

A Comparative Study of Mobile Services in Top-Tier University Libraries in China and the United States: Postprint

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Abstract

[Purpose/Significance] To understand and compare the development of mobile services in top-tier university libraries between China and the United States facilitates the enhancement of mobile services in Chinese university libraries.

[Method/Process] Adopting website investigation and content analysis methods, this study surveyed libraries from 137 “Double First-Class” universities in China and the top 100 ranked universities in the United States. By investigating and analyzing aspects including mobile service types, content provided by mobile websites, mobile reference consultation services, social media, mobile reservation services, and mobile printing services, the differences in mobile services between Chinese and American university libraries were compared.

[Results/Conclusion] Strengthen the development of mobile websites, fully leverage the service functions of WeChat Official Accounts, add services such as personal librarians and teaching reference resources to promote library utilization among users, and accelerate the development of services that meet users’ daily needs, including mobile reference consultation, mobile reservation, and mobile printing.

Full Text

A Comparative Study of Mobile Services Between Chinese and American First-Class University Libraries

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Abstract

[Purpose/Significance] Understanding and comparing the development of mobile services in Chinese and American first-class university libraries is conducive to better promoting the improvement of mobile services in Chinese university libraries. **[Method/Process]** This study employs website access investigation and content analysis methods to survey libraries of 137 “Double First-Class” universities in China and the top 100 universities in the United States. By investigating and analyzing mobile service types, content provided on mobile websites, mobile reference consultation services, social media, mobile reservation services, and mobile printing services, this paper compares the differences in mobile services between Chinese and American university libraries. **[Result/Conclusion]** Chinese university libraries should strengthen the development of mobile websites, give full play to the service functions of WeChat official accounts, increase services such as personal librarians and teaching reference resources to promote library utilization, and accelerate the development of services that meet users’ daily needs such as mobile reference consultation, mobile reservation, and mobile printing.

Keywords: mobile services; university libraries; digital libraries; China-US comparison

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1. Introduction

With the arrival of the digital era, information technology and social media have developed rapidly, and smartphones and tablets have become widely popular among the public. People’s ways of accessing libraries have shifted from traditional physical visits to more mobile access. As early as 2010, L. Thomas proposed that libraries were facing a contest between traditional service models and continuously evolving information technology service models. How libraries can demonstrate their value and provide better services amid mobile impacts has become a new challenge.

Library mobile services refer to services that users receive from libraries through wireless access via mobile phones, tablets, and other mobile terminal devices. University libraries’ primary users are faculty and students, who are among the most mobile-device-savvy groups with urgent needs for mobile services. For many faculty and student users, mobile devices are no longer just communication tools but also portable information access devices. Utilizing mobile services can not only meet their information needs but also save them time on library procedures and make full use of their fragmented spare time. For libraries, mobile services can improve service efficiency and resource utilization.

Since the beginning of the 21st century, university libraries both domestically

and internationally have been exploring and practicing mobile services. In 2000, the University of Toyama Library in Japan launched a mobile book catalog query system, and Beijing Institute of Technology Library began applying a short message push platform in 2003. Today, mobile services have become an inevitable choice for almost every university library.

The United States has one of the most developed higher education systems in the world and is also the most advanced and widely applied country in information technology. American university libraries have always played a leading and exemplary role in mobile services. Faced with growing demand for mobile services, how do top American university libraries carry out mobile services? What differences exist between Chinese and American university libraries in mobile services? What are the development trends of university library mobile services? How should Chinese university libraries develop mobile services? These questions are all worthy of in-depth research.

To understand and compare the development of mobile services in Chinese and American first-class university libraries, this study investigates the libraries of 137 “Double First-Class” universities in China and the top 100 universities in the United States, aiming to provide references for the development of mobile services in Chinese university libraries.

