




“Strategy of marketing and promotion of knowledge services in university libraries from the perspective of micro media: Evidence from China”

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STRATEGY OF MARKETING AND PROMOTION OF KNOWLEDGE SERVICES IN UNIVERSITY LIBRARIES FROM THE PERSPECTIVE OF MICRO MEDIA: EVIDENCE FROM CHINA

Abstract

With the rise of micro media, the library's traditional knowledge services and its publicity and promotion methods have been challenged. This study investigates the marketing and promotion of knowledge services through micro media in university libraries. Based on the dynamic model of knowledge service marketing promotion in university libraries, this paper conducts network research and analysis on the library knowledge service microblog, WeChat, and microfilm marketing of 42 world-class universities in China. The results show that among 42 university libraries, microblog and WeChat have a high opening rate but do not attach importance to late marketing management and maintenance (microblogs' opening rate is 83.3%, the proportion of people paying attention is 20%). The number of knowledge service outlay exceeds 1,000 accounts (28.6%). The rate of consultation feedback within one day is 17.14%. The official WeChat account number has 97.6% of libraries. The ratio of WeChat push at least once a week is 68.3%, and the rate of consultation feedback within one day is 17.07%. Microfilm marketing is not valued as a whole (the release rate of microfilms is only 9.5%). Successful microfilm marketing (such as Tsinghua University's "falling in love with the library" series with 7,320 views/day) helps to improve the communication efficiency of knowledge services and brand awareness. This study confirms that micro media marketing has not been fully developed and utilized. University libraries should take user experience, media technology, resource reserve, service content, account publicity, and operation as the starting point to improve user viscosity.

Keywords

marketing model, media, knowledge service, China, micro media, dynamic model, personalization

JEL Classification

B41, D12, M31

INTRODUCTION

As service organizations, libraries have been given a new mission and function in the era of the knowledge economy. The marketing promotion of library knowledge services has become a vital link to improve service quality. Library services are no longer limited to essential services such as borrowing and circulation of collection resources. Extended services (reference, information retrieval, and other information services), discipline services, and knowledge services have increasingly become important content for libraries. In the information age, it may be difficult for users to accurately and comprehensively find the information and knowledge they need without professional training and high information and knowledge literacy. At this time, the knowledge services of the library are particularly important.

The real-time interaction of micro media provides communication power for the promotion of library knowledge services. As a public



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service, the process of library knowledge services is the process of communication. The communication channel is interpersonal communication, and the motivation of communication is the acquisition, transmission, and communication of information and knowledge. The library makes reasonable and appropriate use of microblog, WeChat, and other micro media to provide users with all kinds of knowledge promptly, effectively collect users' opinions, and understand their attitudes. It is conducive to provide users with knowledge services that are more suitable for their personality and needs, while offering more targeted solutions.

Closely combined with the media platform with large market share and wide user base, this study applies marketing theory (4I principle of network marketing) to library knowledge services, studies the successful cases of 42 world-class universities ("double first-class") marketing, and analyzes the application of micro media platforms within the marketing of university libraries. Through network research, this paper collects data, analyzes marketing knowledge, and uses dynamic model analysis to determine the influencing factors that limit the application of micro media in knowledge service marketing promotion. At the same time, it proposes a corresponding marketing strategy, which aims to provide the basis for the library to formulate the marketing plan for knowledge services as it plays an important role in promoting the development and upgrading of knowledge services and library knowledge service.

1. LITERATURE REVIEW AND HYPOTHESES

Research on micro media originated from research on new media. Jeong and Widjaja (1996) proposed a new media access control protocol for wireless ATMs. At the IEEE International Symposium 2000, Kritzenberger et al. (2000) proposed the application of new media technology in providing mental health services for young people. MacIntyre et al. (2001) took augmented reality as a new media experience and designed an AR experience example. Nakatsu and Edirisinghe (2013) analyzed the behavior patterns of users in the new media environment by studying the use of blogs, Twitter, and Facebook by new media users in Singapore. Kolay (2016) advocated an enhanced user-driven approach to knowledge expansion through new media. The birth of micro media depends on the development and application of new media technologies.

Zhang (2011) believes that micro media and micro marketing have brought a wave of change in traditional media marketing. Sui (2012) took microblogs, a representative of micro media, as an example to analyze the characteristics of cultural communication in the "micro era". Cheng (2015) proposed the promotion path of digital reading micro media in university libraries and constructed the promotion mode of digital reading micro media in university libraries. Tang (2017) revealed the moral education

value of micro media and proposed a path to realize its value based on big data. Wang (2017) summarized the reading promotion strategies of university libraries in the micro media era.

At present, there are many studies on library service marketing. Yorke (1977) researched the marketing of library services. Bellardo and Waldhart (1977) were the first to explore the feasibility of marketing techniques applied to university library products and services. Wood and Young (1988) wrote a one-of-a-kind guide to library marketing. Muema (2004) proposed that any type of library needs to be user-oriented, and the marketing theory provides some support for the library to collect and analyze user needs. After exploring the methods and problems encountered by the University of Kenya Library in promoting services to different types of users, it was pointed out that improving services is necessary for library marketing.

Xia (2009) explored the impact of the Facebook group on the marketing activities of public libraries. After combining the marketing activities of two libraries in the United States, it was proposed that the Facebook group can be transformed into a social network to enable more users to participate, so as to expand the library's services to more users and meet the needs of more users. Krom (2016) believes that before the implementation of library brand marketing, it is necessary to establish brand behavior standards, professional ethics, and man-

agement rules, and combine them with the organizational brand culture. For example, in the brand behavior construction of the Scottish library, he established a strict and delicate management style, built a systematic goal and incentive mechanism, and scientifically managed librarians, thus laying the foundation for the construction of the library brand marketing model.

