WeChat Mobile Library Service in Chinese Academic Libraries:
A Case Study of Shanghai University

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ABSTRACT

This paper introduces the WeChat mobile library service programme at Shanghai University Library and identifies problems and resolutions by reviewing the development process and experience and user feedback. A case study was conducted, and user feedback from a web survey was analysed to identify the programme's problems. Accordingly, recommendations and resolutions were developed. The author discovers that a WeChat account is crucial as an interaction platform between libraries and patrons, particularly on mobile devices. Patrons prefer to receive library services via WeChat rather than other channels. Their favourite features include online public access catalogue (OPAC), my library, and study facility availability. Libraries should conduct regular assessments to understand patrons' feedback or requests and make timely adjustments accordingly. The web survey and its data are novel in this area and provide a credible example to optimize WeChat library services.

KEYWORDS

1. INTRODUCTION

Social media has become an important part of daily life for people across the world, especially millennials. It has become a common platform for users to exchange information and share their experiences and ideas. By January 2015, there were 2.078 billion active social media accounts for 7.2 billion people around the world. Among these accounts, 1.685 billion were active mobile social accounts. As mobile-oriented services such as WhatsApp, WeChat, and Facebook Messenger are the most popular social media platforms in some economies, it is clear that much of our digital behaviour is now converging around mobile devices (*Kemp, 2015*).

In China, WeChat (Weixin in Chinese) (2017) and Weibo/Microblog are the two major social media platforms, with communication features similar to WhatsApp, LINE, Twitter, and Facebook. It is noteworthy that WeChat has already become the No.1 social media platform in China since 2011.

The WeChat mobile application was released by Tencent (2017), a leading high-tech Chinese company, in January 2011. WeChat had soon become the most popular Social Networking Site (SNS) application with more than 846 million active users in China, as of the third quarter of 2016. Meanwhile, having integrated many other functions especially payment, purchase and games, WeChat has evolved into a "must-have" app for most Chinese mobile phone users. Weibo (Microblog in English), the previous dominant SNS in China before 2011 with similar functions as Facebook and Twitter, had only 297 million active users as of the third quarter of 2016 (*CIW Team, 2016*).

WeChat is free to install, use and download, and it supports all smartphone platforms and Windows Phone operating systems. It has become a global social media platform with more than 70 million overseas users, available in over 200 countries and supported over 20 languages.

WeChat users can engage in social communication with a reduced cost of admission (*Zhang, 2017*). However, WeChat is more than a mere person-to-person messaging platform. In the beginning, WeChat was just a social media app developed for mobile devices, but it soon became a comprehensive platform integrating many features such as public account, news feed, online payment and a portal to host other applications. Individuals or institutions can create a public account to provide news and other contents. Using Application Programme Interfaces (APIs) and services provided by WeChat, public account owners can develop custom features for their account as their marketing tools. Users can subscribe to these accounts, receive news, write comments and even participate in more complicated interactive online activities.

Compared with other social media platforms such as Facebook, Twitter, WhatsApp, Instagram and LINE, WeChat has many unique advantages in China because of its availability, free and open API and low cost of secondary development. Not only can people exchange information, but also complete business transactions. Previously, Twitter opening its API was a unique feature that initially allowed a host of other developers to secure their own clients. However, Twitter has now closed off access to its API (*Fernandez, 2016*). Likewise, although Facebook's Instant Articles service allows publishers to host their content on Facebook's servers, allowing publishers to load content faster and work within Facebook's mobile environment, the service is currently unavailable in China because of Internet censorship.

Thus, WeChat offers an alternative way to extend the outreach for Chinese academic libraries. As it has so much unique strengths and can make library users gain a more comfortable experience, more and more Chinese academic libraries have begun to launch WeChat.

This paper will review the development process of the WeChat mobile service programme at Shanghai University (SHU) Library, and provide an empirical case of the library patrons' preference to receive library services via WeChat. A web user survey offers evidence and leads to suggestions for its further development. The author concludes that WeChat not only can help the library to disseminate information but is also a good platform for two-way communication with patrons. It is a powerful tool for the library to attract patrons in the current mobile environment.

2. LITERATURE REVIEW

Nowadays many libraries promote their collections and services to the digital-native generation via social media. Cuddy et al. (2010) introduced the application of Twitter at the NYU Health Sciences Libraries as an outreach tool for marketing.

Facebook is also widely used by libraries for community building and providing static links to library resources, whereas Twitter is used for communicating with individuals and publishing timely updates about new resources and current events (*Palmer, 2014*).

Chan (2012) investigated the relative effectiveness of different forms of social media advertising in promoting the collections and services of academic libraries at the Hong Kong Baptist University. Chan claimed that social network advertising had the potential to be a cost-effective means of marketing for academic libraries. Moreover, Chan found that advertising strategies that drew on the social features of Facebook were more effective than traditional approaches.