2. Literature Review

2.1 Overview of Mobile Services Research in University Libraries at Home and Abroad

In 1991, M. Weiser from Xerox PARC first proposed the concept of ubiquitous computing, under which people could obtain needed information and services anytime and anywhere. In 1995, S. Gessler and A. Kotulla’s research showed that through wireless network connections, people could use PDAs (Personal Digital Assistants) to access information services from anywhere, gradually bringing library mobile services research into view.

T. Spire surveyed 766 American librarians and found that by 2007, there was little demand for mobile device services: only 18% of libraries purchased content specifically for wireless handheld devices, and only 15% formatted content resources for mobile devices. K. Pope listed the main forms of mobile services in libraries in 2010, including SMS services, My Info exploration, digital collections, audiobooks, Apps, and mobile websites. M. Enis’s research indicates that VR provides new opportunities for education, and university libraries can be at the forefront.

Chinese scholars began discussing the impact of wireless networks on libraries in 1994, proposing that in the context of information highway construction such as wireless communication systems, traditional library collection content, management methods, management techniques, and reader service methods would

undergo significant changes. In 2002, Zhu Haifeng proposed the concept of wireless libraries, believing that libraries could provide new book information, SMS services, and wireless retrieval services, and could also provide e-book reading services in the future when PDAs became widespread. Wu Zhipan proposed in his article “Mobile Reading and the Future of Libraries” that almost all activities in university libraries today might be completed through mobile phones in the future.

Peking University began researching mobile vision in 2010 and hosted the second Mobile Visual Search Seminar in 2011. If mobile visual search can be organically combined with virtual augmented reality technology and applied to the digital library field, the “what you see is what you need” information retrieval and service model with mobile intelligent terminals as the service platform may become a new generation of information service paradigm after search engines.

In 2017, Jing Rongjuan integrated mobile cloud concepts and technologies into library personalized reading services, believing this move has milestone significance, and that user information acquisition, mining, and analysis in mobile clouds would be efficient and in-depth.

2.2 Overview of Comparative Studies on Mobile Services Between Chinese and American University Libraries

Since the late 1980s, Chinese scholars have compared services between Chinese and American university libraries, summarizing the differences as “open-shelf” versus “closed-shelf” models. Since then, many comparative studies have focused on reference consultation services, network information services, subject services, and personalized services.

In 2011, Gao Chunling published the article “A Comparison of Mobile Library Services Between China and the US,” selecting the top 20 university libraries from each country for investigation, comparing commonalities and gaps, and proposing that expanding mobile library services would be the mainstream service model of future libraries. The same year, Jiang Ying’s research showed that American university libraries generally adopted a “WAP website and Application combination” approach in mobile service models, providing more applications directly usable by mobile devices, while Chinese university libraries adopted a “SMS service 为主, WAP website 为辅” service model.

Sun Xuegang, through comparing mobile service content between Chinese and American universities, pointed out that Chinese university library mobile services were still largely built around basic library business, while the US added many new service types beyond traditional library services, proposing that breaking the temporal and spatial boundaries of traditional library service models is the future development trend.

Zhu Yiting et al. noted that compared with the US, China needs to integrate services such as reservations provided on mobile websites into mobile-end ser-

vices and strengthen consultation services for mobile readers. Chen Yudie et al. believe that China's featured mobile information services have lower penetration rates and fewer types compared with American universities, and Chinese university mobile information services are somewhat deficient in library information release. Guo Chan, in a comparative study of APP services between Chinese and American university libraries, pointed out that American university libraries lead China in both depth and breadth of services, but Chinese libraries, though slower in development, have greater prospects. Wei Meng et al., surveying the top 60 university libraries in both countries, found that 74.6% of Chinese university libraries provide mobile services, while the proportion in American universities reaches 83%, reflecting a certain gap in the development level of mobile services between Chinese and American libraries.

Compared with existing research, this study investigates the latest development status of mobile services in Chinese and American university libraries, selecting first-class universities from both countries as survey objects, which are highly representative and comparable. The survey content includes mobile service types such as mobile websites, APPs, and WeChat official accounts, as well as mobile reference consultation, social media, mobile reservation, and mobile printing services provided by libraries, which can comprehensively reflect and compare the basic status of mobile services in Chinese and American university libraries.