Bansal-Travers et al. (2016) proposed that libraries should strengthen brand guidance to users in the process of brand marketing, enhance the comprehensive brand image by strengthening services. In addition, the library needs to continuously expand its collection, create high-quality and efficient services through rich cultural connotations and considerate services, and improve the brand marketing ability of public libraries. Petty (2018) proposed that the formulation of library brand marketing needs to establish a brand image, improve organizational culture, and clarify positioning. The construction of brand image should be closely combined with the image of a library collection, which can not only give full play to the characteristics of a public library but also further promote the process of brand image construction.

Epperson et al. (2017) believe that public libraries need clear characteristics, that is, clear brand positioning, which can better attract users, provide users with required services, make users satisfied with their needs, and then form brand loyalty and brand tendency. Yun et al. (2019) believe that the library brand image is fundamentally an image feature existing in the hearts of users, and an expression of users' subjective cognitive feeling and thinking association for the library brand. The rational construction of brand image has a far-reaching impact on the final effect of brand marketing.

Li (1999) introduced the concept of service marketing and conducted marketing research on library services from the aspects of the service product market and service marketing strategy. These studies mainly focus on the marketing concept, marketing strategy, marketing mode analysis, etc. Yang (2003) studied the marketing of library knowledge services in China and proposed a marketing strategy of knowledge services from three aspects: reader satisfaction strategy, service product, and service quality. Tu and Luo (2004)

believed that the main measures of library knowledge service marketing were the big service view of "let users succeed," the total quality management of knowledge service, the expansion of service space, and the development and management of human resources.

Yang et al. (2017) thought that the transfer process of subject knowledge services was the marketing process. They put forward the subject knowledge service marketing strategy of the Big Four deep excavation of the connotation of marketing objects and requirements to lay out the marketing subject to maximize efficiency, upgrade and update the knowledge service products, and make full use of new media rapid transfer of value-added content. Yang et al. (2019) discussed that academic library consortia knowledge service marketing should revolve around the efficiency of knowledge acquisition and the design of knowledge service products. In addition, it should fully account for the power organization marketing main body, realize the knowledge platform and rich media delivery, and focus on the sustainability of marketing activities by opening the document (CASHL) on the knowledge of service marketing, for example.

In summary, there are few studies on micro media and library knowledge service marketing and even fewer studies on library knowledge service marketing from the perspective of micro media. Studies on micro media in China mostly regard it as a new media development background, focusing on its application and promoting effect in a certain aspect (such as reading promotion), while the research topic of library knowledge service marketing mainly focuses on the content and strategy of library knowledge service marketing. This paper analyzes the current situation of knowledge service marketing of Chinese university libraries from the perspective of micro media and conducts strategic research.

Therefore, this paper proposes the following hypotheses:

H1: Microblogs and WeChat have been widely used in the marketing and promotion of knowledge services in university libraries because of their simple installation and low maintenance cost.

- H2: *The higher the popularity of a university, the more people pay attention to its library’s micro media.*
- H3: *The greater the number of articles pushed by micro media in university libraries, the higher the update frequency and the more people are concerned.*
- H4: *University library microblogs and platform message feedback timeliness are positively correlated with the number of people who pay attention.*
- H5: *The launch of microfilms by university libraries will help them build up a brand image and increase the attention of users.*
- H6: *In the market economy environment, university library staff generally have an awareness of marketing promotion and related knowledge.*
- H7: *University libraries have generally opened the “knowledge service” column on their official websites, and most of them can refine and classify their services, provide personalized services, and market and promote knowledge services through micro media to improve users’ use viscosity and attention.*

2. METHODOLOGY

This study is to construct the dynamic model of micro media marketing of knowledge services in university libraries based on the 4I principle of network-integrated marketing and the “pyramid” three-dimensional communication model.

2.1. Theoretical basis

This paper applies the 4I principle of network-integrated marketing, which are: (1) the principle of interesting methods is to attract consumers in interesting ways or contents; (2) the principle of interests is indeed based on material interests. In addition, it also includes meeting consumers’ information, psychological and other needs; (3) the principle of interaction is based on the interactivity of the network to attract consumers to participate in the process of product production or marketing, and their user experience can be fed back; (4) the principle of an individual is to carry out personalized marketing according to the characteristics that different consumers have different characteristics. The application of the 4I principle in libraries will have an important impact on knowledge services. The knowledge services taking the network as the main battlefield of marketing is affected by the 4I principle and presents new characteristics in the micro media environment, as shown in Figure 1.

Source: Don Schultz et al. (2014).

