1) Restructuring the division of responsibilities to meet the needs of emerging services.** Guided by service scenarios, libraries should redefine job responsibilities and shift from traditional operations-oriented staffing structures toward structures oriented to emerging services, thereby providing organizational support for the development of new services. **(2) Providing regular, tiered, and role-specific competency training to develop a multi-skilled librarian workforce.** Libraries should design differentiated training programs for librarians in different positions and at different levels, establish progressive development pathways, and emphasize the cultivation of diverse capabilities, including research services, the use of AI tools, data governance, and cross-departmental coordination. **(3) Establishing mechanisms to facilitate collaboration between librarians and AI.** Libraries should establish standardized mechanisms for human-AI collaboration and clearly define their respective roles and boundaries. AI should be used to enhance routine operational tasks, freeing librarians to focus on higher-value knowledge services and thereby improving overall efficiency through human-AI collaboration.

Expert opinions were relatively concentrated on three options: **(1) Supporting the university's priorities to enhance the library's influence; (2) Seeking broader policy support to ensure adequate staffing levels for professional librarians; and (3) Supplementing the workforce through diversified employment arrangements.** Libraries should secure university support for staffing by making substantive contributions in areas such as technological information analysis and disciplinary development. Minimum staffing ratios for professional librarians should be established based on factors such as the number of users and the size of library premises, thereby addressing continued staffing reductions at the institutional level. Libraries should also appropriately supplement their human resources through diversified staffing arrangements, including public institution staffing, contract-based employment, labor dispatch, and project-based appointments. A minority of experts also proposed measures such

as improving support system for librarians' career development and ensuring stability in library leadership.

2.2 Challenges and Solutions for User Relationships

2.2.1 Challenges for user relationships

Regarding the challenges that academic libraries may face in user relationships over the next five years, expert opinions are highly concentrated on three options: **(1) Increasingly diverse, stratified, and differentiated user needs.** Users across different disciplines, academic levels, identity groups, and development stages have markedly different needs for resource access, teaching and research support, and library space use. Traditional service models fall notably short of providing precise and personalized services tailored to these diverse needs. **(2) Rapidly evolving user behaviors and information needs.** Intelligent tools and social media are substantially reshaping how users access information, produce knowledge, and communicate. As user needs evolve rapidly, libraries face continued pressure to innovate in their services. **(3) Declining user reliance on libraries.** Users are increasingly turning to search engines, open platforms, and generative AI as their primary points of access to information, thereby reducing their reliance on libraries.

Expert opinions are relatively concentrated on three options: **(1) Erosion of users' deep-reading habits; (2) Ever-expanding user base (e.g., enterprises, alumni, local residents, and AI agents); and (3) Growing user demand for library spaces.** AI agents may emerge as a new category of "digital users" for libraries, challenging existing service boundaries and resource allocation approaches. A minority of experts also identified underdeveloped mechanisms for user participation and value co-creation, overly broad user profiling and insufficient insight into service scenarios, and disparities in information literacy as challenges.

2.2.2 Solutions for the challenges of user relationships

Regarding solutions for the challenges of user relationship, expert opinions were highly concentrated on two options: **(1) Proactively integrating library services into educational and research scenarios.** Libraries should embed their services into university course platforms, research systems, and research workflows, proactively identifying and anticipating user needs in the context of actual teaching and scholarly tasks. **(2) Developing a dynamic,**

compliant, and accurate user profiling system. Libraries should integrate data from internal platforms for collection circulation, databases, course services, and referencing. They should also connect with relevant university administrative systems—including those for human resources, academic affairs, research, and student affairs—to collect user data in compliance with applicable requirements. Big data, AI, and other technologies should then be used to develop multidimensional, dynamic user profiles, providing statistical support for differentiated and targeted services.

Expert opinions were relatively concentrated on four options: **(1) Creating diverse spaces for learning and exchange to enhance the user experience; (2) Incorporating information literacy instruction into talent development programs; (3) Strengthening user participation in content creation and governance; and (4) Intensifying efforts to cultivate user' capacity for deep and systematic reading.** Libraries should create inclusive and engaging third spaces and venues for scholarly exchange, integrate information literacy education and deep-reading skills training into talent development programs, and enhance users' ability to engage critically with AI. They should also foster trust and strengthen users' sense of identification with the library by promoting user participation and value co-creation. A minority of experts also proposed measures such as implementing differentiated and tiered management for internal and external users and establishing regulations for user data governance and privacy protection.

2.3 Challenges and Solutions for Resource Development

2.3.1 Challenges for resource development

Regarding the challenges that academic libraries may face in resource development over the next five years, expert opinions are highly concentrated on three options: **(1) Limited funding for resource development.** Funding for resource development remains insufficient, while the prices of both print and electronic resources continue to rise. The procurement of imported resources is also subject to multiple pressures, including exchange-rate fluctuations and value-added tax, creating significant difficulties for libraries in ensuring the provision of disciplinary information resources. **(2) Severe resource fragmentation and ineffective integration of resources from multiple sources.** Multi-modal resources—including print resources, databases, open-access resources, research data, and audiovisual materials—are distributed across different systems that lack unified data standards. Consequently, cross-

platform resource integration, unified search, knowledge mining, and service delivery have become increasingly challenging. **(3) Growing dependence on commercial databases, resulting in a lack of control over resources.** Electronic resources are heavily dependent on external commercial databases and subject to significant copyright barriers. As a result, libraries have limited autonomy in resource negotiations, long-term preservation, and resource management.

Expert opinions are relatively concentrated on three options: **(1) Low efficiency in resource utilization; (2) Outdated systems for organizing and discovering resources; and (3) Irrational resource allocation (e.g. insufficient resources for emerging/ interdisciplinary fields and an imbalance between print and electronic resources).** Under the impact of AI, the traditional resource development model, which emphasizes acquisition, collection, and provision, is increasingly misaligned with users' information behaviors. Libraries face shortcomings in resource organization, discovery, and utilization, while the balance between print and electronic resources also needs to be improved. A minority of experts also identified the uneven quality of open-access resources and a lack of mechanisms for their selection, integration, and management; a lack of mechanisms for the long-term preservation of digital resources; and the insufficient revitalization and utilization of ancient texts and featured collections as challenges.

2.3.2 Solutions for resource development

Regarding solutions for resource development, expert opinions were highly concentrated on two options: **(1) Enhancing consortium purchasing to reduce resource development costs.** Libraries should continue to advance the joint development and sharing of resources, deepen cross-regional resource collaboration through programs such as CALIS, CASHL, and DRAA, strengthen regional, inter-university, and discipline-based consortia, promote open access, and enhance their bargaining power and autonomy. **(2) Developing an integrated platform to enable unified resource management.** Libraries should integrate internal and external resources, unify metadata standards, and achieve the integrated consolidation of heterogeneous resources. They should also use intelligent technologies to build knowledge networks and enable the unified management, presentation, and utilization of resources.

Expert opinions were relatively concentrated on four options: **(1) Establishing mechanisms to evaluate resource effectiveness and make dynamic adjustments; (2) Enhancing the semantic description of library collections (e.g., metadata governance, knowledge**

graphs, and semantic search); (3) Establishing a demand-driven model for targeted resource development; and (4) Strengthening the development of featured collections and institutional knowledge bases. Drawing on user data and trends in disciplinary development, libraries should conduct in-depth analyses of user and disciplinary needs, regularly evaluate resource effectiveness, and dynamically adjust resource development strategies to improve the relevance and utilization of resources. Libraries should also employ digital and intelligent technologies to strengthen metadata governance and semantic search, while advancing the digitization of featured collections and the development of institutional knowledge bases. A minority of experts also proposed developing a system for the selection, evaluation, description, and provision of open-access resources; establishing a multi-layered system for the long-term preservation of digital resources; and promptly adjusting resource acquisition and allocation in response to national strategies and global technological developments.