3. Research Methods

3.1 Survey Sample

This study surveyed a total of 237 university libraries. The Chinese university library samples were selected from the libraries of all universities in the "World-Class Universities and First-Class Discipline Construction Universities and Construction Disciplines List" announced by China's Ministry of Education in September 2017. The first batch of "Double First-Class" construction universities totaled 137, including 42 world-class university construction universities and 95 world-class discipline construction universities. The American university library samples were selected from the top 100 university libraries in the comprehensive ranking of American universities published by *U.S. News & World Report* in 2018, including Princeton University Library, Harvard University Library, and the University of Chicago Library.

3.2 Survey Process

This survey mainly used mobile website access and content analysis methods to collect data. The survey period was from June to September 2018, and the process could be divided into three stages: First, researchers used computers and mobile phones to access the official websites of the 237 university libraries

to confirm whether these libraries had mobile websites and whether these platforms could operate normally, then statistics were compiled on services provided by Chinese and American university library mobile websites. Second, mobile phones were used to investigate services provided by library APPs and WeChat official accounts. Researchers searched for APPs from these libraries that could be downloaded from Apple App Store or Android app stores, downloaded and installed them if available, then searched for Chinese university libraries' WeChat official accounts and followed them if available, followed by statistical investigation of mobile services provided by APPs and WeChat official accounts of Chinese and American university libraries. Third, researchers checked and reviewed the survey results to ensure data accuracy.

4. Research Results

4.1 Comparison of Mobile Service Types

Survey results show a significant gap between Chinese and American first-class university libraries in mobile website construction: 92% of American university libraries have built mobile websites, while only 40% of Chinese university libraries have launched mobile websites. The proportion of Chinese and American university libraries providing their own APPs is not high, with only 6% in the US and 9% in China. [Figure 1: see original paper]

Mobile websites refer to websites specifically designed to adapt to mobile device access, matching the small screens of mobile devices to achieve good layout and content display effects. Compared with traditional desktop websites, mobile websites generally display text and images in a single column rather than a three-column layout, and unnecessary images are hidden. American university libraries show high enthusiasm for mobile website construction, with 92% having built mobile websites. A noteworthy phenomenon is that 70% of the official websites of China's 137 "Double First-Class" universities have built mobile websites, indicating that these universities have already designed mobile website solutions, so it should not be difficult for their libraries to build mobile websites. However, only 40% of university libraries have built mobile websites, reflecting to some extent that Chinese university libraries do not attach sufficient importance to mobile website construction.

APP is the abbreviation for Application, referring to mobile applications based on various mobile intelligent terminal systems that integrate platforms, resources, and social functions, available to users for free and offline, with a focus on user experience. Only 6% of American university libraries have developed their own APPs as a platform to provide mobile services to users. Chinese university libraries have 9% that have developed their own APPs, while another portion uses public APP platforms provided by Superstar Mobile Library or Huiwen Mobile Library.

Gratifyingly, WeChat official accounts, as a popular mobile service method in China in recent years, have become popularized among Chinese university libraries. This survey shows that currently, as many as 93% of the 137 “Double First-Class” universities in China have utilized WeChat official accounts to carry out services, pushing information to users and providing mobile services such as collection search, borrowing management, seat reservation, and reference consultation.

4.2 Comparison of Content Provided on Mobile Websites

Through statistical investigation of content provided on mobile websites of Chinese and American first-class university libraries, it was found that services provided by Chinese and American university libraries are similar in many areas, but also show certain differences.

Basic services provided by libraries include account login, catalog search, news/events, location and opening hours, contact us, resources/downloads, and reference consultation. Over 90% of Chinese and American first-class university library mobile websites provide these services (see).

Services such as library guides, interlibrary loan, digital special collections, subject services, research support, and off-campus access/VPN are provided by Chinese and American university libraries at similar proportions, ranging from 60% to 90%.