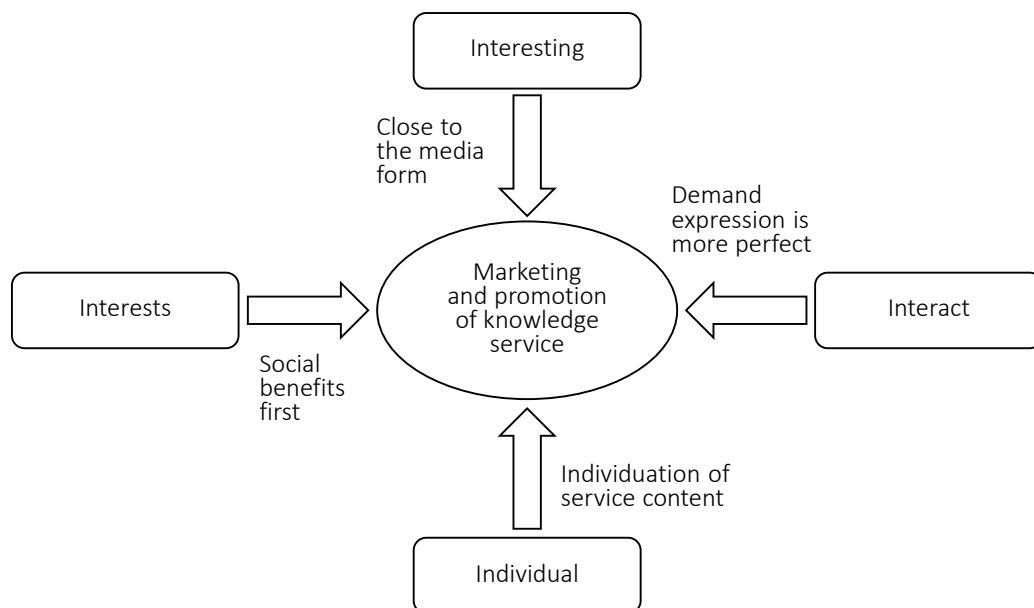
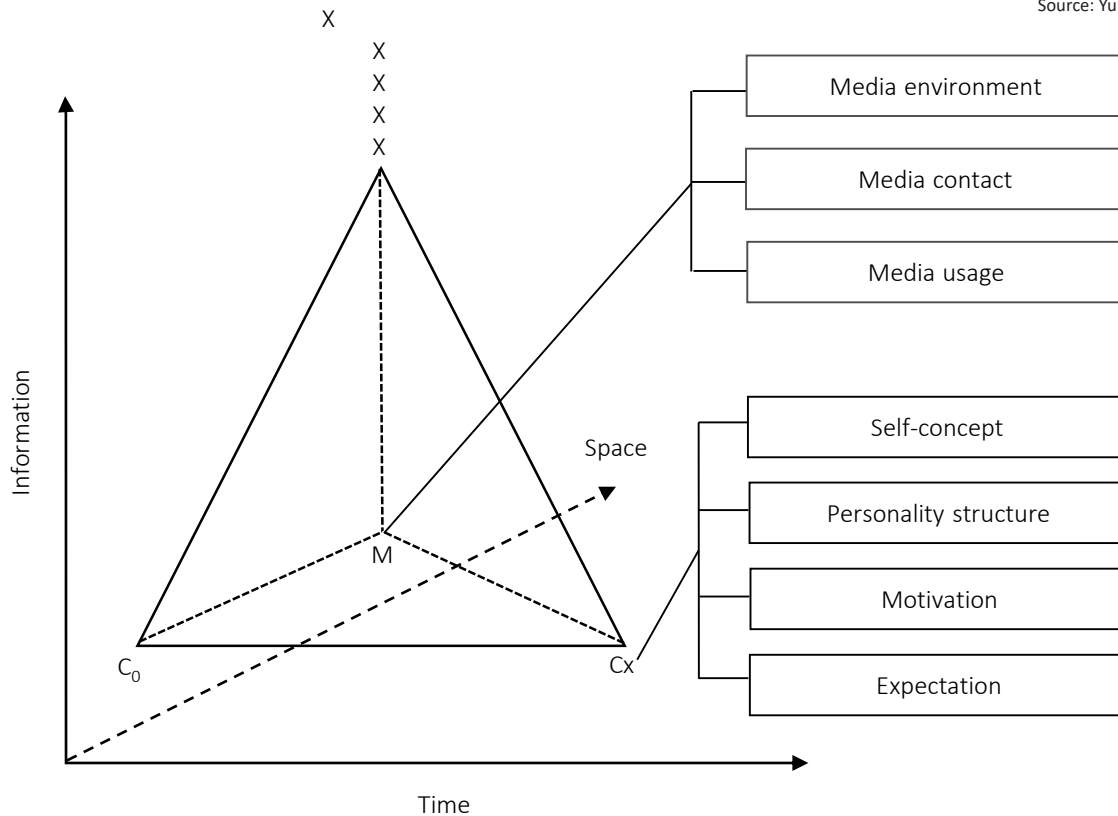


Figure 1. The influence of 4I principle on the marketing of knowledge services in university library from the perspective of micro media

Source: Yu (2015).



Note: M – medium, C – knowledge participant, X – knowledge.

Figure 2. “Pyramid” three-dimensional transmission mode

The “pyramid” three-dimensional communication model was proposed by Yu (2015). This model is different from the linear knowledge communication model. It takes into account that in the new media environment, knowledge communication is no longer a one-to-many communication from knowledge authority publisher to knowledge receiver, but a three-dimensional communication that everyone can participate. At the same time, it also has the interactivity of feedback mode, and on the premise, that time and space are no longer restrictive factors. This communication model has become a symbol of openness. Moreover, the control in the process of knowledge dissemination is also contained in the whole media environment. Whether for the participants of knowledge dissemination or the media itself, the communication rules are contained in it. “Pyramid” three-dimensional communication mode, which shows that the media environment is not limited by time and space, the actors participating in knowledge communication are communicators, the receivers are weakened in this communication mode, and the obvious boundaries of the traditional media

era have been broken between knowledge participants. More importantly, what the “pyramid” three-dimensional communication model reveals is that it is completely possible to achieve equality among all new media users and jointly achieve the purpose of knowledge sharing (Figure 2).

2.2. Dynamic model of knowledge services marketing promotion in university libraries from the perspective of micro media

Based on the perspective of micro media, this paper introduces the 4I principle of network marketing and the “pyramid” three-dimensional communication mode into the field of the library. It also determines WeChat marketing, microblog marketing, and microfilm marketing as the research objects of university library knowledge service marketing promotion mode, and constructs the power model of university library knowledge service marketing promotion from the perspective of micro media (Figure 3).