2.4 Challenges and Solutions for Service Provision

2.4.1 Challenges for service provision

Regarding the challenges that academic libraries may face in service provision over the next five years, expert opinions were highly concentrated on four options: **(1) Insufficient integration into the full cycle of teaching and research.** Coordination between library services and front-line teaching and research activities remains inadequate, resulting in a degree of misalignment between service provision and actual needs. **(2) Library services lacking visibility and impact in support of university development.** The supporting role of libraries has yet to be fully reflected in the Double First-Class initiative and universities' agendas for high-quality development. **(3) AI-powered and intelligent services remaining largely at a basic stage and failing to deliver efficiency.** Existing applications remain largely confined to basic intelligent Q&A and search functions, with insufficient integration into core services such as intelligent resource discovery and personalized research support. As a result, their impact on overall service effectiveness remains limited. **(4) Insufficient support for emerging services (e.g., data management, open-access publishing support, and think tank services).** Amid changes in research paradigms, libraries remain relatively weak in resource allocation and professional talent reserves and have yet to establish comprehensive service support systems.

Expert opinions were relatively concentrated on one option: **Continued reliance on reactive service models and a limited ability to proactively identify and anticipate user needs.** At present, library services rely largely on users to articulate their needs proactively, while mechanisms for anticipating user needs through behavioral data mining have yet to be established. A minority of experts also identified homogeneous services and limited ability to develop distinctive and branded services; declining demand for traditional reader services; and library spaces being unable to support diverse learning and research scenarios as challenges.

2.4.2 Solutions for service provision

Regarding solutions for service provision, expert opinions were highly concentrated on three options: **(1) Further integrating disciplinary services into the full cycle of teaching and research.** Libraries should proactively engage with faculty and researchers to develop an end-to-end knowledge service model spanning course instruction, the research process, and research output evaluation. **(2) Establishing cross-departmental coordination mechanisms within the university to integrate library services into its core operations.** Through close collaboration with departments responsible for academic affairs, research, human resources, and other areas, libraries should further align their services with universities' core operational processes and enhance their visibility and contribution. **(3) Promoting AI application in scenarios such as teaching and research support and personalized recommendations.** Libraries should leverage technologies such as LLMs and knowledge graphs to provide targeted research support and resource recommendations, thereby improving overall service efficiency.

Expert opinions were relatively concentrated on three options: **(1) Developing a proactive, data-driven service system based on the identification of user needs; (2) Leveraging internal and external resources to enhance the provision of emerging services (e.g. data management, open-access publishing support, and think tank services); and (3) Implementing smart upgrades to library spaces to meet diverse teaching and research needs.** Libraries should front-loaded their services in teaching and research processes and accelerate their intelligent transformation, adopt data-driven approaches to identify user needs with greater precision, strengthen support for emerging services, and develop smart learning spaces. A minority of experts also proposed establishing a classified and tiered service system to precisely meet the needs of different scenarios and developing and promoting distinctive service brands.

2.5 Challenges and Solutions for Cultural Development

2.5.1 Challenges for cultural development

Regarding the challenges that academic libraries may face in cultural development over the next five years, expert opinions were highly concentrated on four options: **(1) Limited recognition and appeal of cultural brands.** Libraries lack influential and recognizable cultural brands, while their cultural activities remain conventional in format and lack distinctive features. **(2) A lack of systematic, top-level planning for cultural development.** Cultural development lacks institutionalized and sustainable implementation mechanisms and top-level management. **(3) Insufficient integration into the university education systems.** The cultural education function of libraries is neither sufficiently integrated with universities' fundamental mission of fostering virtue through education nor adequately connected with the development of campus culture. The frameworks for routine cultural education have yet to take shape. **(4) Highly homogeneous cultural activities.** Cultural activities are limited in format and highly homogeneous, with insufficient innovation in cultural preservation.

Expert opinions were relatively concentrated on one option: **A weakened or marginalized role for cultural education.** The cultural functions of libraries receive relatively limited attention in the Double First-Class initiative and research performance evaluation systems. This challenge is compounded by the rise of AI and growing competition from diverse campus spaces, as residential colleges, cafes, and online communities increasingly attract users, heightening the risk that libraries' cultural education functions may become marginalized. A minority of experts also identified unclear approaches to evaluating cultural development, insufficient dissemination and utilization of cultural content, and weak information culture governance as challenges.

2.5.2 Solutions for cultural development

Regarding solutions for cultural development, expert opinions were highly concentrated on three options: **(1) Incorporating cultural development into library strategic planning and modernization priorities.** From a strategic perspective, libraries should establish a cultural governance system with clearly defined rights and responsibilities and strong institutional support, while fostering an internal organizational culture that encourages innovation and tolerates experimentation. **(2) Developing distinctive cultural brands and activities.** Libraries should develop a diverse range of cultural activities centered on regional culture,

university history and traditions, and collegiate spirit, thereby building cultural education brands that reflect their universities' distinctive characteristics and library identity.**(3) Incorporating cultural development and services into the university's general education, ideological and political education, and cultural cultivation systems.** Libraries should collaborate with academic affairs offices, graduate schools, and other departments to integrate cultural cultivation into university education systems. They should also strengthen funding support and long-term operational mechanisms to reinforce their role as strongholds of advanced campus culture.

Expert opinions were relatively concentrated on two options: **(1) Encouraging faculty and students to participate in the co-creation of cultural content; and (2) Strengthening the promotion of distinctive cultural resources.** Libraries should encourage faculty and students to participate in the collection and organization of cultural materials and the creation of cultural content. They should also explore the distinctive cultural resources contained in university archives, featured collections, and ancient texts to advance their revitalization and promotion. A minority of experts also proposed establishing long-term mechanisms for cultural development and strengthening information culture governance in areas including AI ethics, data privacy, and ideology.

2.6 Needs and Capabilities for AI Applications

2.6.1 Academic libraries' needs for AI applications

Regarding academic libraries' needs for AI applications over the next five years, expert opinions were highly concentrated on four options: **(1) Developing multi-modal knowledge bases based on library collections.** Libraries should integrate their licensed core databases with locally held distinctive scholarly resources in compliance with applicable requirements to build trustworthy, traceable, and structured knowledge foundations. This can provide high-quality corpora for LLMs, ensure the reliability and authority of AI services at the source, and meet users' requirements for information accuracy and traceability. **(2) Developing intelligent resource discovery and semantic search systems.** Libraries should shift from traditional keyword-based search toward conversational question answering in natural language, while enabling cross-database and cross-modal semantic search and knowledge graph visualization to support users' in-depth knowledge discovery. **(3) Automating basic operational**

workflows (e.g. metadata generation, classification and indexing, OCR, document digitization, and data cleaning). AI should be widely applied to highly standardized library workflows, freeing staff to provide higher-value-added knowledge services and improving libraries' operational efficiency. **(4) Providing personalized, smart services.** Based on user profiles, libraries should deliver targeted information to different user groups and tiers, thereby meeting users' personalized knowledge needs throughout their learning and research activities with greater precision.

Expert opinions were relatively concentrated on one option: **Developing a smart middle office for library data.** Libraries should break down information silos between operational systems and establish a unified data asset pool to provide the data foundation for intelligent services and support targeted resource allocation and intelligent service matching. A minority of experts also proposed providing AI-assisted teaching and research tools; deploying AI-powered reference librarians; enhancing intelligent space management through space reservations, traffic monitoring, smart shelf inventory, etc.; using AI to enhance interactive experiences; and enhancing intelligent management decision-making in areas such as budget planning, performance evaluation, and promotion.