Services such as citation/search/reporting/searching, new student guides, thesis submission, reading recommendations, and patent guides are set up at relatively high proportions on Chinese university library mobile websites but are not or almost not set up on American university library mobile websites. Recent new books, reading recommendations, recommended purchases, and borrowing services are set up at higher proportions on Chinese university library mobile websites than on American first-class university library websites.

In terms of social media, support/donation, space reservation, and alumni services, American first-class university library websites show significantly higher setup proportions than Chinese university libraries. 98% of American first-class university libraries use social media, while the proportion displayed on Chinese university library websites is only 86%. The proportion of American first-class university libraries providing alumni services reaches 57%, while China’s is only 9%.

Comparison of Service Content Provided on Mobile Websites of Chinese and American First-Class University Libraries

Additionally, mobile websites of American first-class university libraries provide other services that Chinese libraries generally do not or rarely provide: 91% of American first-class university libraries have teaching reference resource services; 74% provide staff directories; nearly half provide disability services and technical support; and 12% have personal librarians. [Figure 2: see original paper]

4.3 Comparison of Mobile Reference Consultation Services

Mobile reference consultation services refer to exchanges and services implemented between reference librarians and readers through corresponding platforms using mobile terminals such as mobile phones or tablets, with at least one party using such devices, enabling people to obtain library information and services without time and space limitations. Mobile reference consultation services not only enrich and improve mobile library information services but also inject new vitality into traditional reference consultation services.

Survey results show that there are differences in the degree of attention paid to mobile consultation services between Chinese and American university libraries. The proportion of Chinese university libraries providing mobile consultation services is 88%, while American university libraries provide them at 100%. [Figure 3: see original paper]

In terms of mobile consultation service types, web forms and online chat are the mainstream service forms of libraries. American university libraries have higher proportions in providing these two services than Chinese libraries. 74% of American university library mobile websites provide reference consultation services through web forms, generally displayed as “Email Us” or “Online Forms,” where users can fill in content directly on the webpage and leave their email addresses without logging into email, and librarians reply via email; 59% of Chinese university libraries also provide web form consultation services, generally in the form of message boards or director mailboxes. The proportion of American university libraries providing online chat reaches 67%, where users can open online chat webpage dialogues to consult with librarians during working hours. The proportion of Chinese university libraries setting up online chat is 50%, mainly providing consultation services through QQ or CALIS virtual reference consultation systems, with a few libraries such as Yunnan University Library providing 24-hour robot online consultation services.

In terms of mobile new media usage, Chinese university libraries use them more for reference consultation services than American university libraries. 46% of Chinese university libraries use social media such as WeChat official accounts and Weibo to provide consultation services. In particular, WeChat official accounts have been basically popularized among Chinese university libraries, with 127 of the 137 “Double First-Class” university libraries having opened WeChat official accounts. The survey shows that 44 of these libraries provide reference consultation services through their WeChat official accounts. Only 8% of American university libraries use social media to provide consultation services, generally using Twitter or Facebook. The proportion of Chinese university libraries using domestic and foreign instant messaging tools such as QQ, MSN, and Gtalk to provide reference consultation services reaches 28%, while the US is only 8%. American university libraries still provide SMS services to users at 38%, while Chinese university libraries almost no longer use this consultation method. [Figure 4: see original paper]

4.4 Comparison of Social Media Usage

As the main users of university libraries, college students' internet usage habits influence library information service methods. The emergence of social media, on the one hand, strengthens user interaction and participation enthusiasm, providing convenience and a new development platform for library information services; on the other hand, it also brings enormous pressure and challenges to libraries. Both Chinese and American university libraries attach great importance to social media usage, with 98% of American university libraries using social media and Chinese university libraries reaching 96% (86% displayed on websites).