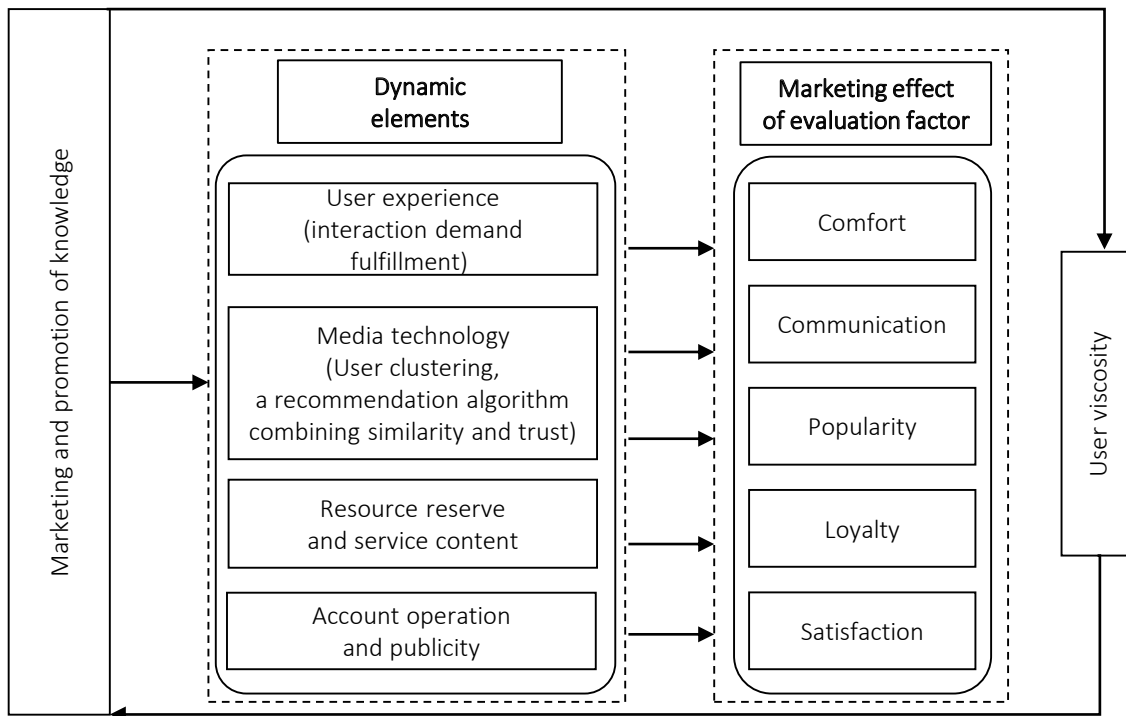


Figure 3. Dynamic model of marketing promotion of knowledge services in university libraries from the perspective of micro media

According to the dynamic model, the success of micro-media marketing of knowledge services in university libraries depends on five dynamic elements: user experience, media technology, resource reserve, service content and operation, and publicity. These five dynamic elements affect the induction and summary of the micro media marketing promotion strategy of knowledge services in a university library. Choosing comfort, communication, popularity, loyalty, and satisfaction as the evaluation factors of knowledge service marketing can guide the analysis of the current situation of “double first-class” micro media marketing promotion of knowledge services in the university libraries. When it comes to user experience, the first thing people think of is user satisfaction with knowledge service. Still, comfort covers the psychological evaluation and emotional tendency of users in the process of knowledge services in addition to pleasure. Therefore, comfort explains the connotation of user experience more comprehensively. Media technology determines the dissemination and popularity of knowledge service marketing. Resource reserve and service content affect user loyalty to library knowledge services. Using micro media for knowledge service market-

ing involves whether users are satisfied with the operation and publicity. The dynamic marketing factor of the model determines the marketing effect evaluation factor, and the marketing effect evaluation factor determines the viscosity of users to the knowledge services of a university library. Only when the user viscosity is high and stable, the micro media marketing promotion of knowledge services in a university library is successful. On the contrary, the success of promoting knowledge service marketing in university libraries will also enhance user viscosity. The two are a process of mutual influence and publicity.

2.3. Investigation process

Based on the dynamic model of knowledge service marketing promotion of university libraries from the perspective of micro media, this paper selects the methods, objects, and contents.

“Double first-class” colleges and universities play an exemplary and leading role in optimizing the curriculum system and teaching content, discipline development and evaluation, talent training and innovation ability training, and promoting

the reform of higher education teaching methods and means. The research object is determined as the 42 “double first-class” university library, which has certain forerunners and references.

This online survey includes four aspects. First is to search the user named “University Library” through Sina microblog, identify and follow the official microblogs of “double first-class” university libraries, and then survey the number of posts, the number of fans (i.e., attention), and the number of knowledge service posts on their official microblogs. Second, the paper searched the official public account and subscription account named “University Library” through WeChat, followed the WeChat public account corresponding to the list of “double first-class” universities, and investigated the frequency of sending articles and the frequency and content of knowledge service articles. Third, through website search, information push, literature research, and official website research, the study determines whether “double first-class” universities have carried out marketing promotion of knowledge services through microfilm. Fourth, through browsing and studying the websites of 42 “double first-class” university libraries one by one, it was determined whether there is a knowledge service column on the homepage of their websites (that is, whether to promote their knowledge services through the website). If yes, whether the location is eye-catching and what knowledge service content is advertised. In the process of this survey, any uncertain situations were solved through online interviews such as WeChat service number consultation and microblog consultation. All data in this paper are from January 1, 2020, to December 31, 2020, and the survey period is up to January 10, 2021.