2.6.2 Promoting the standardized use of AI agents

Regarding the standardized use of AI agents, expert opinions were highly concentrated on four options: **(1) Developing trustworthy, high-quality corpora and knowledge bases.** Drawing on the high-quality data accumulated over time, libraries should develop trustworthy and specialized knowledge bases to reduce the risks of AI hallucinations and misinformation and ensure the compliance and accuracy of AI agents. **(2) Establishing tiered management mechanisms for AI agent applications.** Differentiated management should be implemented according to the risk levels of different application scenarios, supported by evidence-chain and traceability mechanisms to ensure that outputs can be traced and accountability assigned. **(3) Enhancing AI literacy among librarians and users.** AI ethics should be incorporated into information literacy initiatives to develop teachers' and students' ability to critically evaluate AI-generated content. Librarians should acquire capabilities in AI agent training, quality oversight, and risk identification, thereby transitioning from passive users to active participants in AI governance. **(4) Collaborating with multiple university departments to develop an AI governance framework.** Libraries should proactively collaborate with relevant university

departments to establish unified standards for the academic use of AI, clearly define boundaries concerning data security, privacy protection, and academic integrity, and develop a governance framework covering the entire life cycle of AI agents.

Expert opinions were relatively concentrated on two options: **(1) Adopting a model that combines locally deployed LLMs with consortium-based sharing; and (2) Establishing human-AI collaborative workflows in which librarians retain ultimate accountability.** Libraries should prioritize local deployment to ensure data security while drawing on library consortia to share computing power and data resources, thereby reducing development costs. Librarians should be responsible for prompt design, output review, and risk flagging and conduct the final review of high-risk content, thereby establishing a tiered response mechanism. A minority of experts also proposed securing data licenses from commercial database providers, establishing mechanisms for user authorization and data privacy protection, and participating in the joint development of industry standards and regulations for AI applications.

2.7 Core Functions and Indispensable Roles of Academic Libraries in University Operations

2.7.1 Core functions of academic libraries

Regarding the core functions of academic libraries, expert opinions are highly concentrated on five options: **(1) Cultural inheritance and cultural cultivation.** Libraries should preserve and carry forward cultural heritage while serving as campus hubs for cultural cultivation. Through reading promotion, information literacy campaigns, and cultural activities, they should enhance the humanistic literacy of faculty and students and foster the collegiate spirit. **(2) Providing information resource support.** Libraries should consistently provide high-quality print, digital, data, multimedia, and other resources aligned with disciplinary needs. They should strengthen the acquisition, processing, integration, storage, and retrieval of these resources, effectively fulfilling their role in the university-wide governance of scholarly resources and digital assets. **(3) Supporting teaching and research.** Libraries should embed knowledge services throughout the full cycle of teaching and research, covering areas such as literature review, research-front identification, technology novelty searches, and data governance. They should also provide services related to the dissemination of research outputs, scholarly impact assessment, and knowledge consulting, thereby providing effective support for the development of high-

quality teaching and research systems. **(4) Providing think tank services and decision-making support.** Libraries should focus on their universities' first-class disciplines, high-caliber talent, and key projects. By integrating data from literature, patents, policies, and other sources, they should conduct intelligence analysis and provide decision support for strategic planning, disciplinary development, research innovation, and evaluation. **(5) Providing spatial services.** Libraries should provide diverse spaces for learning and discussion, develop smart environments integrating physical and virtual spaces, and establish future learning centers supported by course resources and academic guidance, thereby comprehensively facilitating in-depth learning and scholarly exchange among faculty and students. A minority of experts also proposed that libraries should assume responsibilities for domestic and international scholarly communication and dissemination, data management, and information governance.

2.7.2 Indispensable roles of academic libraries in university operations

Regarding the indispensable roles of academic libraries in university operations, expert opinions were highly concentrated on three options: **(1) Empowering research innovation and professional development among faculty through academic support.** In response to the needs of faculty across different disciplines, libraries should provide services such as disciplinary competitiveness analysis, research-front tracking, scholarly impact assessment, and intellectual property services. They should also participate throughout the faculty development process, providing intelligence support and digital literacy training for talent recruitment, project applications, early-career faculty development, and teaching reform. **(2) Embedding information literacy illustration throughout the talent development process.** Libraries should leverage their role as "second classrooms" by providing students at different levels with targeted training in information retrieval, digital and AI literacy, and academic integrity. Such education should be integrated into university talent development systems to cultivate students' capacity for lifelong learning. **(3) Strengthening the ideological front through resource development.** Libraries should strengthen and standardize the ideological governance of their resources, enhance ideological and cultural security. They should also provide value guidance through immersive educational initiatives, such as thematic literature exhibitions and reading promotion activities.

Expert opinions were relatively concentrated on three options: **(1) Upholding and carrying forward core socialist values through the promotion of reading culture; (2) Supporting multidimensional education through future learning centers and diverse spaces;**

and (3) Supporting talent recruitment and faculty evaluation through the analysis of multi-source academic data. Libraries should leverage their strengths in resources, services, and spaces to integrate more deeply into university education systems and provide decision support for university development through multi-source data. A minority of experts also proposed advancing the revitalization of ancient texts and featured collections as well as cultural inheritance; supporting disciplinary research and international dissemination through professional scholarly governance services; and supporting public services through technical literature and science popularization services.

2.8 External Relationships of Academic Libraries

2.8.1 Important external relationships of academic libraries

Regarding the external relationships that academic libraries need to handle well,expert opinions were highly concentrated on four options: **(1) Relationships with upstream and downstream commercial organizations.** Libraries depend on publishers, database providers, technology vendors, and other commercial organizations for resource procurement and technological systems. Faced with rising resource prices, copyright barriers, and technological lock-in, libraries need to safeguard their rights and interests through both competition and cooperation. **(2) Relationships with other organizations in the library sector.** Academic libraries should strengthen collaboration and resource connectivity with peer libraries, public libraries, and other institutions, while harnessing the collective strength of consortia, academic societies and associations, and other professional communities to enhance overall effectiveness. **(3) Relationships with library consortia/organizations.** Libraries should actively participate in standards setting, regulation formulation, and policy advocacy through professional associations, while drawing on the collective strength of consortia and other organizations to amplify the voice of the library sector. **(4) Relationships with relevant government agencies.** Libraries should proactively align themselves with national strategies and policy directives, and strengthen communication and coordination with agencies such as the Ministry of Education, the Ministry of Culture and Tourism, and intellectual property administrations, thereby consolidating the foundations for sustainable development.

Expert opinions were relatively concentrated on one option: **Relationships with other cultural institutions.** As the scope of library services continues to expand, cross-sector collaboration with archives, museums, cultural centers, and other institutions is becoming increasingly

common. Libraries and their partners should strengthen efforts to preserve ancient texts and other historical documents, develop and share digital resources, and jointly organize cultural programs, thereby advancing cultural preservation and innovation. A minority of experts also proposed that libraries should actively participate in the open science ecosystem and effectively manage their relationships with philanthropic organizations, technological information institutions, and other stakeholders.

2.8.2 Key measures for strengthening external relationships

Regarding how academic libraries should effectively manage these relationships, expert opinions were highly concentrated on three options: **(1) Conducting collective bargaining and joint negotiations through industry consortia to reduce procurement costs.** Faced with the market dominance of commercial organizations, libraries should harness the collective strength of industry consortia and other organizations to secure reasonable prices and protect their legitimate rights and interests. **(2) Deepening joint development and sharing of resources among libraries.** Through consortium-based and peer collaboration, libraries should strive to achieve resource complementarity and coordinate service provision, thereby enhancing the overall availability of documentary resources. **(3) Proactively aligning with government strategic plans to secure policy and funding support.** In close alignment with national and regional development needs, libraries should proactively engage with higher authorities, contribute to the implementation of strategic plans, and secure greater resource support.

Expert opinions were relatively concentrated on two options: **(1) Collaborating with public cultural institutions to organize distinctive cultural and educational activities; and (2) Providing tiered and orderly access to resources and spaces, prioritizing the university needs while maintaining an appropriate balance with public services.** Through cross-sector collaboration, libraries should organize distinctive cultural education activities and expand their cultural influence. When fulfilling their public service responsibilities, they should continue to prioritize university needs and implement tiered access controls for their resources and spaces. A minority of experts also proposed promoting open science and participating in knowledge production, dissemination, and governance; providing information services for regional technological innovation, encompassing technology novelty searches, patent analysis, industry intelligence, etc.; and improving donation management and donor recognition systems while actively incorporating donated resources into collection development.

