Study on WeChat Service of Library in University--Based on Readers’ Behavioral Needs

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Abstract. The paper used Maslow's hierarchy of needs theory to study library WeChat service based on readers’ needs. Firstly, we designed a questionnaire to find out readers’ WeChat needs. We divided readers’ expectations on library WeChat service into five levels. We carried out a mean analysis for each level of indicators. Then we used PASW statistical analysis methods to analyze relevant questionnaire data. Four main questions on library WeChat services were concluded. Finally, the paper provided four countermeasures which provides inspiration and reference for the library that has already launched and is about to launch WeChat service.

1. Introduction
Mobile internet service has grown rapidly with the popularity of iPad and smart phones in the era of big data. Traditional micro-blog and SNS erode gradually. WeChat APP becomes the mainstream tool. Tencent officially released the latest “2018 WeChat Data Report”. According to Tencent released data, WeChat has become the leading chat software in China. In 2018, more than 1000 million user’s login WeChat per month. People sent 45 billion messages, 410 million audio and video calls daily. The two data increased by 100% respectively compared with 2017. WeChat widgets cover more than 20 categories and 200 industry subdivision categories now. To carry out various consultations and services, modern technologies were applied in libraries. The effectiveness of Library micro-blog, library SNS community and mobile library has already appeared. With the change of reader’s behaviours, these traditional means can no longer meet the needs of readers in terms of convenience and personalized service. Library WeChat service can make up for these shortcomings. Therefore, it is very important to study how to carry out WeChat service in libraries from the perspective of reader’s demanding behaviour. Based on Maslow five level theory of demand, this paper analyses the characteristics of reader's needs and behaviours, and provides some reasonable suggestions for developing WeChat services in university libraries.

2. Review of Domestic Research on Library WeChat Services
Research literature on the application of WeChat in libraries began in 2013. Now more and more scholars are studying the service of Library WeChat now. WeChat has the function of pushing information and voice. It can realize the communication between library staff and readers in a timelier manner. Libraries can also send personalized information to reader’s WeChat terminals on a targeted basis (He Xiaoping, Sun Xinyang, 2015). Because of the openness of WeChat APP, we can design some service interfaces which are compatible with WeChat for integrating related business of library into WeChat, to improve the speed and quality and to reduce the cost of related services (Zhou Yao, Jiang Tianjin, 2016).
Some scholars have analyzed the characteristics of WeChat, and the feasibility of WeChat’s application in libraries. Then they put forward relevant WeChat services, including providing timely advisory services, pushing notification information, borrowing and returning books, inquiry and reminder service, new book recommendation and reader survey, etc. They also analyzed the problems existing in these services and gave some constructive suggestions (Song Zhenshi, Gu Xiaoying, 2017). At the same time, libraries can combine their own services with WeChat public platform and address to realize timely and interactive services and to widen the scope of mobile library and intelligent library (Zhou Lingyuan, etc.; 2018). There are differences in the characteristics and functions between WeChat, SNS and micro-blog. We can get more reasonable library micro marketing strategies by analyzing those differences to improve user’s satisfaction. (Lei Huan, 2017). From the existing research literatures, most scholars focus on the feasibility and existing problems of WeChat library services, and try to establish a service mode based on WeChat public platform. However, few scholars have conducted a questionnaire survey on WeChat services in libraries from the perspective of reader’s demand behaviour. In this paper, Maslow’s hierarchy of needs theory is introduced to the reader’s WeChat behaviour. Through collecting questionnaires on reader’s demand for WeChat, based on the analysis of these data, the effective mode of Library’s WeChat service is given, which provides inspiration and reference for the library that has already launched and is about to launch WeChat service.

3. Questionnaire Design and Data Collection

3.1. Questionnaire Design

3.1.1. The theoretical basis of the design of the questionnaire. Reader’s WeChat needs are the core of the questionnaire design. In order to find out the reader’s needs for Library WeChat services, this paper uses Maslow’s five level theory of demand: physiology, security, social interaction, respect and self-actualization to study reader’s WeChat demand behaviour, and put reader’s WeChat demand from low level to high level. There are five categories: viewers, entertainers, social netizens, contributors, and advisors (hosts). According to the content of WeChat services provided by the library, each service content can be summed up to five levels according to the attributes of demand, which constitute various indicators of Library Reader’s demand behaviour, and are shown in Table 2.