Saw et al. (2012) pointed out that more than half of international and domestic students use social media for sharing and finding information. Their survey results strongly suggested that libraries needed to further exploit the strengths of different SNS. She thought SNS was an important platform for participation and collaboration to disseminate information and facilitate engagement, and, ultimately, build better relationships with students.

Though Facebook, Twitter, and WhatsApp are popular in Western countries, they are not allowed in China. Chinese people have other substitute social media tools such as Weibo, QQ and WeChat. Within the past six years, WeChat has become the most powerful social media tool in China. More and more government agencies, enterprises and non-profit institutions have begun to utilise WeChat for posting information and/or providing services.

Libraries had consistently sought to use technology to reach out to their communities (*Fernandez, 2015*). Further, libraries have increasingly seen that technology becomes a quick candidate as a solution to nearly every problem in the field (Blackburn, 2011). Many academic libraries have offered the WeChat service to promote their collections and services. Some scholars have researched this use of social media.

For example, Xu (2015) surveyed the 39 top Chinese academic libraries. The survey results indicated that about one-third of the libraries used WeChat as a marketing tool in 2014, but most were still at their fundamental or initial stages in developing WeChat services.

Sun (2015) discovered WeChat is a good platform to collaboratively encourage college students to read classics and improve their humanistic and cultural literacy.

Pun (2015) introduced a practice for virtual reference via WeChat implemented into the library of New York University in Shanghai. He proposed that WeChat offered useful and unique features beyond the traditional social media outlets (Facebook and Twitter) and could provide a range of services and support for research and information needs. He introduced WeChat as one approach to serving communities that rely heavily on mobile devices to find and gather information. His study concluded that new apps could be experimentally introduced in many other areas of the Library beyond 'virtual reference'—such as outreach programming, including gamification in libraries, or as a teaching tool to explore 'moments' that serve similar purposes as a Facebook wall, where users can post status updates and information.

Zhu (2016) introduced the Jinan University Library's practice of using the WeChat service. Zhu claimed that the social media tool was an effective approach to promoting library services and enhancing relationships between the library and its patrons. Effective WeChat service requires WeChat's provider, third-party application vendors, and the library to work together for success.

Wei (2017) designed the WeChat library infrastructure of the Chongqing University Library. He points out that the most prominent advantages of WeChat Library were its low development cost and low technology threshold. The WeChat Library could provide a better solution for mobile library services.

To date, there have been few studies of WeChat implementation and users' feedback. This study, by reviewing the WeChat mobile library programme at SHU Library and the results of a web survey of its users, aims to prove that WeChat can, and has, become an effective mobile platform for libraries to serve and retain their patrons. The WeChat library service can increase users' viscosity to libraries. The web user survey results offer credible insights to further improve the mobile library service.

3. METHODS

An empirical research method was used for this study. This paper reviewed the implementation of the WeChat mobile programme at SHU Library, including the background, challenges, launching, features and functions and results.

Quantitative analysis was also used. The data of the online survey were analysed to assess the achievement of the WeChat mobile programme and served as a reference for the programme's further development.

The librarians investigated WeChat users' preferences, usage time, access behaviour and further expectations on Wenjuanxing (http://www.sojump.com/publicsurveys.aspx), which is an online survey platform in China like Survey Monkey. The survey questions included the following:

1. Follower identification and characteristics.
2. How long do you spend on WeChat every day?
3. Which channel do you prefer to access the library?
4. What information do you expect to get from WeChat library service?
5. Which features do you use the most on the WeChat platform?
6. What features do you hope to get in the future?

The questionnaire was posted on the WeChat library platform. The library's followers on WeChat were encouraged to complete the questionnaire survey on a voluntary basis without any reward. The survey was opened for four days, June 28 to July 1, 2016. Though many users were on summer holiday and had left the campus, there were 383 views of the questionnaire and 113 completed responses, representing a response rate of 29.5%.

Wenjuanxing exported a report of the results after the survey closed. The collected data were analysed in Microsoft Excel 2010. The data collection and analysis focused on three areas:

- Demographics
- WeChat mobile library access
- Usage and further expectations

At China's universities, conducting a survey does not require the approval of the university's Institutional Review Board (IRB). Therefore, the online survey was carried out with the approval of SHU's Chief Librarian.

4. SHU LIBRARY'S WECHAT PROGRAMME

4.1 About SHU and Its Library

Shanghai University (SHU) is a key municipal university, ranking 36th among all the universities in China and 69th among the Best Asian Universities by the QS World University Ranking in 2016. Well known for engineering, science, art and humanities, SHU has 22,000 undergraduate students, 12,000 graduate students, 4,000 international students and 3,000 faculty members (*SHU, 2017*).

SHU Library (2017) has a collection of four million physical items. However, the focus of the library collection development has shifted from print resources to digital resources. The library has purchased and/or subscribed to 68 commercial databases, including resources in English such as Elsevier, John Wiley, Web of Science, Springer, and Engineering Village, providing 24/7 online access services to its users.