2.9 Internationalization of Academic Libraries

2.9.1 Key consensus on the internationalization of academic libraries

Regarding the internationalization of academic libraries, expert opinions were highly concentrated on four options: **(1) Academic libraries should introduce foreign-language resources while promoting Chinese scholarly outputs and cultural resources internationally.** Internationalization entails both "bringing in" and "going out". Libraries should not only introduce high-quality international resources but also actively disseminate outstanding Chinese scholarly outputs and cultural resources. **(2) Library internationalization should advance in step with and as an integral part of the university's internationalization strategy.** Library internationalization should be viewed in the context of the university's talent development, scientific research, and international exchange and cooperation, and should advance in alignment with the university's overall internationalization strategy. **(3) Internationalization is an important pathway to enhancing academic library services and scholarly influence.** Internationalization encompasses not only resource acquisition and staff exchanges but also the continuous improvement of service philosophies and resource systems. It is also an important means of enhancing scholarly influence and amplifying the academic voice of libraries. **(4) Academic libraries should develop differentiated approaches based on their universities' disciplinary strengths and cultural traditions.** Libraries should avoid homogeneous approaches to internationalization. Instead, they should pursue differentiated pathways for cooperation and dissemination based on their universities' distinctive strengths and institutional foundations, while preserving their institutional character and cultural autonomy amid open exchange.

Expert opinions were relatively concentrated on one option: **Academic libraries should systematically enhance their international service philosophy, standards, and capabilities.** A minority of experts also proposed that academic libraries should actively share China's experience in library development with the international community. They further noted that internationalization is constrained by limited funding, insufficient staff exchanges, geopolitical factors, and other challenges.

2.9.2 Key measures for advancing internationalization

Regarding the principal measures for advancing the internationalization of academic libraries, expert opinions were highly concentrated on four options: **(1) Promoting the overseas digital dissemination of Chinese classics, the university's ancient texts and featured collections, historical documents, and distinctive cultural resources.** Libraries should systematically identify rare cultural resources within their collections and enhance the global influence of outstanding Chinese cultural resources through digitization, translation, and international dissemination. **(2) Integrating the university's scholarly outputs into international open-access networks to enhance their global visibility.** Libraries should extensively participate in the global open-access movement and facilitate the integration of universities' scholarly innovations and leading disciplinary resources into international academic communication systems, thereby constantly expanding their global influence. **(3) Incorporating library internationalization into the university's overall strategy and strengthening funding support and cross-departmental coordination mechanisms.** Libraries should seek to integrate internationalization into their universities' internationalization strategy, with clear funding commitments, departmental responsibilities, and operational mechanisms in place to strengthen institutional support. **(4) Conducting staff exchanges, joint research, and resource exchanges with overseas academic libraries.** Academic libraries should engage in in-depth benchmarking and substantive cooperation with leading counterparts worldwide, promoting two-way exchange of advanced concepts, proven experience, and high-quality resources.

Expert opinions were relatively concentrated on one option: **Developing a professional librarian workforce with cross-cultural service capabilities.** A minority of experts also proposed providing cross-border literature, intelligence, and intellectual property services to support international academic collaboration; actively participating in the activities of international library organizations and contributing to the formulation of international standards and regulations; and providing cross-cultural learning and research support for international faculty and students.

03

Conclusion



Peking University Library

Conclusion

Based on the findings above, the research team focused its analysis on the 60 options that received a high level of expert consensus, while also taking into account the 40 options that received moderate consensus and relevant input from the first round of consultation. On this basis, the team identified six strategic problems facing academic library modernization and the development approaches that would play a decisive role in addressing them, and distilled the corresponding overall trends. The team also summarized the limitations of the study and directions for future efforts.

3.1 Strategic Problems Facing Academic Library Modernization and Development Strategies for the New Stage

Academic library modernization faces six principal strategic problems:

(1) How can academic libraries implement the new development philosophy, follow the principles governing library development, and achieve high-quality development while contributing to modernization with Chinese characteristics and the development of China into an education powerhouse?

(2) How can academic libraries scientifically identify, respond to, and embrace change amid revolutionary advances in productive forces and profound transformations in the relations of production, while enriching their AI-enabled value systems and advancing connotative development? From the perspective of key elements, this involves determining how to build a high-quality professional librarian workforce and a versatile team of assistant librarians; encourage faculty and students to make full use of libraries and engage more deeply with them; enhance libraries' service capability and overall efficiency; strengthen their capacity to provide both general and specialized resource support; and bolster their cultural capacity and overall educational effectiveness.

(3) How can academic libraries contribute to university governance and the development of faculty and students while advancing their own integrated development?

(4) How can academic libraries apply new technologies where there is a clear need and the necessary conditions are in place, thereby advancing their isomorphic development?

(5) How can academic libraries strengthen external relationships in alignment with their

universities' positioning and strategic direction and explore complementary development?
(6) How can academic libraries strengthen internationalization in line with the strategic plans of their universities and the library sector, thereby embarking on leading-edge development?
The process of addressing these strategic problems constitutes the modernization of academic libraries, while the models and pathways adopted in doing so constitute their development approaches. Accordingly, the development strategy for the new stage is to adopt differentiated approaches to different strategic problems. High-quality, connotative, and integrated development are broadly applicable to all academic libraries, whereas isomorphic, complementary, and leading-edge development are more applicable to libraries with different resource endowments and comparative advantages.

3.2 Overarching Trends in Academic Library Modernization for the Next Five Years

The process of addressing strategic problems involves several key stages, including identifying their manifestations, developing and selecting solutions, implementing specific measures, evaluating outcomes and incorporating feedback. As our understanding of the strategic problems outlined above deepens and appropriate solutions and measures are adopted, these problems will be gradually resolved. In this process, development goals will be progressively achieved, and future trends will become increasingly apparent. Six overarching trends will characterize academic library modernization over the next five years.

(1) Staying true to the original aspirations and consistently pursuing the high-quality development of academic libraries.

High-quality development is the primary task in building a modern socialist country in all respects. The advanced practices and proven experience accumulated through the high-quality development of academic libraries in recent years should be further upheld. First, libraries should continue to fully and accurately implement the new development philosophy of innovation, coordination, green development, openness, and sharing. In light of the integrated advancement of education, technology, and talent, as well as the realities of university reform and development, they should reinforce advanced principles such as being user-oriented and service-first, while positioning themselves to make greater contributions to national

development, university development, and the development of faculty and students. Second, libraries should continue to forge ahead with courage and determination; uphold a commitment to modernization, creative thinking, and holistic development; and remain true to their service mission, academic standards, and humanistic spirit. Third, libraries should faithfully fulfill their fundamental responsibilities: accurately acquiring, presenting, organizing, and facilitating the use of scholarly information resources; effectively disseminating and preserving human knowledge and the achievements of civilizations; and providing substantive support for university development and cultural prosperity. Fourth, libraries should uphold their appropriate roles as academic institutions within universities, centers for the management and provision of scholarly information resources, and platforms for cultural education and public services. Fifth, libraries should remain steadfast in their vision of becoming both integral components of their universities' talent development and research innovation systems, as well as important spaces for enriching the nation's cultural life and fostering cultural confidence.

(2) Upgrading resources and comprehensively advancing the connotative development of academic libraries.

Connotative development is a primary approach to achieving high-quality development. All libraries set priorities in accordance with the endowments, structures, and comparative advantages of their librarians, users, services, resources, culture, and other key elements, making every effort to overcome challenges and comprehensively deepen reform and development.

First, libraries should build a high-quality professional librarian workforce and a versatile team of assistant librarians. Key measures include improving position structures in alignment with institutional responsibilities; developing professional development systems that enhance the general competencies and AI literacy of all professional librarians, including library directors; strengthening communication with university leadership and relevant departments on the development of library services across the university; and developing the team of assistant librarians—including volunteers, outsourced personnel, and part-time staff—needed to ensure smooth library operations.

