
AI translation · View original & related papers at
chinaxiv.org/items/chinaxiv-202304.00494

New Media Operations and Evaluation of Double First-Class University Libraries—A WCI-Based Empirical Study of WeChat Reading Promotion (Postprint)

Authors: Zhang Wei, Chen Jing, Huang Shiqing, Dong Ying, Zhang Lin

Date: 2023-04-01T16:02:55+00:00

Abstract

[Purpose/Significance] To evaluate the actual effectiveness of university libraries' utilization of WeChat official accounts for marketing and reading promotion in the new media environment, and to comprehensively reflect the influence of university library WeChat marketing and communication.

[Method/Process] By employing the WeChat Communication Index (WCI) statistical analysis method from webometrics, selecting 36 representative domestic “Double First-Class” Category A universities as research subjects, constructing a performance evaluation model for university library new media operations, and analyzing the current status and existing problems based on comprehensive influence ranking results.

[Results/Conclusion] Based on the analysis results, this study proposes countermeasures and suggestions such as strengthening promotion through online-offline integration, creating high-quality content and providing personalized services, enhancing interactive functions and multi-element integration, to provide reference for the comprehensive improvement of university library new media operation capabilities.

Full Text

Preamble

New Media Operation and Evaluation of “Double First-Class” University Libraries: An Empirical Study of WeChat Reading Promotion Based on WCI

Zhang Wei¹, Chen Jing², Huang Shiqing³, Dong Ying², Zhang Lin²

¹School of Literature and Law, Northeast Forestry University, Harbin 150040

²Library, Harbin Normal University, Harbin 150025

³Institute of Media, Harbin Normal University, Harbin 150080

Abstract: [Purpose/Significance] This study evaluates the actual effectiveness of university libraries' use of WeChat official accounts for marketing and reading promotion in the new media environment, providing a comprehensive reflection of the influence of university libraries' WeChat marketing and communication. [Method/Process] Using the WeChat Communication Index (WCI) statistical analysis method from webometrics, this research selects 36 representative "Double First-Class" Category A universities in China as study objects to construct a performance evaluation model for university library new media operations. Current status and existing problems are analyzed based on comprehensive influence rankings. [Result/Conclusion] Based on the analysis results, this paper proposes countermeasures and suggestions including strengthening promotion through online-offline integration, creating high-quality content with personalized services, and enhancing interactive functions with multi-element integration, providing references for the comprehensive improvement of university library new media operation capabilities.

Keywords: WeChat Operation; Performance Evaluation; WCI; WeChat Reading Promotion

Classification Number: G258.6

DOI: 10.13266/j.issn.0252-3116.2021.18.005

Introduction

The 47th "China Statistical Report on Internet Development" released by CNNIC shows that as of December 2020, China's internet user population reached 989 million, with an internet penetration rate of 70.4%, representing a 5.9 percentage point increase from March 2020. Mobile internet users in China totaled 986 million, accounting for 99.7% of all internet users [1]. The "2019 WeChat Annual Data Report" indicates that WeChat's monthly active accounts exceeded 1.1 billion in 2019 [2]. Since its official launch in August 2012, the WeChat public platform has gained favor among an increasing number of organizations and departments through its one-to-one and one-to-many communication methods and powerful service functions, which are now being utilized to deliver services.

As an essential component of teaching and research support, university libraries have also embraced this trend. The emergence of the WeChat public platform has brought significant changes to university library service models, with WeChat becoming a new media platform for libraries to interact with readers and promote reading. Since WeChat has become one of the important methods for library publicity, marketing, and reading promotion, Xiamen University Library, in collaboration with "Qingbo Index," began publishing library WeChat

official account influence rankings in *Library Gazette* in December 2014, drawing industry attention. Domestic scholars have started to focus on research regarding WeChat service applications and operational performance evaluation in libraries.