Table 2 is the core part of the questionnaire. According to Likert five scales, each of the above indicators is investigated and scored by the questionnaire. 1 shows that it is very inconsistent; 2 indicates that it does not meet the requirements; 3 indicates general; 4 indicates that it is basically consistent; 5 indicates that it is very consistent. So that reader’s needs behaviours can be obtained through quantitative analysis.

3.1.2. The process of questionnaire design. There are three stages in the design of the questionnaire. The first stage is the preliminary design of the questionnaire. The author initially designed the indicators of the questionnaire mainly based on the contents of the library’s WeChat services provided by the Information Technology Department of Xiamen University libraries. Secondly the questionnaire was distributed to 50 randomly selected students and staff in Xiamen University to see if the questionnaire was reasonable. Through the feedbacks from students and faculty members, some of the colleagues and random students were interviewed directly. At last according to the results of the interview, the author revised the options to form the final questionnaire. The author also consulted the relevant teachers of the school of information technology and management of Xiamen University to modify the questionnaire and get the final questionnaire.

3.2. Data Collection

The author selected three relatively good universities in Fujian Province, Xiamen University, Huqiao University and Fuzhou University as the research scope. These three schools are in Xiamen, Quanzhou and Fuzhou respectively, and are more reasonable in terms of geographical distribution. The questionnaire survey lasted from September 15, 2016 to December 15, 2017. A total of 900
questionnaires (300 copies each school) were distributed to candidates, teachers and administrators by means of electronic questionnaires and paper questionnaires. The rate of recovery was 59.3%, and 516 questionnaires were valid, excluding incomplete and unqualified questionnaires.

4. Data Analysis

4.1. Data Analysis of Reader’s WeChat Behavior Survey

4.1.1. Basic situation analysis on readers. In the survey of the basic situation of readers, gender, identity, profession and age were analysed. There were 252 female readers and 264 male readers, accounting for 48.8% and 51.2% respectively. The distribution was relatively average, which could eliminate the impact of gender differences on the survey results. There were 180 undergraduate readers, 192 postgraduates, 120 teachers and 24 administrative staff in the survey of identity. Students and teachers are the main groups of library readers. On the age distribution, there are 276 people aged 15-30, 108 people aged 31-40, 96 people aged 41-50, and 36 people aged above 51 years. The survey showed that most users were young and middle-aged.

4.1.2. A statistical analysis of reader’s behavior of WeChat. In the survey of reader’s WeChat behaviour, we try to build up a picture of reader’s behaviour habits. See Table 1 specifically.

| Table 1. Survey and Analysis on WeChat behaviour of readers |
|-----------------------------------------------------------|
| Reader’s WeChat behaviour | Number of people | Percentage | Reader’s WeChat behaviour | Number of people | Percentage |
|---------------------------|------------------|------------|---------------------------|------------------|------------|
| Popular WeChat public platform | A celebrity or an idol | 84 | 16.3 | Time and place using WeChat | Dormitory | 336 | 65.1 |
|                           | Games and other amusement | 180 | 34.9 |                               | In the car | 444 | 86 |
|                           | Social news, life, and other information | 216 | 41.9 |                               | Classroom | 300 | 58.1 |
|                           | Shopping information, etc. | 36 | 7.0 |                               | Go shopping | 240 | 46.5 |
| The length of time paying attention to library public platform | Less than 6 months | 156 | 30.2 | Whenever and wherever possible | Mobile phone | 504 | 97.7 |
|                                              | 6-12 months | 168 | 32.6 |                               | IPAD and other mobile terminals | 215 | 41.7 |
|                                              | 1-1.5 years | 132 | 25.6 |                               | Browsers | 192 | 37.2 |
|                                              | over 1.5 years | 60 | 11.6 |                               | Entertainer | 24 | 4.7 |
|                                              | Positioning their selves on WeChat behaviours | 85 | 16.5 |                               | Social networkers | 96 | 18.6 |
| Frequency of concerns on library public platform Weekly | 1 time or less | 120 | 23.3 |                               | Contributor | 108 | 20.9 |
|                                              | 2-4 times | 180 | 34.9 |                               | Advisor (Master) | 96 | 18.6 |
|                                              | 5-6 times | 85 | 16.5 |                               | Library posting | 24 | 4.7 |
|                                              | Above 7 times | 131 | 25.4 | How to get notices from library | Library website and | 372 | 72.1 |
4.1.3. Statistical Analysis of Reader’s Expectations on Library WeChat Service. According to above introduction, we divide reader’s expectations on Library WeChat service into five levels. Then we carry out a mean analysis for each level of indicators. See Table 2 in detail.