4.2 Challenges for SHU Library

Academic library patrons increasingly rely on digital resources for their teaching, research, and learning. SHU Library's webpage acts as a portal for patrons to find links to various digital resources among its many other functions. The statistics reveals, however, that the number of full-text downloads of the library's e-resources has been increasing dramatically while the number of logins to the library webpage has been decreasing; this implies that once the patrons store the e-resource links, they rarely visit the library webpage again, for the old-fashioned web pages are not attractive to the patrons, particularly to millennials (Figure 1). Meanwhile, library loans have not increased and have even decreased, although the new print collection has remained at 50,000 items per year over the past five years and the entrance-count of patrons keeps increasing steadily. The reason is that millennial patrons, who are smartphone users, prefer accessing e-resources and using the space in the library for self-study, communication and events rather than as a place for borrowing books or reading periodicals.

Figure 1. Shanghai University Library Service Statistics in 2010-2015
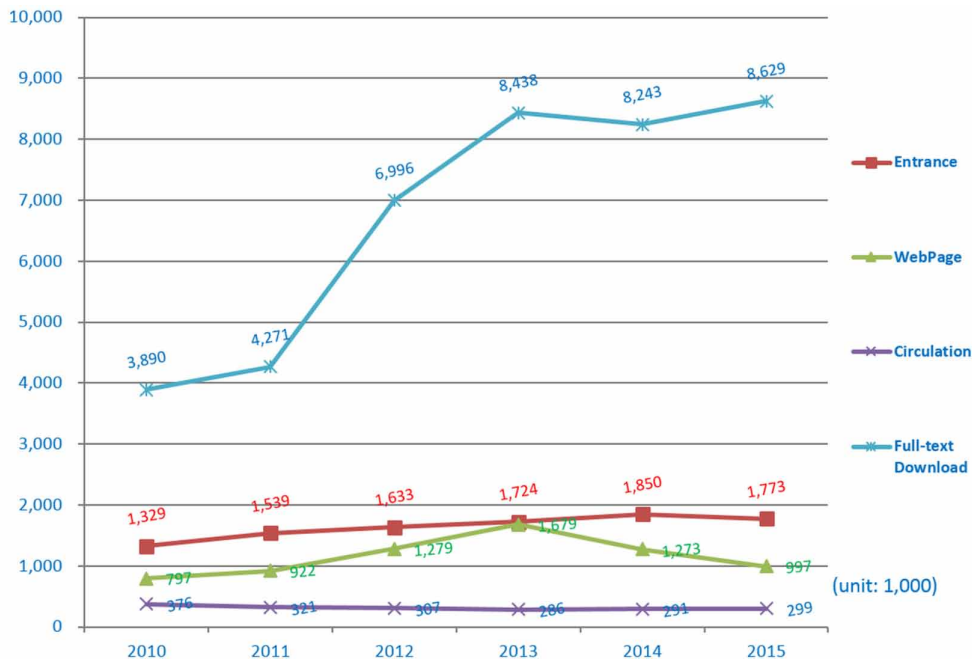
To deal with the challenges arising from patron preferences, IT technologies, and collection changes, the library decided to launch a mobile library programme based on social media apps. The programme goal was to provide tailored mobile library service, improve the user experience and maintain patron viscosity in the mobile environment. WeChat was chosen as the platform because of its wide coverage among the patrons' mobile devices.

4.3 Implementation of the WeChat Programme

The WeChat mobile library programme was launched in spring 2014 after the library's WeChat official account was created and certified. The WeChat ID is shu_library. And an image of the library building is used as the logo.

The WeChat QR code (Figure 2) is placed in a prominent position on the library webpage so that it can be easily noticed. Patrons can scan the WeChat QR code to subscribe to the news or add the ID to become a follower. After a patron subscribes, a welcome window that says 'Thank you for following Shanghai University Library' will pop up on his or her WeChat page (Figure 3).

Then, by clicking into the official account, subscribers can see three category menus at the bottom of the screen (Figure 4):

- **Collection and Facility:** Search for books (*Online Public Access Catalogue, OPAC*), new books, library's homepage, seats available in reading rooms
- **Promotion Events:** Events such as Reading Month, Graduation Season and Freshman Season
- **My Library:** Checkout records, renewal, overdue reminders and billing

When subscribers first click 'My Library', the account will ask them to link their university ID to use the function. There is a button to input text to interact with the librarian. Thus, the library can provide online reference and other feedback to subscribers via WeChat.