American libraries use a wide variety of social media types, among which the most utilized by American university libraries are Twitter (96%), Facebook (95%), Instagram (66%), and YouTube (60%) (see [Figure 5: see original paper]). The University of Iowa Library uses the most social media services, providing eight types including Facebook, Twitter, YouTube, Blog, Instagram, Flickr, Pinterest, and Tumblr, while most other university libraries use 3-4 types of social media.

The most used social platforms by Chinese university libraries are WeChat and Weibo. Currently, 93% of libraries have opened WeChat official accounts, and users only need to scan QR codes on their mobile phones or search for “某某大学图书馆” in “WeChat - Add Friends - Official Accounts” to follow and use services provided by the library. Additionally, 60% of libraries use Sina Weibo to operate official accounts, 4% use Tencent Weibo to publish latest library information, interact with users, and answer questions. A few libraries also use social media such as Renren, Douban, and Kaixin to provide services to users. [Figure 6: see original paper]

4.5 Comparison of Mobile Reservation Services

The popularization of mobile networks has made it possible for library services to extend to ubiquitous environments. The emergence and development of university library mobile reservation services represent new attempts by libraries in the mobile network era to provide and improve personalized services for readers. Currently, 60% of Chinese university libraries can provide mobile reservation services, while the proportion of American university libraries providing mobile reservation services reaches 83%. There are significant differences in the types of reservation services between China and the US.

American university libraries focus more on study room and individual study space reservations, with proportions of 76% and 57% respectively, more than 30 percentage points higher than Chinese university libraries. In addition, American university libraries have higher proportions than Chinese libraries in computer reservations and librarian appointments. However, Chinese university libraries have higher proportions than American libraries in book reservation and lecture hall reservation services. [Figure 7: see original paper]

In addition, some Chinese and American university libraries also provide personalized reservation services. Tsinghua University Library provides reservation services for expedited document processing; China Agricultural University Library allows readers to reserve library training; Wuhan University Library can make door-to-door service appointments to help users solve various problems encountered in using database resources. The University of Maryland College Park Library allows reservations for demonstration practice spaces, teaching laboratories, and special event rooms; the University of Texas at Austin Library allows reservations for interview practice rooms and demonstration practice rooms; Florida State University provides reservation services for equipment such as audio editing rooms, laptops and tablets, cameras and recorders, projectors, and video game consoles, but only for graduate students and faculty.

4.6 Comparison of Mobile Printing Services

Mobile printing is a new service launched by libraries in recent years, allowing users to self-print through mobile devices such as mobile phones and tablets. Currently, only 4% of Chinese university libraries, such as Shanghai International Studies University and South China Normal University, provide mobile printing services, while the proportion of American university libraries providing this service has reached 17% (see [Figure 8: see original paper]). There are also significant differences in mobile printing service methods between China and the US. Chinese university library mobile printing services are generally cloud printing, requiring no print client installation; users only need to log in to the cloud printing interface, upload files to be printed, send print commands, and then swipe cards at printers to obtain printed materials. American university libraries generally require downloading print drivers or APPs that support mobile printing, then directly sending print commands to printers.

Currently, more common wireless printing allows users to send print commands through laptops via wireless networks or remotely via email, but does not support printing from mobile devices such as mobile phones. The proportions of Chinese and American university libraries providing wireless printing services are 42% and 53% respectively. Chinese university libraries generally require users to install Lianchuang self-service printing drivers on their computers before sending print tasks, then use campus cards for self-service payment and printing at library self-service printing stations. American university libraries also generally require users to download print drivers, but some libraries such as American University Library allow users to use cloud-based systems (Papercut) for printing on computers without installing printing software.

Additionally, 54% of Chinese university libraries and 30% of American university libraries do not provide mobile or wireless printing services, but most of them still have printers available for users within the library.