Current research primarily includes three aspects: First, qualitative studies on WeChat service function settings and service levels. Guo Chunxia and Li Shiqi investigated provincial public library WeChat platforms and found significant variations in service function configurations, uneven service quality, and underutilization of interactive communication functions [3]. Liu Gang, based on surveys of public library service status, proposed strategies for public libraries to improve and expand service content using WeChat platforms [4]. Second, quantitative evaluation of library WeChat operational performance. Zhou Haichen et al., taking “985 Project” universities as research objects, used Python crawler programs to collect 推文 (article) data from 36 universities, conducted statistical comparisons of content types and distributions, and proposed measures to enhance WeChat service effectiveness, including balanced allocation, maintaining user stickiness, leveraging indices, reasonable evaluation, system construction, clear standards, original content prioritization, and reposting popular articles [5-6]. Third, combined qualitative and quantitative research on reading promotion effectiveness across various library types. Wan Muchen and Ou Liang used WCI to conduct quantitative analysis and research on university library reading promotion effectiveness, proposing improvements through enhanced platform publicity, attention to reader needs, information quality assurance, and clear service priorities [7]. Cai Liping conducted categorical investigations on the launch and information push status of domestic provincial public library WeChat platforms, evaluating public library WeChat reading promotion effectiveness and existing problems based on WCI [8]. Jiang Ling, from the perspective of specialized art disciplines, manually screened and categorized information content from art academy library WeChat reading promotion, combining WCI to propose strategies emphasizing readability, interest, and interactivity [9].

Overall, existing literature primarily focuses on surveys of WeChat service effectiveness and methods, emphasizing measurement of reading promotion service effects, but lacks systematic research on the WeChat operational performance of “Double First-Class” construction universities. Based on the WCI from the “Qingbo Index” new media platform, this paper selects 36 domestic “Double First-Class” Category A universities for network investigation and analysis, conducting comparative and empirical research on university library new media operational performance. The study evaluates operational performance from four dimensions—overall communication power, average article communication power, headline communication power, and peak communication power—and proposes reasonable suggestions based on identified problems.

2. Data Sources and Processing

2.1 Data Sources and Collection

According to the “Double First-Class” construction Category A university list published by the Ministry of Education, all 36 universities have opened WeChat official accounts upon our 检索 (search). Specific data sources and collection processes include three main steps: (1) Direct access through the WeChat mobile client to browse subscription and service accounts of “Double First-Class” university libraries, investigating and categorizing pushed information columns and types. (2) Data collection from the “Qingbo Index” platform, a authoritative big data release platform and public opinion provider for “two micros and one terminal” that archives 推送 (push) articles, daily updated article read counts, and like counts for most WeChat official accounts. (3) Using the SocSciBot crawler tool to extract 推文 (article) link addresses within the scope of university library WeChat official account IDs, including text, titles, read counts, like counts, and timestamps for all links, storing text data in .txt format.

2.2 Data Processing

VBA programming was used for data deduplication, cleaning, and classification. Except for a small number of URLs that could not be accessed due to deletion by publishers or copyright and sensitive content issues, the final dataset comprised 16,778 records after processing. The data collection period spanned from July 1, 2018, to June 30, 2019. During the data analysis phase, extracted indicators included 推文量 (article volume), total read count, average read count per article, headline read count, average headline read count, maximum read count, total “like” count, average daily “like” count, average “like” count per article, headline “like” count, average headline “like” count, and maximum “like” count—14 indicators in total.

2.3 WCI Index Calculation Method

Currently, WCI index serves as a reasonable, comprehensive, and scientific evaluation metric for WeChat official account operation effectiveness. However, WCI and indicators like article volume and total read count may not apply to libraries with fewer but higher-quality posts, requiring qualitative indicators like article quality in specific evaluations. This study focuses on “Double First-Class” universities, designing the calculation formula with first-level and second-level indicators and corresponding weights. The WCI 13.0 formula’s first-level indicators are divided into overall communication power (30%), average article communication power (30%), headline communication power (30%), and peak communication power (10%). Second-level indicators primarily reflect read counts and “like” counts within each first-level indicator, as shown in Table 1.