Figure 2. QR code of Shanghai University Library
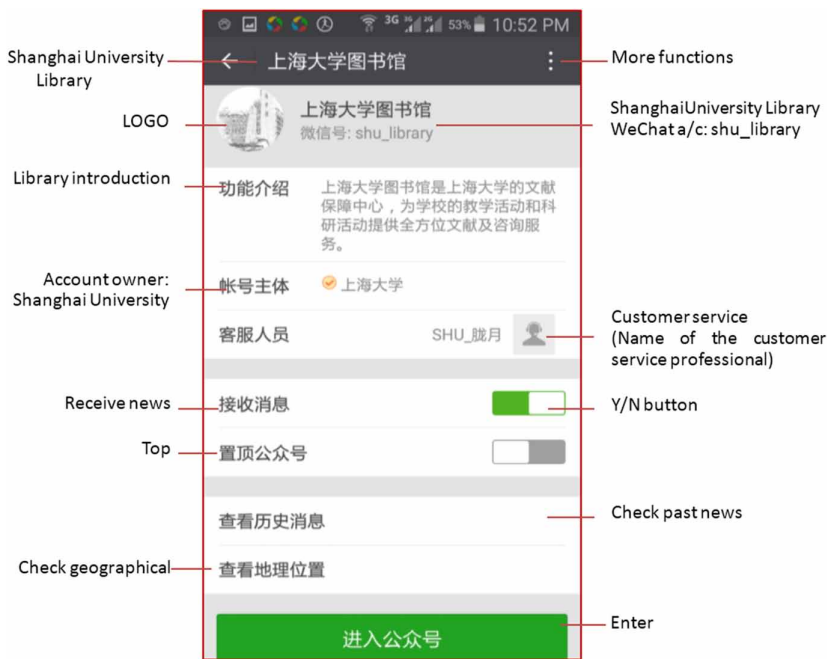

Figure 3. WeChat official account interface

Figure 4. WeChat library interface

4.4 Operation and Management

Four young librarians were assigned to form a team in charge of the daily operation and development of the account, IT development, content generation and online customer service, respectively. Due to the dramatically increased patron interaction, two more librarians joined the team to assist in WeChat reference service in 2016. The workflow is that the content librarians edit collection information and promotion news, and the IT librarian releases the content to the WeChat platform through a third-party software system. Single or multiple messages can be sent to subscribers. The messages cover the library's hours of operation, new digitized resources, the Best Book Newsletter, events, lectures and seminars, as well as other library issues.

4.5 WeChat Features and Services

4.5.1 Resources

The menu has four links through which users can access Search for Books (OPAC), New Books, Library's Homepage and Available Seats in Reading Rooms. The OPAC retrieval function is incorporated into the WeChat service via API. The feature supports collection retrieval including all fields such as keyword, title, author, press, ISSN/ISBN, and call number.

4.5.2 Promotion and Marketing

The function of the library's promotion and marketing is used to advertise branding events such as Graduation Season Events, Freshman Season events, Reading Month events, and Merit Service Month events. The Reading Month events have become influential events on the campus each spring. Many followers' reading reviews or design works are posted on the platform and have led to competition. The event 'No Overdue Penalty Day' is learned from American academic libraries. On World Book & Copyright Day, held from April 22-23, patrons are not charged for returning overdue books. This

is warmly appreciated by the faculty and students. The number of returned overdue books usually increases sharply during the two-day event.

4.5.3 My Library

The column includes patron information, checkout record, book renewal, reservation and overdue reminders. Subscribers can take care of their book-loan issues using this part of the WeChat platform. The features are fundamental but more practical and convenient for patrons. These features increase subscribers' viscosity to the library gradually.

4.5.4 Online Reference

The online reference service began on January 8, 2015, giving patrons a new way to send feedback to the library. Patrons can ask various questions about the library service to customer assistants by chatting on WeChat. The customer assistants stay online on business days and mostly respond within four hours. Each assistant answers inquiries from about 10 patrons per day.

The subscribers showed a high interest in SHU Library events and gave a lot of feedback, such as 'I am not able to come to the writing workshop. Can I have the PPT slides?', 'Hope such activities can be held on branch campuses too!' and 'Many thanks to the company of the library from me! Lots of beautiful memories!' They also asked many questions concerning the library's daily services, such as 'Why I am unable to find the book although the system says it is available?' and 'What are the operating hours during the holiday break, and is there any air conditioning?' The customer assistants responded to the patrons' requests and questions in a professional way. As a result, misunderstandings and conflicts between the library and patrons have decreased significantly, and so have complaints to the Dean of the Library. This feature demonstrates the WeChat service works as a new way for libraries to communicate with patrons. It acts as the library's mobile online reference platform.

5. ASSESSMENT AND FINDINGS

As of June 2016, the official WeChat account had over 4,700 subscribers, representing about 10% for the total of 41,000 faculty members and students. This number continued to grow and almost doubled in the following semester. The Library Weibo however, had only 2,760 followers after being active for 4 years. WeChat had become another channel to access library services on patrons' smartphones instead of Weibo, email and other channels. The WeChat platform makes it easier for them to communicate with the library and save time.