| 10-19hours | 157 | 30.4 | micro-blog |
| More than 20 hours | 131 | 25.4 | Classmates |
| | | | WeChat platform |
| | | | 108 | 20.9 |
| | | | 12 | 2.3 |

| Functions of WeChat preferred | Voice chat | 492 | 95.3 | Take part in library reader survey | Through library website |
| | Shake | 168 | 32.6 | | 228 | 44.2 |
| | Circle of friends and album | 492 | 95.3 | | Not concerned about | 288 | 55.8 |
| | Audio, picture etc | 216 | 41.9 | | Through the library website | 312 | 60.5 |
| | Micro-blog, mailbox etc | 108 | 20.9 | | Go to reception desk and renew books | 60 | 11.6 |
| How to remember the due date | Library website inquiries | 132 | 25.6 | | Often forget, lead to frequent overdue fine | 72 | 14.0 |
| | Often forget | 240 | 46.5 | | I don't know if I can renew it | 72 | 14.0 |
| | Email and other reminding | 144 | 27.9 | | How to solve the problem | 156 | 30.2 |
| | How to get new books recommendation | Through library website | 132 | 25.6 | | Phone | 12 | 2.3 |
| | | Through library | 156 | 30.2 | | Email consultation | 288 | 55.8 |
| | | Not concerned about new books recommendation | 228 | 44.2 | | Check library website | 60 | 11.6 |
Table 2. Reader’s expectations on library WeChat service

| Reader’s demand level | Content and Indicators                                                                 | Mean value |
|-----------------------|----------------------------------------------------------------------------------------|------------|
| Browsers              | 2.1 I would like to get some basic information about library collections and notices    | 4.84       |
|                       | 2.2 I would like to get information about new book recommendations and database updates | 4.40       |
|                       | 2.3 I hope this platform will be more convenient and effective for getting information | 5.00       |
|                       | 2.4 I want to get the related techniques used in the database                           | 4.47       |
|                       | 2.5 I want to get a personal loan and renewal and so on.                                | 4.91       |
| Entertainer           | 2.6 When I feel annoyed and bored, I spend time on the platform                          | 3.23       |
|                       | 2.7 I hope library WeChat platform will provide some entertainment services             | 4.53       |
|                       | 2.8 In this platform, I can enjoy it very much                                          | 4.16       |
| Social networkers     | 2.9 I can communicate with other students and staff on the platform                     | 4.79       |
|                       | 2.10 I want to consult and give feedback on the platform                                 | 5.00       |
|                       | 2.11 I can get support and encouragement from other students on the platform           | 3.56       |
|                       | 2.12 When I am in trouble, I get help from others on the platform.                     | 4.53       |
| Contributors          | 2.13 I would like to publish some interesting topics on the platform for discussion      | 4.58       |
|                       | 2.14 I want to build and maintain friendships with other people on the platform         | 3.65       |
|                       | 2.15 I will share some valuable information on the platform                              | 4.63       |
|                       | 2.16 I would recommend the students and friends to join in the platform                 | 4.49       |
| The advisor (Master)  | 2.17 I want to participate in the book purchase through the platform                    | 4.42       |
|                       | 2.18 I want to solve problems and help others on the platform.                          | 4.60       |
|                       | 2.19 I hope that the platform can put forward a variety of good suggestions for improvement to library | 4.81       |
| Overall expectation   | 3.1 I think it is necessary for libraries to develop WeChat platform services           | 4.84       |
|                       | 3.2 I am satisfied with the current WeChat service provided by the library              | 2.67       |

4.2. The Main Problems of Library WeChat Service Based on Statistical Analysis

Through Tables 1 and 2, we can see that there are four main problems in the development of WeChat service in libraries.