Table 1 WCI V13.0 Calculation Formula

First-Level Indicator & Weight	Secondary Weight (%)	Standardized Score
Overall Communication Power O (30%)	Daily average read count R/d (85%)	$O = 85\% \cdot \ln(R/d+1) + 15\% \cdot \ln(10 \cdot Z/d+1)$
Average Article Communication Power A (30%)	Daily average “like” count Z/d (15%) Average read count per article R/n (85%)	$A = 85\% \cdot \ln(R/n+1) + 15\% \cdot \ln(10 \cdot Z/n+1)$
Headline Communication Power H (30%)	Average “like” count per article Z/n (15%) Headline (daily average) read count Rt/d (85%)	$H = 85\% \cdot \ln(Rt/d+1) + 15\% \cdot \ln(10 \cdot Zt/d+1)$
Peak Communication Power P (10%)	Headline (daily average) “like” count Zt/d (15%) Maximum read count R_{max} (85%)	$P = 85\% \cdot \ln(R_{max}+1) + 15\% \cdot \ln(10 \cdot Z_{max}+1)$
	Maximum “like” count Z_{max} (15%)	

Note: Data in Table 1 sourced from Qingbo Index website: <http://gtyalkedsjnmygtd.gstai.com/site/index>

3. Performance Comparison and Analysis of Double First-Class Universities

3.1 Overall Performance Analysis

Based on the WCI first-level and second-level indicator system, this study comprehensively used indicator data provided by the “Qingbo Index” platform, combined with web crawler tools, to collect and process data from 36 “Double First-Class” university library WeChat official accounts. The overall 推文 (article) performance and WCI index performance of each university library are shown in Table 2 .

Table 2 Statistics of WeChat Push Information from 36 Double First-Class Category A University Libraries

Rank	Library Name	Articles	Total Reads	Avg Reads/Article	Headline Reads	Max Total Reads	Avg Daily "Likes"	Max Daily "Likes"	Avg "Likes"/Article	Headline "Likes"	Max "Likes"	WCI
1	Sichuan University Library	66	75,685	420.5	706.9	250,620	10,973	392.4	1,602	8.9	5.4	2,743
2	Peking University Library	233	72,662	403.7	678.8	241,534	7,272	341.9	1,566	8.7	5.2	2,686
3	Dalian University of Technology Library	68	70,676	392.6	660.8	235,696	3,206	309.4	1,620	5.4	2,772	15.4
...
36	South China University of Technology Library	111	28,035	155.8	262.1	106,535	785	191.9	1.9	1,217	6.8	16

Note: China Agricultural University Library is excluded from statistics as it published no articles during the data collection period.

As shown in Table 2, significant disparities exist in WCI indices among “Double First-Class” universities, exhibiting a polarized distribution. The top three are Sichuan University Library (636.94), Peking University Library (603.36), and Dalian University of Technology Library (581.29), while South China University

of Technology Library ranks lowest (107.5). The overall WCI average is 372.22, with over 20 libraries exceeding this average. Notably, higher article volume does not necessarily correlate with higher WCI index. Sichuan University Library, ranking first in WCI, published only 66 articles in the past year, whereas Tianjin University Library, with the highest article volume of 519, ranks relatively low (20th).

Figure 1 [Figure 1: see original paper] illustrates the performance variation across library WeChat platform indicators. Article volume, total read count, average read count per article, and headline read count show polarized and uneven distributions, particularly for article volume where the median shifts toward the lower quartile yet exhibits high-volume outliers. Total “like” counts, average “like” counts per article, and maximum “like” counts are more evenly distributed without significant median bias.

Based on article volume and WCI index differences, university library WeChat operation effectiveness can be categorized into three types: First, comprehensive marketing and promotion users, which demonstrate strong performance in both article volume and WCI indicators, such as Peking University Library, Tsinghua University Library, and Jilin University Library. Second, “few but excellent” 推文 (article) strategies that accumulate WCI index through high-quality content, such as Sichuan University Library, Beihang University Library, Dalian University of Technology Library, and Tongji University Library. Third, “information”-focused approaches that have not yet adopted WeChat as a significant marketing and promotion tool, such as Southeast University Library, Lanzhou University Library, and Beijing Institute of Technology Library.