Through a two-year effort, the following content had been put on the WeChat platform: new digital resources, a new book newsletter, events, lectures and seminars, posters, holidays, reading reviews and library highlights. A total of 189 items of news and announcements had been released, and 1,120 items of online chat requests had been addressed. The WeChat online reference had almost replaced all the other kinds of references.

To evaluate the WeChat mobile library accurately and determine the next steps in its development, the library launched a web survey to its followers. The survey focused on the followers' identification and characteristics, preferences, usage time, access behaviour, and further expectations. The survey announcement was posted on the WeChat mobile platform. Followers were encouraged to participate in the survey as volunteers to help improving WeChat service without any reward.

The survey lasted for four days from June 28 to July 1, 2016. There were 113 completed responses that were gathered, which represented a response rate of 29.5%. A report of the survey responses was exported from Wenjuanxing, and the data were analysed in Microsoft Excel 2010. The data were divided into three sections:

- User demographics

- WeChat mobile library access behaviour
- Usage and further expectations

5.1 User Demographics

The results of the study were highly encouraging. The 113 respondents were from all levels of the university community, including faculty (11.5%), postgraduates (16%) and undergraduates (72.5%). We noticed that freshman was the first group with enthusiasm to the WeChat library service. They were full of curiosity and exploration after intense Gaokao competition. Junior students began to write academic papers, so they also had strong needs to the Library and ranked as the second group. This confirmed that young students were more likely to prefer mobile library service via social media (Figure 5).

Figure 5. Follower composition
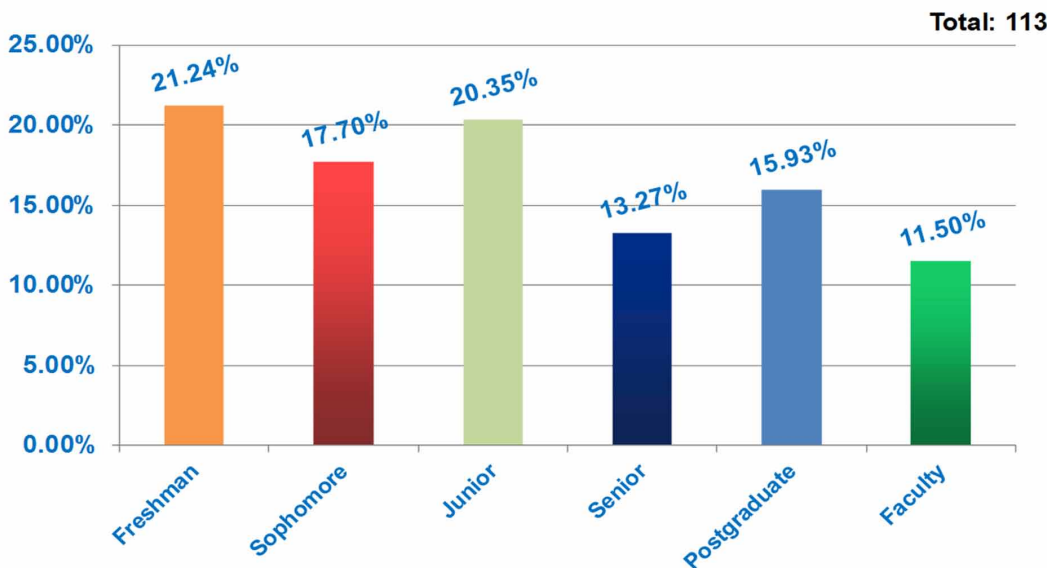
Most followers were very active on social media. Half of them spent over two hours on WeChat per day, 36% of them spent 1-2 hours per day, and 12% of them spent less than 1 hour per day. Only 1% of followers rarely used WeChat (Figure 6).

5.2 WeChat Library Access

Among all the survey responses, WeChat ranked first at 3.46 points in the four main channels for accessing the library, followed by the library webpage at 2.64 points. The traditional announcement ranked third at 1.81 points. We noticed the microblog (Weibo in Chinese) ranked last, at 1.52 points. (Figure 7)

The survey participants were also asked how they found and subscribed to the WeChat library service. They reported that they subscribed via searching (48%), library promotion (28%), friends recommendations (13%) and information from the WeChat friend circle (9%) (Figure 8).