5. Conclusions and Implications

Through in-depth investigation and comparative analysis of mobile services provided by 137 “Double First-Class” university libraries in China and the top 100 university libraries in the United States, this study found that mobile services have been comprehensively developed in both Chinese and American university libraries, but certain gaps still exist in some aspects. In terms of mobile service popularity, there is a large gap between China and the US, especially in mobile website construction, where China lags significantly behind in both quantity and technology. In terms of mobile service content, American university libraries place more emphasis on services that meet users’ daily needs and promote library resource utilization, performing better than Chinese university libraries in services such as teaching reference resources, space reservation, social media, online reference consultation, disability services, wireless printing, and personal librarians. However, Chinese university libraries demonstrate unique advantages and vigorous development momentum in using new mobile media such as WeChat and Weibo to build mobile libraries and develop mobile services.

Several development trends in current university library mobile services deserve attention: First, mobile websites, especially RWD (Responsive Web Design) websites, have become the most mainstream mobile service platforms, WAP mobile websites face elimination, and APPs only play a supporting role in Chinese and foreign university libraries. Second, social media is widely used in university libraries and plays increasingly important functions, not only helping to establish continuous, highly interactive, and even personalized close connections with users to enhance user stickiness, but also directly relying on them to carry out mobile library construction. Third, more traditional services are integrating with mobile services to meet users’ diversified needs. Traditional library services such as reference consultation, space reservation, and printing are all developing various forms of services with the help of mobile technology, and more mobile service functions can be expected to be continuously developed and applied.

Based on the survey results, this paper puts forward some suggestions for the development of mobile services in Chinese university libraries.

5.1 Strengthen the Development of Library Mobile Websites

According to the 42nd “Statistical Report on Internet Development in China” released by the China Internet Network Information Center (CNNIC), as of June 2018, China’s mobile internet users reached 788 million, with the proportion of internet users accessing the internet via mobile phones as high as 98.3%. With the popularization of smartphones, tablets, and other mobile devices, mobile reading is becoming the main way for young people to obtain information, forcing university libraries to transform toward providing mobile information services, and building library mobile portals is the first step in this transformation.

Compared with 92% of American university libraries having mobile websites, only 40% of Chinese university libraries have built mobile websites, leaving much room for improvement. According to the mobile website construction experience of American university libraries, adopting Responsive Web Design (RWD) is the mainstream solution. RWD websites are considered a long-term solution to meet the needs of both users and designers, satisfying the needs of different terminal users including PCs, tablets, and mobile phones. Users access the same URL, but the website automatically presents adaptive display effects based on the differences in access devices. For designers, RWD websites only need to be developed once to be applicable to various terminals, solving various compatibility and update issues in mobile website design and making website development more efficient. Some libraries such as Yunnan University Library are already practicing RWD website construction, and it is hoped that more Chinese university libraries will attach sufficient importance to mobile website construction.

5.2 Develop the Service Functions of WeChat Official Accounts

As China's most popular social application, WeChat is downloaded and installed by almost all mobile internet users. WeChat official accounts are more suitable for mobile devices than websites and have advantages that APPs cannot match: no need to download and reinstall software, just follow the official account in WeChat to use; they do not occupy users' phone storage and running space; and they have greater advantages in dissemination breadth through the WeChat platform.

Currently, 93% of "Double First-Class" university libraries in China have opened WeChat official accounts, and many libraries have tried to provide more efficient, convenient, and humanized services through them. In the WeChat official account of Renmin University of China Library, users can reserve study rooms and seats online, and the official account automatically reminds users to bind their library card numbers to push due date reminders and overdue notices. In the WeChat official account of Hefei University of Technology Library, convenient service functions such as the latest SCI papers and school calendars are available. Forty-four Chinese "Double First-Class" university libraries, including Fudan University Library, use WeChat official accounts to provide reference consultation services.

Chinese university libraries should develop and optimize the service functions of WeChat official accounts according to users' increasingly diversified information needs, better presenting high-usage services such as collection search, space reservation, digital resource browsing, event announcements, borrowing services, and reference consultation, effectively leveraging WeChat's platform advantages and libraries' resource advantages to provide users with an "information service port" beyond temporal and spatial limitations in an instant messaging environment, building WeChat official accounts into convenient mobile libraries for users.