Second, libraries should encourage more faculty and student users to make full use of libraries and engage more deeply with them. Key measures include encouraging professional

librarians to systematically map teaching and research scenarios across different disciplines and programs and embed library services within them; strengthening user relationship management to ensure that user feedback concerning libraries during self-directed learning is collected and addressed broadly, promptly, and accurately; enhancing users' audiovisual and cultural experiences both on-site and online; strengthening face-to-face and online interaction between librarians and users; and providing substantive support to users in need develop information literacy and reading skills that will benefit them throughout their lives.

Third, libraries should enhance their service capabilities and overall efficiency. Key measures include improving information service mechanisms for institutional users, including various teaching and research units across the universities; strengthening collaboration and coordination with university departments responsible for talent development and research innovation; advancing the application of AI to library service innovation and efficiency improvement; expanding emerging services, such as intellectual property and disciplinary intelligence services; and establishing smart library service systems in conjunction with education digitization and smart campus development.

Fourth, libraries should strengthen their ability to provide both general and specialized resource support. Key measures include advancing open access to journal articles and the lawful sharing of public data; strengthening consortium-based interlibrary cooperation through joint purchasing, cooperative cataloging, and other initiatives; promoting the integrated discovery and access of documentary and data resources through knowledge integration; establishing and improving collaborative resource provision mechanisms with institutional users throughout the resource development process; and enhancing the development and sharing of featured collections based on university and disciplinary characteristics.

Fifth, libraries should strengthen their cultural capacity and overall educational effectiveness. Key measures include strengthening organizational culture while advancing the development of cultures centered on historical documents, science, and arts; leading the development of information culture based on the relationship between people and information; promoting the integrated development of distinctive culture, featured collection resources, and targeted services centered on talent cultivation; and collaborating with student organizations and relevant university units to organize a range of culturally substantive and widely appealing activities.

(3) Improving functional systems and vigorously advancing the integrated development of academic libraries.

Integrated development is an important approach to achieving high-quality development. Libraries should effectively fulfill their legally prescribed functions, fully exercise their indispensable roles, and vigorously strengthen their interaction and integration with relevant university departments and units, thereby making greater contributions to university governance and the development of faculty and students.

Regarding the functions of academic libraries, the *Regulations for Libraries in Institutions of Higher Education* stipulate that the "principal functions of libraries are education and information services." [13]However, these stipulations have not been adequately reflected in university plans concerning library functions, organizational structure, and staffing levels, or in the university characteristics, regulations, and administrative measures governing library operations. In practice, library operations intersect with those of virtually every other unit across the university, serving the needs of faculty and students round the clock, both on and off campus. Libraries therefore occupy a unique position within university governance systems and maintain close connections with the development of faculty and students. Their principal functions can be summarized as documentary resource provision, cultural education, and information services.

While fulfilling their functions, libraries should remain closely focused on universities' three "foundational tasks"—upholding the correct political direction in university administration, building a high-quality faculty workforce, and establishing a high-standard talent development system—as well as their other missions and responsibilities. Libraries should also work in concert and pursue collaborative innovation with university functional departments, teaching and research units, and other institutional users, while joining faculty, students, and other individual users in addressing challenges and creating value. In all these aspects, libraries have an indispensable role to play.

(4) Embracing AI to effectively advance the isomorphic development of academic libraries.

In the AI era, the threshold for the isomorphic development of libraries have been raised. Isomorphic development highlights either the convergence of external structures among similar entities or the mutual learning of element relationships across dissimilar entities. It requires an accurate understanding of the formal and substantive characteristics of these entities,

as well as the conditions of their constituent elements. The shared impact of AI on libraries will contribute to greater convergence in their external structures. At the same time, certain relationships between the constituent elements of AI and those of libraries may serve as points of reference for one another, enabling broader insights to be generated through analogy.

AI presents both opportunities and challenges for libraries. AI-enabled application R&D will accelerate the creation of replicable and shareable multi-modal knowledge bases, semantic search systems, personalized smart service platforms, and human-AI collaborative operational platforms, substantially improving the user experience and librarian productivity. AI-native application R&D will also produce promising professional-grade and general-purpose AI agents and robots, greatly enhancing libraries' overall effectiveness.

The constituent elements of AI include data, algorithms, computing power, models, human-computer interaction, task scenarios, and operating rules. The fundamental importance of data indicates that libraries with the necessary capabilities should strengthen the development of data resources. The rule-based trust mechanisms employed by libraries also suggest that AI systems should reinforce their rules to improve data quality, address intellectual property issues, and overcome barriers to cross-scenario applications.

(5) Strengthening external relationships to effectively explore the complementary development of academic libraries.

Complementary development highlights how different parties can complement one another by leveraging their respective comparative advantages. Libraries should engage with external entities, carry out public-oriented activities, fulfill their social responsibilities, and seek society-wide support under the organization or authorization of their universities.

External entities mainly include mass organizations, social organizations, public institutions, enterprises, and grassroots self-governing organizations. Libraries may engage with these entities in various ways, including exchange and mutual advancement, compliant transactions, goodwill-based support, mutually beneficial collaborations, partnerships for greater efficiency, alliances, and joint innovation.

Institutions of higher education are classified as Type II public welfare institutions, and some of the resources required for their operation are allocated through the market. In alignment with their universities' positioning and strategic direction, libraries should act within their capacities and adapt to local conditions while offering public services and contributing to

social development. For example, they may provide sustained support for neighborhood committees or village committees near their campuses in organizing "New Era Civilization Practices."Libraries should also make every effort to mobilize external resources and strengthen the foundations for steady development—for example, by building common ground with relevant external entities, jointly addressing challenges, and developing new services.

(6) Expanding the international presence to pioneer leading-edge development of academic libraries.

Leading-edge development highlights the guiding role of comparative advantages. By 2030, significant progress will have been made toward developing China into an education powerhouse, and several Chinese universities will rank among the world's leading institutions. Both these universities and their libraries need to enhance their global influence. Guided by the strategic vision of building a community with a shared future for mankind, leveraging the Belt and Road Initiative as a platform for international cooperation, and benchmarking themselves against leading institutions worldwide, these libraries should strive to take a pioneering role on the broader international stage.

As an important component of their universities' internationalization strategies, the international development of academic libraries is significant in multiple respects. In particular, international exchange and cooperation enable libraries to draw on high-quality global resources, strengthen their capacity for operational innovation, gain valuable experience in institutional development, and play a pioneering role in global governance.

The international leadership of libraries is also reflected in their strong appeal to global peers and users and their ability to provide efficient services; their efforts to deepen integration and cooperation through librarian engagement; their transition from merely responding to user needs to proactively delivering services; their emphasis on cultural dissemination and preservation alongside information resource services; and their promotion of Chinese experience, discourse, and theories based on exemplary practices.

3.3 Research Limitations and Future Directions

This study primarily employed expert consultation to systematically examine trends in academic library modernization over the next five years. The inherent limitations of the methodology

await further attention. For example, when converting the open-ended questions from the second round into the structured questionnaire used in the third round, the research team consolidated certain questions to further concentrate expert opinions, which may have resulted in some perspectives being omitted. As the Delphi method is primarily designed to build expert consensus, it does not fully capture perspectives on which no consensus has not been reached. In addition, some experts were unable to participate in every round of consultation. Moreover, AI-based textual analysis was used primarily to verify and support the findings of content analysis, while the application of LLMs in this context needs further improvement.

Regarding methodology, the research team will continue to improve the expert consultation mechanism, conduct more detailed analyses of experts' individualized and in-depth perspectives, optimize the consultation cycle on a scientific basis, and further enhance experts' participation throughout the process. It will also deepen the standardized application of AI tools, statistical analysis and other methods in analyzing expert opinions, while strengthening manual review and methodological validation. Regarding research content, the team will build on its macro-level research by focusing on issues of broad concern to experts and exploring practical pathways and innovative cases of academic library modernization at different levels. Regarding the application of research findings, the team will further examine both the common patterns and distinctive trajectories of academic library modernization, and constantly refine its theoretical framework. It will also strengthen collaboration and comparative research with professional associations in the public library, professional library, and other sectors, with a view to jointly advancing library modernization across China.