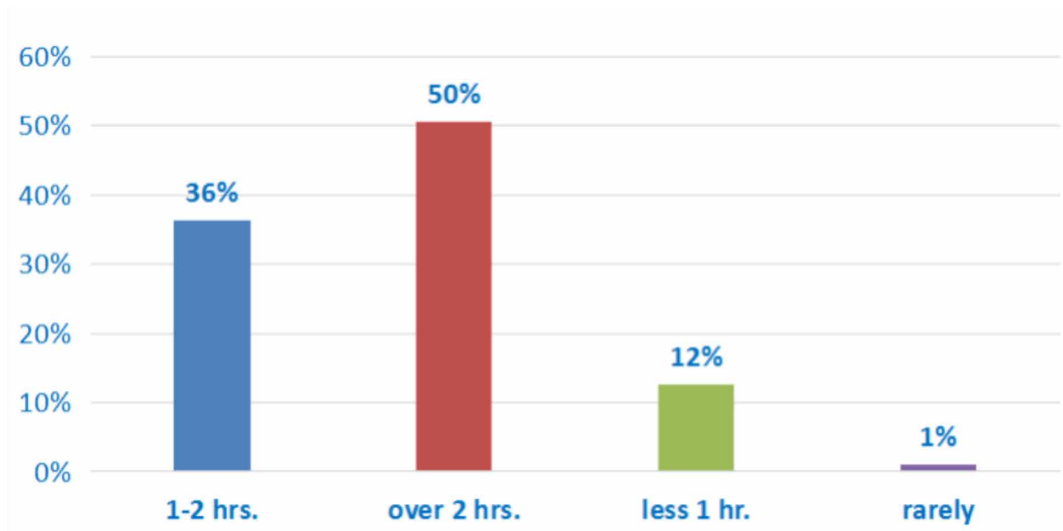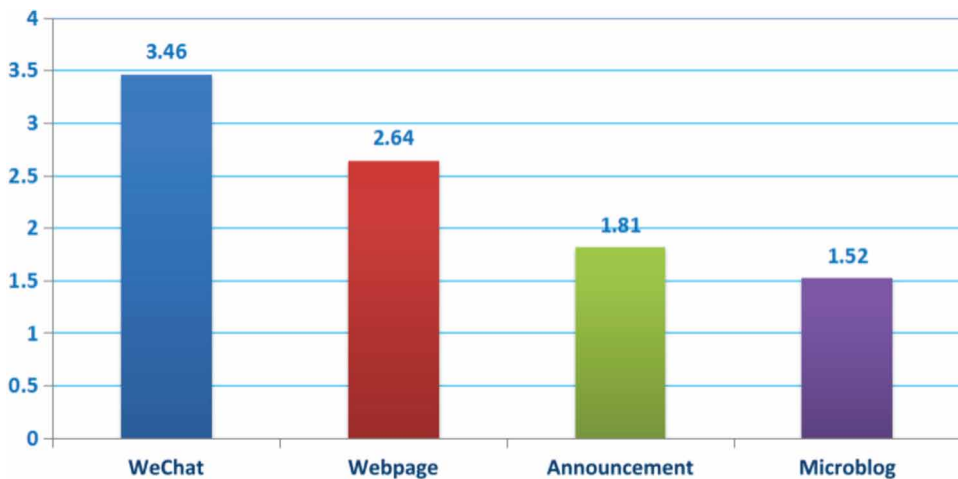**Figure 6. Time followers spend on WeChat per day**

Figure 7. Ranking of the four channels for accessing the library

(Full mark=4)

5.3 WeChat Library Usages and Further Expectations

OPAC Retrieval, My Library, and Facility ranked the top three features. Among the survey participants, 53.1% listed OPAC as their favourite feature, followed by My Library (51.33%), and Facility (Available Seats/Room) (46.9%). Other features such as the new book newsletter, library webpage access and events were used less (Figure 9).

When we asked the participants whether they had interacted with librarians, 95 participants answered 'Yes', which account for 84% of the total. The other 18 followers responded 'No', which account for 16%. This showed that WeChat online reference was welcomed by the patrons and served as a good interaction platform for both patrons and the library.