3. RESULTS

Through in-depth research on the marketing and promotion of the knowledge services of a “double first-class” university library and statistical data, a questionnaire on the marketing and promotion of the knowledge services of a “double first-class” university library was obtained (Table 1).

Forty-two “double first-class” universities in China, in addition to seven university libraries, have no microblog accounts. Three university libraries only

have personal microblog accounts. The other 32 university libraries have Sina official verified microblog accounts. The “double first-class” university libraries account for 83.3% of microblog accounts, while the official microblog accounts of university libraries account for 76%. Tsinghua University Library, Wuhan University Library, Peking University Library, Xiamen University Library, Fudan University Library, Sichuan University Library, and Chongqing University Library rank as the top seven among the “double first-class” university libraries in terms of microblog attention. They are followed by more than 18,000 people. The libraries of Harbin Institute of Technology, Beijing Normal University, Northeastern University, South China University of Technology, Central South University, Huazhong University of Science and Technology, and Tianjin University ranked in the bottom seven (Figure 4).

The top seven university libraries are Tongji University Library, Sichuan University Library, Tsinghua University Library, Wuhan University Library, Chongqing University Library, Peking University Library, and Xiamen University Library, which all send more than 2,900 articles. The libraries in the bottom seven are the library of Beijing Institute of Technology, the library of Beijing Normal University, the library of Tianjin University, the library of Northwest A&F University, the library of Central South University, the library of University of Science and Technology of China, and the library of Huazhong University of Science and Technology. Tongji University Library, Tsinghua University Library, and Peking University Library ranked top three among the top seven university libraries in the amount of publishing knowledge services, respectively (Figure 5). In terms of the timeliness of microblog message consultation and feedback, among the 35 university libraries, 6 (17.1%), 12 (28.57%), 18 (51.43%) and 21 (60%) university libraries replied within 1 day, 3 days, 7 days and 30 days respectively.

Among the 42 “double first-class” universities, 41 universities have set up their own WeChat public accounts to push library information to users from time to time. Only the China Agricultural University library has not set up its own WeChat public account. According to the investigation and research on public accounts, the knowledge service marketing promotion of the Peking University library takes first place in the “double first-class” university library,

Table 1. Marketing and promotion of knowledge services of “double first-class” university library

Universities	Microblog				WeChat		Microfilm	Library website	
	Attention (person)	Speed of consultation and feedback (day)	Microblog number	Knowledge service microblog number	Knowledge service push frequency	Speed of consultation and feedback (day)	Have you used microfilms for knowledge service marketing?	Is there a knowledge service column?	Is the location eye-catching?
Beijing University of Aeronautics and Astronautics	6537	7	1072	120+	At least once a week	7	No	Yes	Yes
Beijing Institute of Technology	2107	–	221	90–	Average once half a year	–	No	Yes	Yes
Beijing Normal University	406	–	138	120–	Average once every two to three days	–	No	Yes	Yes
Central South University	199	–	2	0	At least once a month	–	No	Yes	Yes
Chongqing University	21000	1	3656	1020+	At least once to twice a week	1	No	Yes	Yes
China Agricultural University	–	–	–	–	–	–	No	Yes	Yes
Dalian University of Technology	2039	–	732	120–	Average once every week	7	No	Yes	Yes
East China Normal University	17000	3	1959	860–	At least once a week	7	No	Yes	Yes
Fudan University	28000	3	2542	1160+	Average once to twice two weeks	1	No	Yes	Yes
Huazhong University of Science and Technology	65	–	0	0	Average twice a week	–	No	Yes	Yes
Hunan University	4564	–	2268	230–	About once two weeks	7	No	Yes	Yes
Harbin Institute of Technology	1065	–	256	120–	Average once two weeks	–	No	Yes	Yes
Jilin University	3894	–	2154	820–	Average once every week	–	No	Yes	Yes
Lanzhou University	6256	7	2764	520+	Average twice a week	7	Yes	Yes	Yes
Minzu University of China	–	–	–	–	Average once every three weeks	–	No	No	No
Nankai University	5634	7	1298	530–	Average twice every week	1	No	Yes	Yes
Nanjing University	16000	3	1789	600–	About once two to three weeks	3	No	Yes	Yes
Northwestern Polytechnical University	3924	–	321	60–	Average once a week	–	No	Yes	Yes
National University of Defense Technology	–	–	–	–	At least once a week	–	No	Yes	Yes
Northwest A&F University	2108	–	43	10–	Average once a week	–	No	Yes	Yes
Northeastern University	369	–	297	100–	At least once a week	–	No	Yes	Yes
Ocean University of China	–	–	–	–	Average once a week	–	No	Yes	Yes

Table 1 (cont.). Marketing and promotion of knowledge services of “double first-class” university library