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04

Appendix

Peking University Library

Appendix 1: List of Experts

Name	Institution	Position/Title	Research Direction
WANG Liping	South China University of Technology Library	Deputy Director / Research Librarian	Library Management, Information Resource Development, Intellectual Property Information Services
WANG Jimin	Department of Information Management, Peking University	Professor	Library and Information Technology, Research on AI Applications in Libraries
WANG Shuyuan	Beijing Foreign Studies University Library	Party General Branch Secretary / Executive Deputy Director	Cultural Education
WANG Xincai	School of Information Management, Wuhan University	Professor	Information Resource Development
WANG Xinyu	China University of Mining and Technology Library	Director / Professor	Library Management
SHI Changdi	Capital Normal University Library	Director / Research Fellow	Library Management
LONG Xiaonong	Communication University of China Library	Director / Professor	Digital and Intelligence Library Development, Information Resource Development, Reading Promotion
TIAN Dan	Jilin University Library	Deputy Director / Research Librarian	Library Management, Information Resource Development, Subject Services, Cultural Outreach
FENG Yongcai	Xi'an University of Science and Technology Library	Director / Research Librarian	Library Management and Library Social Services
LAN Liqiong	Sichuan University Library	Director / Professor	Library Management, Higher Education Administration, Biological Sciences

Name	Institution	Position/Title	Research Direction
NING Jin	University of Science and Technology of China Library	Executive Director / Level-5 Staff Position	Library Management, Information Resourcce Development
LIU Hongwei	Harbin Institute of Technology Library	Director / Professor	Computer Science and Technology, Library Management
LIU Mingxin	Minzu University of China Library	Director / Professor	Library Management
LIU Baisong	Ningbo University Library	Director / Research Fellow	Artificial Intelligence, Smart Libraries
LIU Zenghua	Beijing University of Technology Library	Director / Professor	Library Management
LIU Zenghe	Jinan University Library	Director / Professor	Late Qing History, History of the Qing Dynasty's Frontiers, Modern Chinese Financial History
SUN Xiaoying	Library and Information Center, Shanghai Tech University	Director / Senior Engineer	University Informatization, Digital and Intelligent Campus Development, Digital Library Development
LI Yuhai	School of Information Management, Central China Normal University	Professor	Smart Libraries
LI Tuanjie	Xidian University Library	Director / Professor	Library Management
LI Heng	Henan University Library	Director	Library Management
LI Aiguo	Southeast University Library	Director / Research Librarian	Library Management
YANG Guang	Shanxi University Library	Director / Research Librarian	Library Management and Services

Name	Institution	Position/Title	Research Direction
YANG Feng	Xi'an Jiaotong University Library	Deputy Director / Research Librarian	Information Resourcce Development, Resource Organization and Discovery, Intellectual Property Information Services, Smart Library Development
YANG Chao	Beihang University Library	Director / Professor	Library Management
HE Lin	Nanjing Agricultural University Library	Director / Professor	Information Science and Technology
YU Minjie	Zhejiang University Library	Deputy Director / Associate Research Librarian	Information Resourcce Development, Intellectual Property Information Services
ZOU Jinliang	Nanchang University Library	Director / Professor	Information Resourcce Development
YING Wangjiang	Shanghai University of Finance and Economics Library	Director / Professor	Subject Services,Information Resourcce Development
SHA Wutian	Shaanxi Normal University Library	Director / Professor	Information Resourcce Development
CHU Jingli	National Science Library, Chinese Academy of Sciences	Department Head / Professor	Library and Information Development Strategies, User Research and Services, Digital Publishing and Communication
ZHANG Bin	Renmin University of China Library	Director / Professor	Library Management
ZHANG Jing	Sun Yat-Sen University Library	Director / Professor	Public Cultural Governance and Services, Nationwide Reading and Lifelong Learning, Preservation of Ancient Books and Documentary Heritage
CHEN Jinghua	Jiangnan University Library	Director / Professor	Information Resourcce Development

Name	Institution	Position/Title	Research Direction
CHEN Ying	Chang'an University Library	Deputy Secretary of the General Party Branch / Research Librarian	Information Resourcce Development, Cultural Development, Reading Promotion
SHAO Bo	School of Information Management, Nanjing University	Professor	Smart Libraries, Data Security
JIN Jianbin	Tsinghua University Library	Director / Professor	Scholarly Communication, Bibliometric Analysis
ZHOU Di	Huazhong Agricultural University Library	Director / Associate Research Librarian	Information Resourcce Development, Knowledge Services
ZHENG Qingwen	Peking University Library	Party Committee Secretary / Research Fellow	Foundational Theories of Library Science, Ideological and Political Education
ZHAO Danqun	Department of Information Management, Peking University	Professor	Information Organization and Retrieval, Informetrics and Evaluation
ZHAO Xingsheng	School of History, Shandong University	Professor	Library Management
ZHAO Junling	School of Management, Hebei University	Professor	Reading Promotion
CHAO Xiaohong	Xiamen University Library	Director / Professor	Library Management, History
ZHONG Xinchun	Beijing Forestry University Library	Party General Branch Secretary	Library Management
HOU Liqiang	Fudan University Library	Party Committee Secretary / Executive Deputy Director	Library Management
HE Yanping	National University of Defense Technology Library	Director	Library Management, Smart Library Development

Name	Institution	Position/Title	Research Direction
JIA Junzhi	School of Information Management, Renmin University of China	Professor	Information Organization
JIA Ming	Dalian University of Technology Library	Director / Professor	Library Management
GONG Jiaoteng	Xiangtan University Library	Director / Professor	Foundational Theories of Library Science, Library Management and Services
CUI Xiangshu	Yanbian University Library	Director / Professor	Library Management
DONG Youming	Wuhan University Library	Director / Research Fellow	Library Management
HAN Zhaoying	Nankai University Library	Director / Professor	Library Management, Digital Library Development
CAI Yingchun	Shanghai International Studies University Library	Director / Research Librarian	Information Resourcce Development, Digital Scholarship Services, AI Literacy Education
FAN Haiping	Tibet University Library	Director / Associate Research Librarian	Modern Library Management
PAN Wei	Shanghai Jiao Tong University Library	Deputy Director / Research Librarian	Library Management, Library Subject-Based Information Services, Research Data Management and Services
DAI Qianwei	Central South University Library	Director	Library Management
WEI Qunyi	Chongqing University Library	Director / Research Librarian	Smart Library, Digital Library

Appendix 2: Profiles of Project Team Members

Name	Profiles
CHEN Jianlong	Professor; Director of Peking University Library; Vice President of the Library Society of China and Director of Society for Academic Libraries Division Libraries; Director of the Institute of Informatization and Human Information Behavior at Peking University. His principal research interests include information services, information resource management, library management, informatization, and human information behavior.
ZHANG Bin	Professor; Director of Renmin University of China Library; Member of the Information Resource Management Discipline Appraisal Group under the Academic Degrees Committee of the State Council; Deputy Director of the Society for Academic Libraries of the Library Society of China. His principal research interests include archival science, information resource management, and knowledge management.
WANG Bo	Research Librarian of Peking University Library; Former Deputy Editor-in-Chief of the Journal of Academic Libraries; Former Director of Ancient Resources Services Center of Peking University Library. His principal research interests include bibliotherapy, reading promotion, and images of reading in ancient China.
ZHANG Chunhong	Research Librarian, Peking University Library. Her principal research interests include subject services, research evaluation, information literacy programs, and emerging trends in librarianship.
SHAO Yan	Director of the R&D Service Center and Associate Research Librarian, Peking University Library. Her principal research interests include user needs and behavior, research management and services, and library transformation and development.
ZHANG Lu	Deputy Director and Librarian, Information Resource Service Center, Peking University Library,Ph.D. Her principal research interests include subject-based acquisition and services, resource organization and discovery, knowledge management, and service innovation.
WANG Fei	Associate Research Librarian of Peking University Library; Editor of the Journal of Academic Libraries. Her principal research interests include information resource development, information organization, and open access.
FU Juzheng	Librarian, Collaborative Service Center, Peking University Library,Ph.D. Her principal research interests include subject intelligence services and information literacy programs.