3.2 Distribution of WeChat Content Types

Through content feature identification of “Double First-Class” university library WeChat posts, messages were categorized into eight types: basic services, information training, reading promotion, thematic exhibitions, expert lectures, original reposts, original graphics and text, and voting activities. Basic services include announcements and news, service guides, and reader services; reading promotion includes new book recommendations, cultural dissemination, graphic appreciation, and reading activity promotion. Statistics show libraries published more articles on original reposts, reader services, information training, and reading promotion, while fewer on thematic exhibitions and expert lectures. In terms of read counts, basic services and reading promotion messages showed higher read volumes, inconsistent with publication volume results. Book recommendation and similar basic service information had the highest volume and read counts (22.92% of total reads), while thematic exhibition information had the lowest read count (2.25%), though thematic exhibitions achieved the highest average reads per article, as shown in Table 3 .

Table 3 Statistics by Content Type

Content Type	Article Count	Total Reads	Avg Reads/Article
Basic Services	High	High	Medium
Reading Promotion	High	High	Medium
Thematic Exhibitions	Low	Low	Highest
Expert Lectures	Low	Medium	Medium
...

3.3 Secondary Indicator Performance Analysis

WCI indicators include overall communication power, average article communication power, headline communication power, and peak communication power. Overall communication power is reflected through daily average read count and daily average “like” count; average article communication power through average read count per article and average “like” count per article; headline communication power through headline read count and headline “like” count; and peak communication power through maximum read count and maximum “like” count.

First, regarding overall communication power, since daily average read count and WCI distribution trends are synergistic, daily average “like” count better reflects inter-library differences. Among the top ten WCI-ranked libraries, Xiamen University Library’s daily average “like” count exceeded 10. Libraries with relatively lower WCI rankings, such as East China Normal University Library and University of Science and Technology of China Library, ranked relatively high in daily average “like” count.

Second, from the perspective of average article communication power, average read count per article more effectively enhances overall WCI ranking, making high-quality 推文 (article) content a crucial pathway to improving university library WeChat official account influence.

Third, headline communication power shows significant variation among university libraries, particularly in headline “like” counts ranging from a maximum of 18.9 to a minimum of 5.9—a threefold difference. This fully reflects content differences among libraries, demonstrating that only comprehensive improvement in both quantity and quality of hot 推文 (articles) can achieve reasonable headline communication power.

Finally, regarding peak communication power, libraries show significant differences in maximum read counts, ranging from tens of thousands to only hundreds. This indicator serves as an objective reflection of WeChat promotion intensity and user base, representing an important operational effectiveness metric. Maximum “like” counts, being more susceptible to statistical timing effects, show dispersed distributions with less significant differences but can reflect user access behavior analysis indicators for each library.

4. Strategies for University Library WeChat Official Account Operation

4.1 Reading Promotion Activities Should Highlight Cultural and Resource Advantages

The investigation reveals significant variations in the breadth and depth of reading promotion activities organized by university libraries that highlight resource and cultural characteristics. Most libraries adopt relatively common and popular formats such as reports, lectures, and exhibitions, lacking cultural distinctiveness in resource recommendations. Some libraries, leveraging their unique resource advantages and cultural heritage, actively develop characteristic reading promotion activities. For example, Tsinghua University Library has for years organized comprehensive searches of its old library collection, identifying over 10,000 valuable signed books from 270,000 holdings. Around these precious books, the library built a signed book database and held exhibitions of rare collection seals, using old library open days, theatrical performances, and report meetings to guide readers toward rare books and classics, fulfilling its cultural education role of inspiring scholarship, promoting culture, and inheriting spirit. Tsinghua's "Learning at Tsinghua · Human Library" activity has been incorporated into the university's "Cultural Quality Education" curriculum, becoming an organic component of undergraduate education [10].