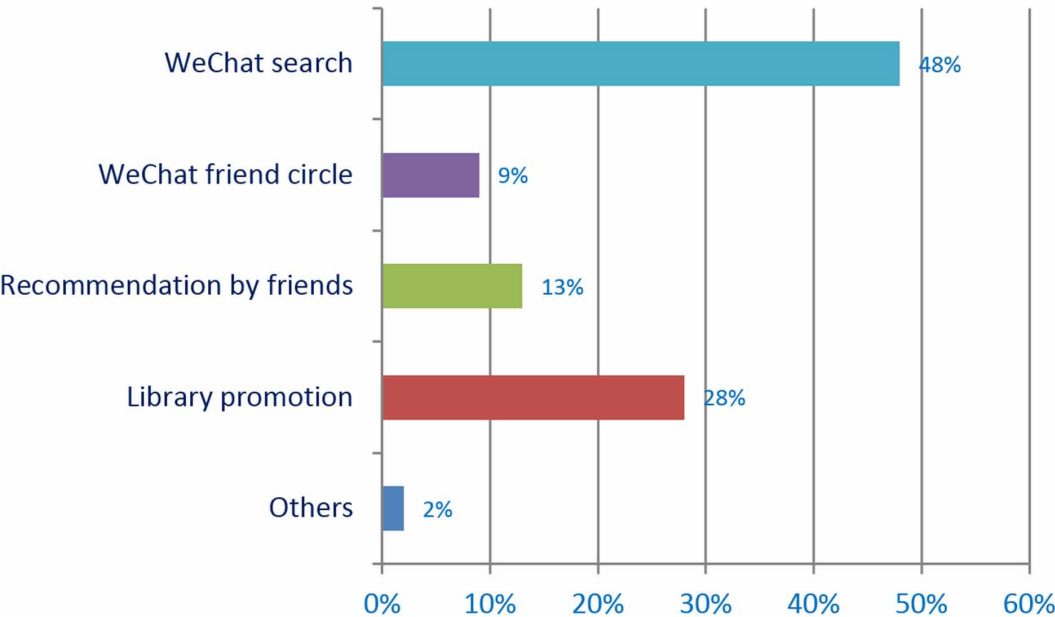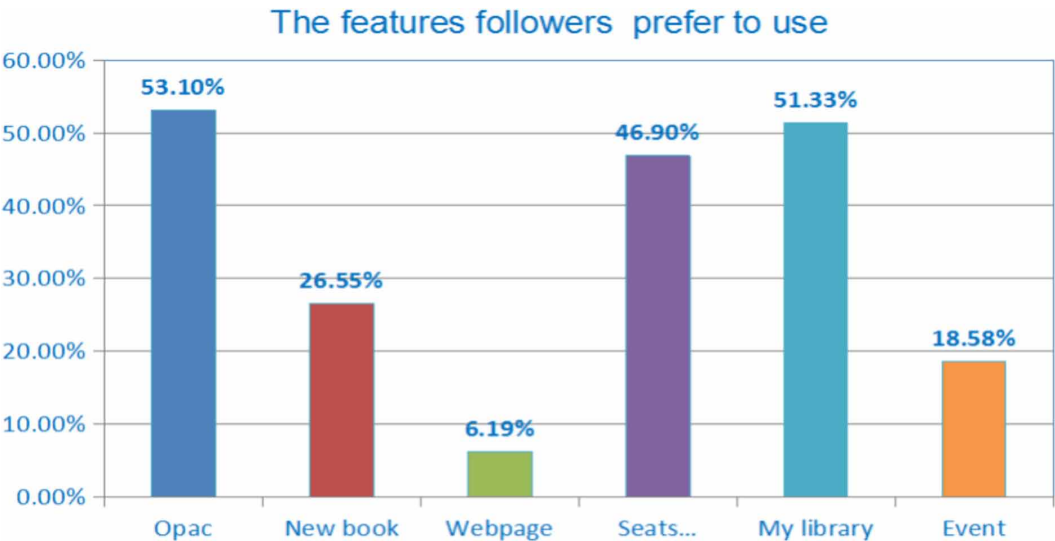**Figure 8. How did you come to subscribe to the library WeChat account?**


Figure 9. The features followers prefer to use

The followers also told the library which features they hoped to access in the future. The top three information sources were OPAC, My Library, and Facility, which were selected by 83.19%, 79.65% and 72.57% of the survey participants, respectively. The participants indicated that they hoped to pay overdue fines and reserve seats or study rooms in the future via the WeChat mobile library. They also hoped to access information about new databases/trials, events, purchase recommendations and interlibrary loan (Figure 10).

Figure 10. The features followers hope to access
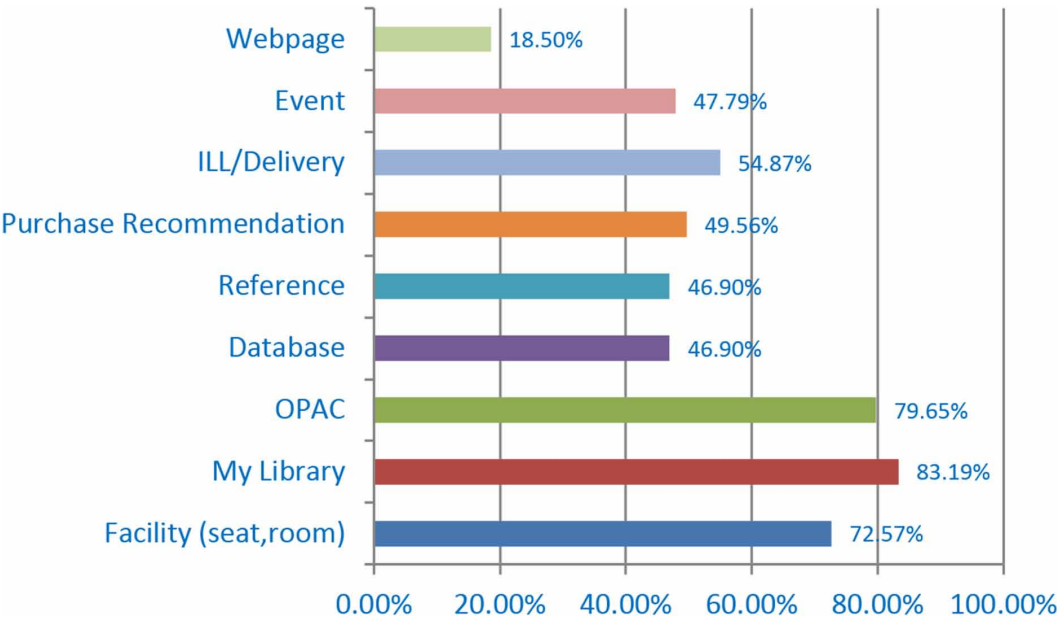
Further, the survey results revealed that OPAC searching, My Library, and Facility were the most frequently used functions. My library ranked first, because the patrons needed to check their borrowing list very often to avoid an overdue bill. OPAC searching ranked second, representing the importance of library collection to patrons' study and research. Facility ranked third, meaning that the patrons still had a strong preference to use the physical spaces in the library as their important vehicle of study and communication. Backend statistics also verified that these three functions were the most frequently used ones (Figure 11).