Appendix 3: Results of the Fourth-Round Survey

(Please select 3 to 5 options for each question.)

1-1 What challenges do you believe academic libraries are most likely to face in librarian workforce development over the next five years?

	Number of Respondents	Percentage
Librarians' competency profiles failing to keep pace with emerging needs	43	87.76%
A decline in the number of librarians	36	73.47%
Division of responsibilities failing to meet the needs of emerging services	33	67.35%
Risk of AI replacing traditional library positions	29	59.18%
Gaps in the talent pipeline	27	55.1%
Inadequate mechanisms for librarians' career development (e.g., limited promotion opportunities and outdated performance evaluation systems)	21	42.86%
Frequent changes in library leadership, making it difficult to ensure long-term workforce planning	15	30.61%
A declining sense of professional identity among librarians	7	14.29%
Entrenched mindsets among librarians	4	8.16%

1-2 Which of the following measures do you believe could help address the challenges in librarian workforce development?

	Number of Respondents	Percentage
Restructuring the division of responsibilities to meet the needs of emerging services	42	85.71%
Providing regular, tiered, and role-specific competency training to develop a multi-skilled librarian workforce	39	79.59%
Establishing mechanisms to facilitate collaboration between librarians and AI	39	79.59%
Supporting the university's priorities to enhance the library's influence	28	57.14%
Seeking broader policy support to ensure adequate staffing levels for professional librarians	23	46.94%
Supplementing the workforce through diversified employment arrangements	18	36.73%
Improving support system for librarians' career development	14	28.57%
Ensuring stability in library leadership	12	24.49%
Implementing a compensation system that rewards greater contributions and ensures equal pay for equal work	5	10.2%

2-1 What challenges do you believe academic libraries are most likely to face in user relationships over the next five years?

	Number of Respondents	Percentage
Increasingly diverse, stratified, and differentiated user needs	42	85.71%
Rapidly evolving user behaviors and information needs	38	77.55%
Declining user reliance on libraries	35	71.43%
Erosion of users' deep-reading habits	23	46.94%
Ever-expanding user base (e.g., enterprises, alumni, local residents, and AI agents)	19	38.78%
Growing user demand for library spaces	17	34.69%
Underdeveloped mechanisms for user participation and value co-creation	15	30.61%
Overly broad user profiling and insufficient insight into service scenarios	13	26.53%
Significant disparities in users' information literacy	10	20.41%
Growing risks to user data privacy	2	4.08%

2-2 Which of the following measures do you believe could help address the challenges of user relationships?

	Number of Respondents	Percentage
Proactively integrating library services into educational and research scenarios	48	97.96%
Developing a dynamic, compliant, and accurate user profiling system	39	79.59%
Creating diverse spaces for learning and exchange to enhance the user experience	32	65.31%
Incorporating information literacy illustration into talent development programs	30	61.22%
Strengthening user participation in content creation and governance	22	44.9%
Intensifying efforts to cultivate users' capacity for deep and systematic reading	19	38.78%
Implementing differentiated and tiered management for internal and external users	9	18.37%
Establishing regulations for user data governance and privacy protection	7	14.29%

3-1 What challenges do you believe academic libraries may face in resource development over the next five years?

	Number of Respondents	Percentage
Limited funding for resource development	39	79.59%
Severe resource fragmentation and ineffective integration of resources from multiple sources	36	73.47%
Growing dependence on commercial databases, resulting in a lack of control over resources	34	69.39%
Low efficiency in resource utilization	29	59.18%
Outdated systems for organizing and sharing resources	19	38.78%
Irrational resource allocation (e.g., insufficient resources for emerging/interdisciplinary fields and an imbalance between print and electronic resources)	18	36.73%
Uneven quality of open-access resources and a lack of mechanisms for their selection, integration, and management	13	26.53%
A lack of mechanisms for the long-term preservation of digital resources	12	24.49%
Insufficient revitalization and utilization of ancient texts and featured collections	10	20.41%
Resource development failing to keep pace with disciplinary and technological advances	9	18.37%
Limited storage space for library collections	3	6.12%

3-2 Which of the following measures do you believe could help address the challenges of resource development?

	Number of Respondents	Percentage
Enhancing Consortium purchasing to reduce resource development costs	42	85.71%
Developing an integrated platform to enable unified resource management	39	79.59%
Establishing mechanisms to evaluate resource effectiveness and make dynamic adjustments	32	65.31%
Enhancing the semantic description of library collections (e.g., metadata governance, knowledge graphs, and semantic search)	26	53.06%
Establishing a demand-driven model for targeted resource development	23	46.94%
Strengthening the development of featured collections and institutional knowledge bases	17	34.69%
Developing a system for the selection, evaluation, description, and provision of open-access resources	15	30.61%
Establishing a multi-layered system for the long-term preservation of digital resources, encompassing technology, standards, management, and others	10	20.41%
Pay close attention to the developments in national strategies and key global technologies to plan ahead for the acquisition and deployment of relevant resources	8	16.33%
Strengthening standardized collection management (e.g., compact shelving, off-site repositories, and weeding mechanisms)	5	10.2%
Further expanding access to and utilization of ancient texts and featured collections	4	8.16%

4-1 What challenges do you believe academic libraries may face in service provision over the next five years?

	Number of Respondents	Percentage
Insufficient integration into the full cycle of teaching and research	47	95.92%
Library services lacking sufficient visibility and impact in support of university development	42	85.71%
AI-powered and intelligent services remaining largely at a basic stage and failing to deliver efficiency	41	83.67%
Insufficient support for emerging services (e.g., data management, open-access publishing support, and think tank services)	36	73.47%
Continued reliance on reactive service models and a limited ability to proactively identify and anticipate user needs	29	59.18%
Homogeneous services and a limited ability to develop distinctive and branded services	13	26.53%
Declining demand for traditional reader services (e.g., lending and reference services)	8	16.33%
Library spaces being unable to support diverse learning and research scenarios	8	16.33%
Existing technological R&D capabilities failing to meet the needs of library services	3	6.12%
Difficulty in adapting standardized service provision to the personalized needs of different user groups	2	4.08%
Outdated service evaluation system	2	4.08%

4-2 Which of the following measures do you believe could help address the challenges of service provision?

	Number of Respondents	Percentage
Further integrating disciplinary services into the full cycle of teaching and research	49	100%
Establishing cross-departmental coordination mechanisms within the university to integrate library services into its core operations	38	77.55%
Promoting AI application in scenarios such as teaching and research support and personalized recommendations	36	73.47%
Developing a proactive, data-driven service system based on the identification of user needs	33	67.35%
Leveraging internal and external resources to enhance the provision of emerging services (e.g., data management, open-access publishing support, and think tank services)	25	51.02%
Implementing smart upgrades to library spaces to meet diverse teaching and research needs	20	40.82%
Establishing a classified and tiered service system to precisely meet the needs of different scenarios	15	30.61%
Developing and promoting distinctive service brands	7	14.29%
Restructuring the service evaluation system by establishing assessment and feedback mechanisms covering the entire service process	4	8.16%
Collaborating with technology giants on the R&D of library service applications	3	6.12%

5-1 What challenges do you believe academic libraries may face in cultural development over the next five years?

	Number of Respondents	Percentage
Limited recognition and appeal of cultural brands	41	83.67%
A lack of systematic, top-level planning for cultural development	40	81.63%
Insufficient integration into the university education systems	37	75.51%
Highly homogeneous cultural activities	34	69.39%
A weakened or marginalized role for cultural education	29	59.18%
Unclear approaches to evaluating cultural development	14	28.57%
Insufficient dissemination and utilization of cultural content	11	22.45%
Weak information culture governance	6	12.24%

5-2 Which of the following measures do you believe could help address the challenges of cultural development?