4.2.1. Low popularity and attention of Library WeChat service. The advantages of WeChat service lie in its timeliness, interaction and convenience. It is close to reader’s mobile terminals. It can carry out information transmission and consult services anytime and anywhere. If a small number of readers
participate in Library WeChat and few readers pay attention to WeChat service, the effect of WeChat service will be greatly reduced. It is very important to increase reader’s participation in library WeChat services. According to the results of the survey, the popularity of Library WeChat services among readers is still low. According to the results of the survey, most readers pay attention to the library WeChat Public Number for a short time. Most of them are under 6 months (30.2%) and 6-12 months (32.6%), 25.6% in 1-1.5 years and only 11.6% in 1.5 years. This shows that the popularity of Library WeChat service among readers is still relatively low and needs to be promoted more vigorously. The frequency of weekly attention to library WeChat public numbers shows extreme distribution. Some "WeChat control" readers may pay more attention to the number of times, at least once per day (25.4%), but another part of WeChat has less frequency of attention, once or less accounted for 23.3%, 2-4 times accounted for 34.9%, 5-6 times the second time accounted for 16.5%, which shows that most readers have not formed the habit of paying attention to the library WeChat public platform every day, and also show that the library WeChat public platform is less concerned. On the contrary, most readers spend a lot of time on WeChat every week, 10-19 hours of readers account for 30.4%, and 20 hours or more readers account for 25.4%, while the time and frequency of WeChat public platform are not large. Most readers use WeChat in dormitories, buses, classrooms, shopping and so on. WeChat has become an indispensable part of reader life. If we can make good use of WeChat to provide services for readers, we will surely achieve the goal of serving readers at anytime and anywhere. With the widespread use of mobile terminals such as mobile phones and IPAD, WeChat will be more convenient to use.

4.2.2. The utilization rate of the existing WeChat service content in the library is not high. At present, the library WeChat service mainly includes library collection and daily notification, new book information bulletin, borrowing and returning book reminder, renewal reminder, reader questionnaire, reader question consultation and answer. The survey results in Table 1 show that the utilization rate of the above services is not high. The current way of understanding the collection and daily notification of the library is mainly based on the library website and micro-blog (72.1%), with students, counselors (20.9%), library posting notices (4.7%) and WeChat (2.3%) seldom used. Readers often forget to overextend (46.5%), Library website enquiries (25.6%) and email reminder services (27.9%) also help readers. The proportion of WeChat access to reminders is also very low. During the renewal of books, readers mainly rely on library website renewal (60.5%), and the front desk renewing (11.6%). And often forget that overdue (14%) accounts for a certain proportion. There are still some readers (14%) who do not know whether to renew them. This shows that there are still some weak links in the service of the library, and the proportion of mobile terminal services such as WeChat is also very low. 44.2% of the readers do not pay attention to the new service. Recommended by the book, 30.2% of the readers posted notices through the library, and 25.6% of readers passed the library website. The proportion of readers who received the service by WeChat and other terminals was low. 55.8% of the readers did not pay attention to and did not take part in the survey of readers in the library, which led to the decrease of the credibility of the survey, while 44.2% of the readers passed the library network. WeChat did not play a major role in the reader survey when participating in the survey. When the reader had problems to solve, 55.8% of the readers would send emails to consult, 30.2% of the readers asked the staff at the scene, other readers could solve the problems by calling or querying website information. Letter service has not played its due role, resulting in the timeliness of consultation services decline, interactive communication effect is poor.

4.2.3. Insufficient Matching between the Content of Library WeChat Service and Reader WeChat Behavior. According to the survey, readers favourite three kinds of WeChat functions include voice chat (95.3%), friends circle and album (95.3%), file, audio, picture and so on (41.9%). At present, the WeChat service provided by the library is basically limited to the transmission of documents and pictures, and even the service of voice transmission is not provided, voice chat, the functions of friends; circles and albums are not well used in library services. Therefore, it is difficult to attract readers; attention and love because the matching of WeChat library services with the readers; WeChat behaviour is not in place. In addition, according to the survey, several readers locate themselves in the
role of WeChat visitors (37.2%). However, the information provided by the library WeChat service is relatively small at present, which makes it difficult for readers to enjoy the role of the viewer, resulting in a decline in readers; attention (18.6%), contributors (20.9%), advisers (18.6%) and entertainers (4.7%), but at present, the library does not provide corresponding services to enable readers to play these roles, resulting in a dislocation between the actual role played by readers and the existing WeChat services in libraries, and it will not arouse readers; preference and participation.