5.3 Increase Services Such as Personal Librarians and Teaching Reference Resources to Promote Library Utilization

In modern society, libraries' service tenet is "user-centered," meaning all library activities should proceed from users' perspectives. In this era of rapid information change, how to better serve users and develop users' perception of libraries from merely borrowing books to flexibly using new mobile services provided by modern libraries is a question that libraries need to consider.

In recent years, more and more American university libraries have implemented personal librarian programs. For example, Yale University assigns a librarian to each undergraduate to help them make full use of the library during their university years. The personal librarian program is a beneficial supplement to the subject librarian system, playing an important guiding role in readers' learning and research activities, and is especially helpful for new students to quickly familiarize themselves with library resources and services. At the same time, many American university libraries provide teaching reference resource services to users, including PPTs from teachers' lectures and teaching reference books needed for lesson preparation, meeting the needs of both student and faculty users.

To better leverage library service functions and enable users to fully understand and utilize library resources, Chinese university libraries can learn from American university libraries by introducing personal librarian services and adding teaching reference resource databases, helping users fully understand library functions and promoting library utilization.

5.4 Develop Services That Meet Users' Daily Needs Such as Mobile Reference Consultation, Mobile Reservation, and Mobile Printing

With the rapid development of modern science and technology and the popularization of mobile devices, users' needs and utilization methods for libraries are constantly changing, and services provided by libraries also need corresponding adjustments to better meet users' daily needs and serve them better.

Reference consultation has always been an important component of library services. The development of mobile reference consultation has solved the time, space, and geographical limitations of traditional reference consultation, and real-time consultation methods such as online chat allow users' inquiries to receive quick responses, greatly improving user experience. The proportion of American university libraries providing online chat consultation services reaches 67%, and these services are generally placed in prominent positions on library websites for users to contact librarians at any time. Currently, many Chinese university libraries have already used webpage QQ and CALIS virtual reference consultation systems to provide online consultation, which is worth promoting on a larger scale.

If users can reserve books, lockers, seats, study rooms, and discussion rooms

before going to the library, it will greatly save their search time and improve order within the library. With more and more users accessing library websites and WeChat official accounts through mobile phones, the possibility and necessity for libraries to develop mobile reservation services have greatly increased. Mobile reservation services will provide convenience for users to better utilize library resources.

Printing demand is enormous on university campuses, and providing printing services is very common for libraries. However, only 46% of Chinese university libraries provide mobile or wireless printing services, with more than half unable to allow users to print through their own mobile devices or laptops. In contrast, 70% of American university libraries provide mobile or wireless printing services. Mobile printing services still have great development space in Chinese university libraries.

Through this investigation and comparative analysis of Chinese and American first-class university libraries, the future development direction of mobile services in Chinese university libraries has become clearer. Providing users with a library that can be accessed and utilized anytime and anywhere will become possible.

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A Comparative Study of Mobile Services Between Chinese and American First-Class University Libraries

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Abstract: [Purpose/significance] Understanding and comparing the development of mobile services of first-class university libraries in China and the United States is conducive to better promoting the improvement of mobile services of university libraries in China. [Method/process] This study uses website access and content analysis methods to investigate the libraries of 137 “Double First-Class” universities in China and the top 100 universities in the United States. By comparing the types of mobile services, content provided by mobile websites, mobile reference services, social media, mobile reservation services, and mobile printing services, it compares the differences in mobile services between Chinese and American university libraries. [Result/conclusion] It is recommended that Chinese university libraries should strengthen the development of mobile websites, give full play to the service functions of WeChat official accounts, increase services such as personal librarians and teaching reference resources to promote users’ utilization of the library, and accelerate the development of services that meet users’ daily needs such as mobile reference consultation, mobile reservation, and mobile printing services.

Keywords: mobile services; university libraries; digital libraries; comparison between China and the US

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