Universities	Microblog				WeChat		Microfilm	Library website	
	Attention (person)	Speed of consultation and feedback (day)	Microblog number	Knowledge service microblog number	Knowledge service push frequency	Speed of consultation and feedback (day)	Have you used microfilms for knowledge service marketing?	Is there a knowledge service column?	Is the location eye-catching?
Peking University	More than 37000	1	3378	1100+	Four times a week	1	Yes	Yes	Yes
Renmin University of China	12000	7	814	100+	Average two times a week	7	No	Yes	Yes
Shanghai Jiao Tong University	9076	3	2741	1020–	Once a week	3	No	Yes	Yes
Southeast University	9461	3	2569	1030–	Average twice a week	3	No	Yes	Yes
Shandong university	2943	–	986	210+	About once a week	7	No	Yes	Yes
Sun yat–sen University	4406	30	1362	110+	At least once a week	7	No	Yes	Yes
South China University of Technology	266	–	247	12–	At least twice a week	–	No	Yes	Yes
Sichuan University	25000	1	9635	1020+	Average once two to three weeks	1	No	Yes	Yes
Tsinghua University	55000	1	7064	1530+	Two or three times a week	1	Yes	Yes	Yes
Tianjin University	17	–	73	12–	Average once every week	–	No	Yes	Yes
Tongji University	19000	3	12528	5050+	Average twice one week	3	No	Yes	Yes
University of Electronic Science and Technology of China	–	–	–	–	At least once a week	–	Yes	Yes	Yes
University of Science and Technology of China	3387	30	0	0	Average once to twice a week	–	No	Yes	Yes
Wuhan University	36000	1	5548	1030+	Average twice to three times a week	1	No	Yes	Yes
Xiamen University	30000	7	2986	1010+	Average once three weeks	–	No	Yes	Yes
Xi’an Jiaotong University	9364	1	543	100–	Average once a month	7	No	Yes	Yes
Xinjiang University	–	–	–	–	Average once a month	–	No	Yes	Yes
Yunnan University	–	–	–	–	Average once two to three weeks	–	No	Yes	Yes
Zhengzhou University	More than 12000	7	2280	330–	About once a month	7	No	Yes	Yes
Zhejiang University	3599	30	1067	220+	At least twice a week	–	No	Yes	Yes

Note: The statistical period of consulting messages on microblog and WeChat platforms is 30 days.

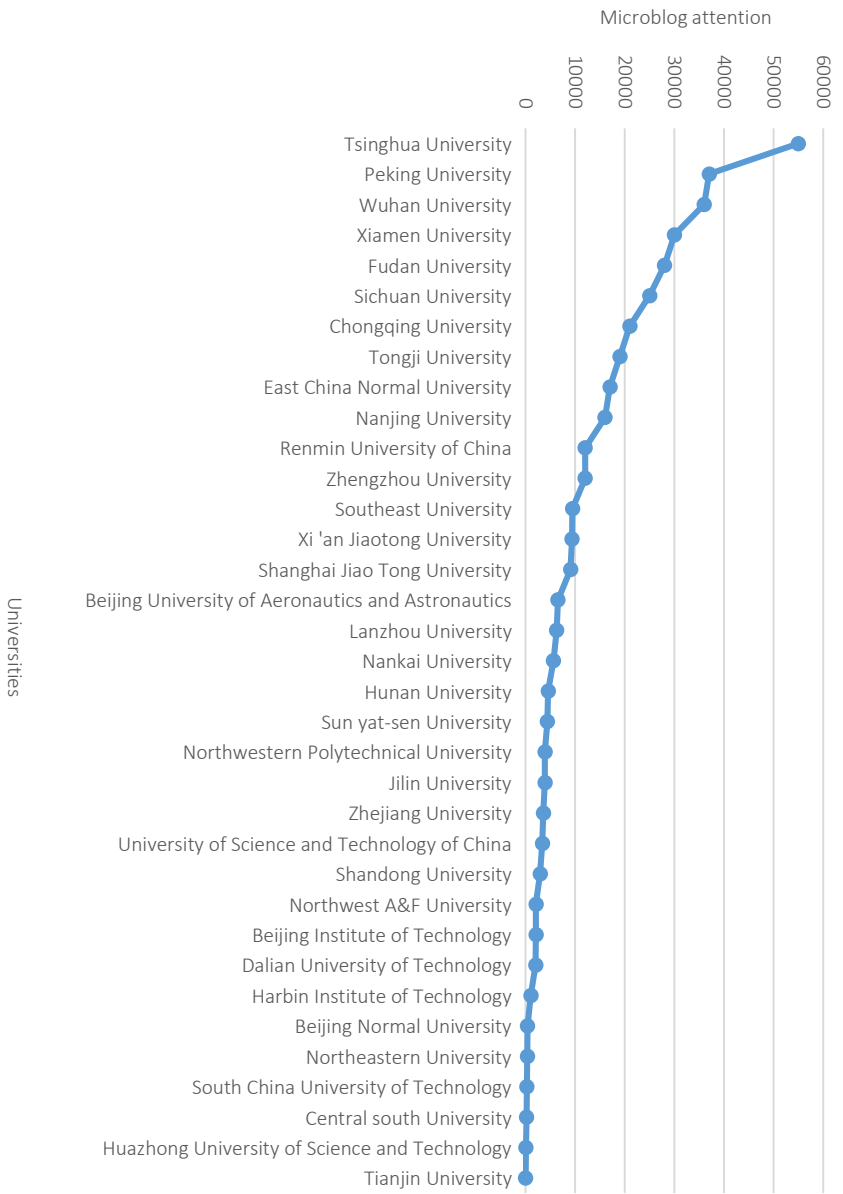


Figure 4. Microblog attention ranking of thirty-five “double first-class” university libraries