4.2.4. There is a big gap between library's WeChat service function and reader's WeChat demand. From the survey results in Table 2, it is found that, overall, readers think that the average value of WeChat services is 4.84 (total score is 5). From the perspective of readers, the better the library early development of WeChat services is, the better the reader overall satisfaction for the library current micro service is 2.67 (the total score is 5). It shows that there is a big gap between the existing micro-letter service of Library and the expectation of readers. What are the gaps? In the survey of indicators of readers demand level in Table 2, the average content of 2.1 to 2.5 items in the browser role is over 4, which are 4.84, 4.40, 5, 4.47 and 4.91 respectively, indicating that the readers have higher expectation for the library to provide the above five services. The role requirements of the entertainer are 3.23, 4.53 and 4.16 of the 2.6-2.8 indicators, respectively. Readers want the WeChat public platform to provide some entertaining services and experience pleasant experiences on the platform, but whether they are used to kill time, the readers do not seem to mind. The WeChat public platform does not provide entertainment services. Readers will not experience pleasure and kill time on the platform. The average value of each index of 2.9-2.12 is 4.79, 5, 3.56 and 4.53 respectively. Platform timely consultation and feedback problems, and hope that other students on the platform can help solve problems. At present, library WeChat services do not allow readers to play the role of social interaction; in contributor roles, the average 2.13-2.16 index is 4.58, 3.65, 4.63 and 4.49, respectively. Some interesting topics or valuable information will be released on the platform, and students will be recommended to join the platform. At present, library WeChat services do not give readers the role of contributors. In the role of recommender, the average 2.17-2.18 index is 4.42, 4.60 and 4.81, respectively, indicating that readers want to play the role of the master in the platform, including recommending books through the platform, solving problems posed by others, and raising library improvement measures to the staff. The library public platform of WeChat is not available to take these functions.

5. Countermeasures and Suggestions for the Library to Carry out WeChat Service

Through the analysis of the above problems, this paper gives some suggestions for the library to carry out WeChat service as shown in Figure 1.

![Figure 1. The "four-wheel drive" model of WeChat service in the library](image)

5.1. Enriching the Content of WeChat Service in Library is Fundamental

The existing library WeChat service is limited to simple information push function and online consulting services. The content of Library WeChat service is not rich enough. It is difficult to attract more readers to participate in the library WeChat service platform. It is also difficult to meet the readers multi-level WeChat needs. The function is the root of success. Besides the functions of basic
information, borrowing and returning books, online consultation, libraries should provide services and functions including entertainment, interactive communication, making friends, making suggestions, information feedback, online payment and so on. So that readers can get a good experience anytime, anywhere.

5.2. Promoting the Popularity and Attention of WeChat in Library is the Key
Although the library has provided WeChat services, it is not very high in the minds of undergraduates, doctoral candidates, teaching staff and so on. To enhance the popularity and attention of Library WeChat is very important. Libraries should take various measures to promote the library WeChat service. For example, the label of the WeChat public platform can be printed on the student card, so long as the student can scan the library with the mobile terminal scan, they can enter the library directly. When students enter school, the student Handbook publicize the library WeChat public platform. Only in this way, the WeChat public platform of the library will gradually become part of the life of students and faculty. Of course, after many readers join the WeChat public platform, the rich functions and service contents are the driving force that attracts readers attention every day. Besides, the convenience of the platform and the satisfaction from the platform will directly affect the continuous attention.

5.3. Familiar with Readers WeChat Behavior is Guarantee
Starting from readers habit of WeChat, we can better improve the content and function of WeChat services. If he library WeChat service can satisfy readers various habits of WeChat, readers will use them conveniently and comfortably. Libraries can conduct research on WeChat behaviour habits on line or offline occasionally to analyze the results of readers feedback appropriately for the improvement of Library’s WeChat services.

5.4. To Meet the Readers Multi-level Needs is the Core
According to table 2, readers have a total of five levels of demand for WeChat services from low to high. The existing library’s WeChat services only meet the needs of the first level. The library should provide functions and services gradually from low to high based on existing WeChat services. For example, we can provide some puzzle games or award-winning questions and answers games on WeChat platform to enhance the entertainment of platform participation. Open various topics group on the platform to let interested readers join in the discussion voluntarily. Provide the interaction of the platform. Open readers real-time questioning area. Encourage readers to propose meaningful improvements. In short, readers can experience multi-level role needs of visitors, entertainers, social workers, contributors and masters on library WeChat platform.

6. Reference
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