	Number of Respondents	Percentage
Incorporating cultural development into library strategic planning and modernization priorities	43	87.76%
Developing distinctive cultural brands and activities	43	87.76%
Incorporating cultural development and services into the university's general education, ideological and political education, and cultural cultivation systems	42	85.71%
Encouraging faculty and students to participate in the co-creation of cultural content	31	63.27%
Strengthening the promotion of distinctive cultural resources	30	61.22%
Establishing long-term mechanisms for cultural development	14	28.57%
Strengthening information culture governance (e.g., AI ethics, data privacy, and ideology)	7	14.29%
Establishing assessment and feedback mechanisms for cultural development	4	8.16%

6-1 What AI applications may academic libraries need over the next five years?

	Number of Respondents	Percentage
Developing multi-modal knowledge bases based on library collections	46	93.88%
Developing intelligent resource discovery and semantic search systems	39	79.59%
Automating basic operational workflows (e.g., metadata generation, classification and indexing, OCR, document digitization, and data cleaning)	36	73.47%
Providing personalized smart services	35	71.43%
Developing a smart middle office for library data	30	61.22%
Providing AI-assisted teaching and research tools	14	28.57%
Deploying AI-powered reference librarians	9	18.37%
Enhancing intelligent space management (e.g., space reservations, traffic monitoring, and shelf inventory)	9	18.37%
Using AI to enhance interactive experiences	7	14.29%
Enhancing intelligent management decision-making (e.g., budget planning, performance evaluation, and promotion)	4	8.16%

6-2 How should academic libraries promote the standardized use of AI agents over the next five years?

	Number of Respondents	Percentage
Developing trustworthy, high-quality corpora and knowledge bases	46	93.88%
Establishing tiered management mechanisms for AI agent applications	38	77.55%
Enhancing AI literacy among librarians and users	37	75.51%
Collaborating with multiple university departments to develop an AI governance framework	37	75.51%
Adopting a model that combines locally deployed LLMs with consortium-based sharing	31	63.27%
Establishing human-AI collaborative workflows in which librarians retain ultimate accountability	16	32.65%
Securing data licenses from commercial database providers	9	18.37%
Establishing mechanisms for user authorization and data privacy protection	7	14.29%
Participating in the joint development of industry standards and regulations for AI applications	5	10.2%

7-1 What do you believe are the core functions of academic libraries?

	Number of Respondents	Percentage
Cultural inheritance and cultural cultivation (e.g., cultivating campus culture, promoting reading, and advancing information literacy)	48	97.96%
Providing information resource support	47	95.92%
Supporting teaching and research	44	89.8%
Providing think tank services and decision-making support (e.g., strategic intelligence, intellectual property services, and decision-making consultancy)	37	75.51%
Providing space services (e.g., learning spaces, discussion spaces, and future learning centers)	37	75.51%
Facilitating scholarly communication and dissemination (e.g., academic exchanges, open access, and open infrastructure)	11	22.45%
Data management and information governance (e.g., the application of digital and intelligent technologies and data governance)	11	22.45%

7-2 What indispensable roles do you believe academic libraries should play in university operations?

	Number of Respondents	Percentage
Empowering research innovation and professional development among faculty through academic support	48	97.96%
Embedding information literacy illustration throughout the talent development process	35	71.43%
Strengthening the ideological front through the development of documentary resources	34	69.39%
Upholding and carrying forward core socialist values through the promotion of reading culture	33	67.35%
Supporting multidimensional education through future learning centers and diverse spaces	29	59.18%
Supporting talent recruitment and faculty evaluation through the analysis of multi-source academic data	23	46.94%
Supporting cultural innovation through the revitalization of ancient texts and featured collections as well as cultural inheritance	13	26.53%
Supporting scientific research and international dissemination through scholarly governance services	10	20.41%
Supporting public services through technical literature and science popularization services	5	10.2%
Enhancing students' overall competencies through extracurricular activities and general education	4	8.16%

8-1 What external relationships should academic libraries prioritize?

	Number of Respondents	Percentage
Relationships with upstream and downstream commercial organizations (e.g., publishers, database providers, and technology vendors)	46	93.88%
Relationships with other organizations in the library sector (e.g., peer academic libraries, public libraries at all levels, industry consortia, and academic societies and associations)	44	89.8%
Relationships with library consortia/organizations	41	83.67%
Relationships with relevant government agencies (e.g., the Ministry of Education, the Ministry of Culture and Tourism, and intellectual property administrations)	40	81.63%
Relationships with other cultural institutions (e.g., archives, museums, and cultural centers)	22	44.9%
Relationships with open science communities	13	26.53%
Relationships with philanthropic organizations	6	12.24%
Relationships with scientific and technical information institutions	6	12.24%
Relationships with the general public/local communities	5	10.2%
Relationships with media organizations	1	2.04%
Relationships with local enterprises	1	2.04%

8-2 How should academic libraries effectively manage their external relationships?

	Number of Respondents	Percentage
Conducting collective bargaining and joint negotiations through industry consortia to reduce procurement costs	46	93.88%
Deepening joint development and sharing of resources among libraries	44	89.8%
Proactively aligning with government strategies to secure policy and funding support	40	81.63%
Collaborating with public cultural institutions to organize distinctive cultural and educational activities	28	57.14%
Providing tiered and orderly access to resources and spaces, prioritizing the university needs while maintaining an appropriate balance with public services	28	57.14%
Promoting open science and participating in knowledge production, dissemination, and governance	15	30.61%
Providing information services to support regional technological innovation (e.g., technology novelty searches, patent analysis, and industry intelligence)	12	24.49%
Improving donation management and donor recognition systems while actively incorporating donated resources into collection development	7	14.29%
Establishing complementary and collaborative relationships with scientific and technical information institutions	4	8.16%
Strengthening media outreach and brand development to enhance the library's public awareness and influence	3	6.12%
Strengthening data security and compliance management in technology partnerships	1	2.04%

9-1 Which of the following views on the internationalization of academic libraries do you agree with?

	Number of Respondents	Percentage
Academic libraries should introduce foreign-language resources while promoting Chinese scholarly outputs and cultural resources internationally	44	89.8%
Library internationalization should advance in step with and as an integral part of the university's internationalization strategy	44	89.8%
Internationalization is an important pathway to enhancing academic library services and scholarly influence	40	81.63%
Academic libraries should develop differentiated approaches based on their universities' disciplinary strengths and cultural traditions	35	71.43%
Academic libraries should systematically enhance their international service philosophy, standards, and capabilities	29	59.18%
Academic libraries should actively share China's experience in library development with the international community	12	24.49%
Library internationalization is constrained by limited funding, insufficient staff exchanges, geopolitical factors, and other challenges	9	18.37%
Library internationalization requires sustained investment, while its returns are intangible and long-term	4	8.16%

9-2 How should academic libraries advance their internationalization?

	Number of Respondents	Percentage
Promoting the overseas digital dissemination of Chinese classics, the university's ancient texts and featured collections, historical documents, and distinctive cultural resources	42	85.71%
Integrating the university's scholarly outputs into international open-access networks to enhance their global visibility	42	85.71%
Incorporating library internationalization into the university's overall strategy and strengthening funding support and cross-departmental coordination mechanisms	39	79.59%
Conducting staff exchanges, joint research, and resource exchanges with overseas academic libraries	38	77.55%
Developing a professional librarian workforce with cross-cultural service capabilities	25	51.02%
Providing cross-border literature, intelligence, and intellectual property services to support international academic collaboration	16	32.65%
Actively participating in the activities of international library organizations and contributing to the formulation of international standards and regulations	15	30.61%
Providing cross-cultural learning and research support for international faculty and students	5	10.2%
Engaging international students through cultural exchange activities (e.g., multilingual reading groups and exhibitions)	5	10.2%
Continually improving the multilingual resource and service systems	2	4.08%