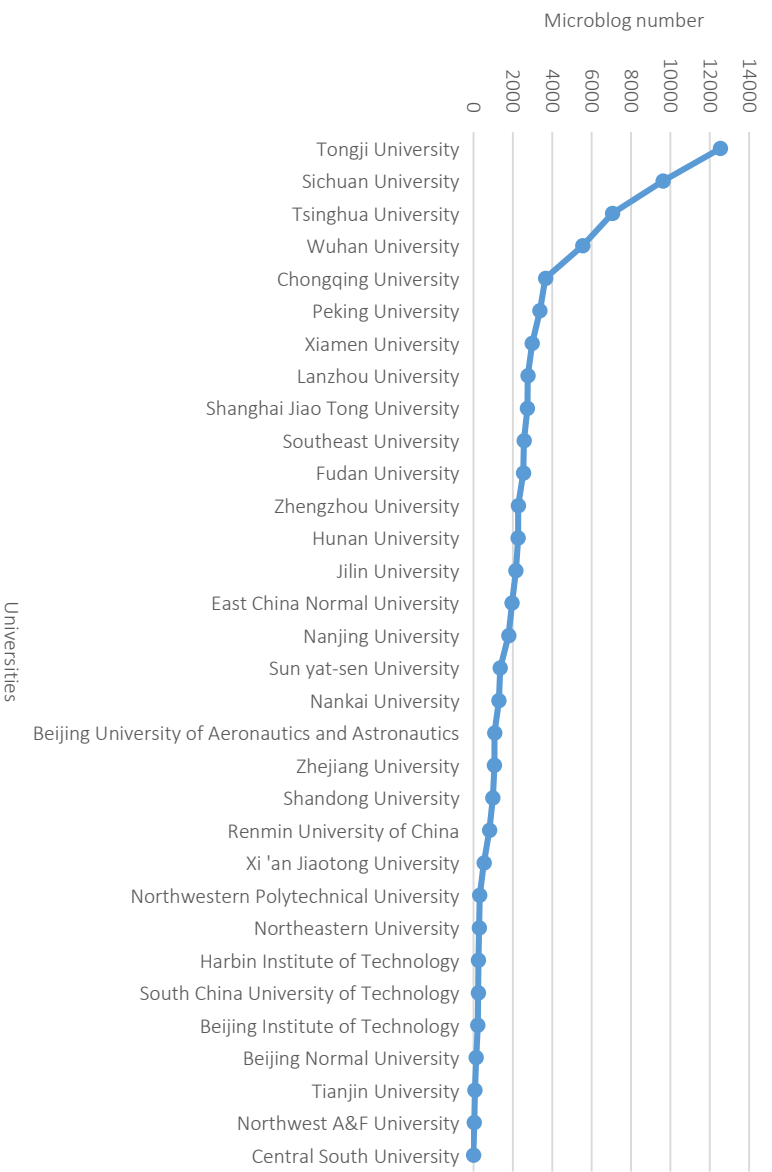


Figure 5. Number of microblog posts issued by thirty-five “double first-class” university libraries

Table 2. Statistics of visitors of “love library” microfilm

Content	Youku (Video website)	iQIYI (Video website)	The microblogging forwarding	Microblog comments	Library bulletin access statistics
Microfilm	184078	20049	894	344	14241
Total	219606				
Average	7320 views/day				

with a frequency of at least four times a week, followed by the Tsinghua University Library. In terms of the timeliness of WeChat message consultation and feedback, among the 41 university libraries, 7 (17.07%), 11 (26.83%), 21 (51.22%) and 21 (51.22%) libraries replied within 1 day, 3 days, 7 days and 30 days respectively.

Through a network search and website search, it was found that only the Peking University Library, Tsinghua University Library, Lanzhou University Library, and the library of the University of Electronic Science and Technology of China officially released a series of short videos. However, Beijing Normal University, Zhejiang University, Xiamen University Library, and Southeast University Library publicize library knowledge services employing promotion. An example is the creative short film “The Journey of the Gray Wolf Library” of Zhejiang University Library, which vividly presents the library’s knowledge services, such as patent consultation, science and technology update, checkout and reference searches to users through humorous sketches.

Tsinghua University’s “falling in love with the library” series is composed of a trailer and five official short films. The trailer mainly introduces the old library and Shaw Hall of Tsinghua University Library. Each of the latter five chapters contains a complete library service theme, including knowledge service contents such as information retrieval and knowledge space service. This series of short videos won first place in the 10th IFLA International Marketing Award. In addition, according to the data of the number of visits to the microfilm of “Falling in Love with the Library” (Table 2), the microfilm marketing

of Tsinghua University Library has realized the purpose of knowledge service marketing and achieved impressive results.

In 42 “double first-class” universities, except the Central University for Nationalities Library (which does not list open knowledge services in the “services” column), the university library website column contains “subject service” (or “subject librarian”) and science and technology novelty search, such as knowledge service, and puts it on the website in more eye-catching ways to facilitate the location of the query. To study the specific content of knowledge services in colleges and universities, the study investigated the specific knowledge services of marketing and promotion of the websites of 42 “double first-class” university libraries, and the results are shown in Table 3.

The survey shows that 42 “double first-class” university libraries have carried out publicity and promotion of knowledge literacy education (including information retrieval training lectures, etc.) and knowledge service content of science and technology searches. In addition, libraries of 15 “double first-class” universities, including Peking University, China Agricultural University, Nankai University, Tongji University, Shanghai Jiaotong University, Dalian University of Technology, Ocean University of China, Xi’an Jiaotong University, and Chongqing University, have set up a special column on “intellectual property information services.” The libraries of Beijing Institute of Technology, Tianjin University, Tongji University, Zhejiang University, Huazhong University of Science and Technology, Lanzhou

Table 3. Marketing and promotion of knowledge service content of “double first-class” university library website

Content	Knowledge literacy education	Subject service	Intellectual property information services	Intelligence analysis and research services	Science and technology novelty search	Knowledge space service
The number of universities	42	42	16	9	42	38
Proportion (%)	100	100	38	21.4	100	90.5

University, and Zhengzhou University provide detailed and targeted knowledge services such as “information analysis and research service.”