The data generated from the survey helped the library to make decisions for optimising WeChat services and developing more tailored functions, such as facility reservation or overdue fine payment.

6. LIMITATIONS/DISCUSSION

The survey was the first one that the library's WeChat team had initiated. The survey questionnaire could have been designed more comprehensively and distributed not only through WeChat, but also through Weibo and even to offline respondents, so as to receive more feedbacks. Furthermore, the survey was conducted in the last week of the semester on a voluntary basis, so most students were

Figure 11. WeChat usage statistics from backend

Features	Hit times	Patrons	Average
My Library	2618	1396	1.87
OPAC	2197	1208	1.82
Facility	520	357	1.46

busy with their final exams and did not choose to participate. Therefore, the response rate was low. At China's universities, such surveys can be done at any time. If it had been conducted in the middle of the semester, and/or with some incentives, the number of responses would have been much higher and the data would have been more convincing.

WeChat is the ideal platform to provide mobile library services to patrons. It is available to libraries without the need to License commercial mobile library systems, such as China's Superstar mobile library, which can save a significant amount of expense each year. However, it also has some weaknesses as below.

First, WeChat's level of openness is low compared with Facebook, Twitter, and Weibo. Followers can only communicate with the service librarians, and they cannot see other followers or their comments automatically. Follower comments can only be seen after checking by the account manager and the service librarians. Thus, there is no discussion among the patron followers. WeChat's interactive model is 'one-to-many'.

Second, WeChat's analytics function is not well developed, and the access statistics of various modules can only be kept for one month. The identification of followers could not be shown. This makes it difficult for the library to accumulate dates, and conduct long-term analyses of followers' behaviours.

It is important to understand that technology is only a tool to provide better service. No matter what kind of technology is adopted, the core function of the library is to provide document information services. Cross-country studies have shown that the demands for mobile library service in China and other countries are the same. Paterson's (2011) survey showed that at the Edinburgh University, OPAC retrieval and My Library Record ranked as the top two services, followed by checking the library's physical service such as hours of operation. This study showed the same results in SHU Libraries.

7. FUTURE DIRECTIONS

The survey results encourage the library to continue promoting its mobile library service. The library made the decision to strengthen connection with patrons by optimising the WeChat mobile service and providing more convenient user experience.

First, WeChat library promotion was enhanced. During the fall 2016 freshman orientation, students were advised to follow the library's WeChat account. As most did so, the follower number increased to 8,400.

Second, the library has expanded its team to include more librarians and student assistants as well as more information and resources, and it is developing more features. Now there are 10 staff members who handle software development, project management, content editing, interface design and enhancement, and customer service. They work in various departments and represent different areas of the student community. New features are under testing to provide more services such as online study room reservation, book purchase recommendation, ILL, and document delivery. The library is planning for future implementation.

8. CONCLUSION

Academic libraries face challenges to make information services and digital content available in a way that patrons will find not only acceptable, but tailored to their preferences. Several conclusions can be drawn from this case study.

First, as smartphones and SNS apps are becoming daily necessities for China's young generation, there is a high demand for university libraries to leverage new technology to provide mobile library services.

Second, WeChat, due to its popularity, multi-functional advantages and convenience for customised development, has been successfully accepted by SHU Library patrons as a platform for mobile library services.

Third, in order to continuously optimise the WeChat-based mobile library services, regular library-patron interviews, communication and surveys are necessary. To this end, libraries need to receive patron feedback through both formal surveys and informal comments to improve the horizontal line of WeChat-based services. Furthermore, libraries should engage patrons to participate in mobile service development and testing.

Fourth, high-quality, convenient and timely document information service is always the core of the patrons' demand. Further development of the mobile library services should be focused on this demand to retain patrons.

Finally, WeChat has also been improving and expanding its functions over the years, and its newly added features will provide more opportunities for users. This reminds the university libraries to keep up with the pace to improve mobile library services.

ACKNOWLEDGMENT

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