4. DISCUSSION

Based on the 4I principle of network-integrated marketing, the “pyramid” three-dimensional communication model, and the network research results of the university library knowledge service marketing promotion power model, this paper discusses and verifies the hypotheses.

Considering *H1*, microblogs and WeChat are widely used in the marketing and promotion of knowledge services in university libraries, which is consistent with the theoretical hypothesis. Therefore, *H1* is accepted. In the survey, among the 42 “double first-class” universities in China, seven have not opened accounts, three are personal accounts, the remaining 32 university libraries have microblog accounts officially certified by Sina, and 42 university libraries have microblogs, accounting for approximately 83%. Of the 42 “double first-class” universities, one university built its version of a library WeChat account, and one did not establish its own official WeChat account. This shows that the university library has realized that the number of users of media technology (microblogs and WeChat) in the dynamic elements is large, and the installation and maintenance costs are low. It is a better platform for the marketing and promotion of knowledge services.

Considering *H2*, the number of people who pay attention to micro media in the library does not increase with the higher popularity of the university. The survey results show that Zhejiang University and Shanghai Jiao Tong University, the top five universities in China, have only 3,599 and 9,076 microblog followers, which is inconsistent with their high popularity. This is not consistent with the theoretical hypothesis, which is rejected.

Considering *H3*, the earlier the university library opens microblogs and WeChat, and the higher the number and frequency of knowledge service articles, the easier it is to attract more users’ attention, which is consistent with the theoretical hypothesis. Therefore, *H3* is accepted. The top seven university libraries in terms of microblog volume have more than 2,900

blogs. Among them, six libraries also rank among the top seven in terms of microblog attention, and all of them have more than 18,000 persons. The reason is that a sufficient number of articles can give users more novel and rich content, and a higher publishing frequency can ensure the timeliness of the content to maintain stickiness to existing users and attract new users. It shows that the rich resource reserve and service content in the dynamic elements can improve user loyalty and satisfaction, and then increase the degree of communication.

Considering *H4*, the faster the feedback response of colleges and universities to users’ message consultation on microblogs and WeChat, the easier it is to attract and keep users, which is consistent with the theoretical hypothesis. Therefore, *H4* is accepted. In the analysis on the timeliness of consultation and feedback, the number of university libraries that replied by microblogs or WeChat within one day highly correlated with the number of people concerned by microblogs of university libraries. The speed of feedback consultation is closely related to the attention of university libraries to “micro media” but is also reflected in the number of documents and service awareness. It shows that a good user experience in dynamic elements can increase user comfort and loyalty.

Considering *H5*, the launch of microfilms makes it easier to establish the brand image of a university library, which is consistent with the theoretical hypothesis. Therefore, *H5* is accepted. The production of micro videos is difficult and costly. It is found that only 4 of the 42 university libraries produce microfilms, and only 3 of them upload to the commercial broadcasting platform. However, its influence and scope cannot be ignored. Taking the series of microfilms shot by Tsinghua University Library as an example, it won first place in the 10th IFLA International Marketing Award. The average daily broadcast volume of the microfilm series is up to 7,320 people, which played a significant role in promoting the popularity of Tsinghua University Library.

Considering *H6*, the marketing awareness and concept of knowledge services of university librarians cannot be obtained through network research. According to Zheng (2009), who empirically surveyed 30 university libraries, only 23.3% of librarians have a correct understanding of library marketing or

realize that library marketing is the most fantastic way to introduce marketing ideas to achieve library service benefits. This shows that the knowledge service marketing consciousness of university librarians is not high as a whole. Based on the above relevant literature, the result is not consistent with the theoretical hypothesis. Therefore, *H6* is rejected.

Considering *H7*, university libraries have generally opened a column of “knowledge service” on their website home page and refined the service, which is consistent with the theoretical hypothesis. Therefore, *H7* is accepted. Forty-two “double first-class” uni-

versity libraries have publicized and promoted their knowledge literacy education (including training lectures on information retrieval) and knowledge service content of scientific and technological novelty search. Among them, 7 university libraries have opened up more detailed and targeted knowledge services such as “information analysis and research service.” In the more mature website service than “micro media”, university libraries have established a relatively perfect knowledge service marketing system. This shows that most colleges and universities can do a good job in the marketing and promotion of knowledge services through micro media.

CONCLUSION

With the deepening of analysis on library marketing, the theoretical system of library marketing has been formed. In contrast, this study mainly makes a network investigation and analysis on the application of micro media in the marketing and promotion of knowledge services in university libraries. At present, the study shows that micro media does not occupy a dominant position in the knowledge service marketing of Chinese university libraries, and users’ viscosity of micro media is not high in the service process. The frequency of news and article updates and push of microblog and WeChat knowledge services in university libraries is low. The reply to consultation messages is not timely, which affects the comfort and satisfaction of users in the process of use, and then reduces the loyalty of users. The emergence of this situation will also have a noticeable impact on the dissemination and popularity of university libraries. The case analysis shows that microfilms have a noticeable effect on improving the brand and popularity of university libraries. Still, it has not been widely valued by university libraries because of its significant difficulty. Therefore, university libraries should enhance the awareness of marketing management and later maintenance of micro media, and improve user experience by improving the librarians’ marketing awareness, excavating users’ needs, and innovating service methods. There are some limitations in this study, which should be solved in future research. Only 42 university libraries were selected in this network survey, and a more significant number of university libraries or public libraries can be included in the study in the future. The network survey method was the only method adopted, which should be further combined with a field survey in subsequent studies.

AUTHOR CONTRIBUTIONS

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