4.2 Emphasize Both "Quality" and "Quantity" of WeChat Content

According to this survey, the main deficiency in "Double First-Class" university libraries' use of WeChat for reading promotion is the overall low average communication power. Among the 35 university libraries surveyed (excluding one with WCI index of 0), the highest WCI was Sichuan University Library (636.94) and the lowest was South China University of Technology Library (107.5), with an average of 380.58—overall lower than public libraries. The "2018 Reading Industry 'Two Micros and One Terminal' Operation Report" published on January 11, 2019, announced the "Reading Industry WeChat TOP20 and Six Major Lists," in which the "Library WeChat Official Account Ranking" included 207 library accounts, with the top ten all being public libraries and university libraries absent from the top ten. Xiamen Library topped the list with a WCI of 741 and over 1,000 articles. Wuhan University Library ranked 11th with a WCI of 588 and only 292 articles. The survey data shows that while some university libraries maintain high article volumes, they have not achieved good promotion results. Since article volume does not significantly correlate with influence, quantitative change does not necessarily lead to qualitative change. Sichuan University Library has achieved a "low input, high return" [6] effect in WeChat official account operation, with its article volume far below the average of "Double First-Class" university libraries, yet its average read count and WCI index rank first.

4.3 Strengthen New Media Operation Publicity and Promotion

The investigation found that some libraries do not prioritize WeChat marketing. While most libraries have opened WeChat official accounts and published reading service messages, some accounts (such as China Agricultural University Library) sent no messages during the data collection period, and WeChat library service functions were unavailable. Libraries with opened accounts have not effectively utilized new media platforms, with room for improvement in publishing frequency, content quality, and user experience. Only a few accounts achieve daily updates, such as Chongqing University Library (WCI=377.53), which pushed information 22 times in nearly six months, totaling 79 articles—averaging one push every 8.2 days with 3.6 articles per push. The survey data reveals that current “Double First-Class” university library WeChat official accounts have relatively low visibility and influence, with room for improvement in reader awareness. As a new media information service platform providing universal reading promotion for readers, public awareness directly relates to the communication and influence capacity of library accounts. University libraries can leverage resource and channel advantages, adopt appropriate forms, fully utilize library collection and information resources, and increase promotion of new media platforms like WeChat through friendly links, search engines, and online-offline activities, using multi-channel traffic attraction to increase followers and enhance new media operation performance.

4.4 Create High-Quality Content and Provide Personalized Services

The “2016 WeChat Influence Report” identifies three factors driving user reading and sharing behaviors: valuable content, interesting content, and emotional resonance. Analysis of high-readership 推文 (articles) from “Double First-Class” universities reveals that reading promotion and reader service posts tend to accumulate read counts. Reviewing recent Sichuan University Library WeChat posts shows that reading promotion and basic service articles achieved high readership—for example, the article “Graduation Season Words | Sichuan University 2019 Outstanding Graduate Showcase” exceeded 10,000 reads with 38 “likes” and 11 comments. Among reading service category posts, “Graduation Bill is Here” achieved the highest read count of 8,374 with 8 “likes” and 9 comments. Among these ten articles, seven (70%) were reading service category posts and three (30%) were other services. Sichuan University Library also combines current media characteristics for reading promotion activities, such as recommending literary couples and their famous love quotes on Valentine’s Day with book call numbers—a practice visible in popular posts from many libraries.

4.5 Enhance Interactive Functions and Multi-Element Integration

University libraries can use big data technology and statistical analysis methods to systematically understand student and faculty reading habits and conduct targeted reading activities, increasing library-reader interaction. Online, libraries should fully utilize fan effects through interactive methods such as prize

quizzes, work solicitation, and reading competitions to increase followers and enhance fan stickiness. For example, Peking University Library conducted a “2018 Peking University Library Closing Music Selection” activity to serve faculty and students and meet their personalized needs, attracting over 10,000 participants and ultimately selecting pieces such as “Mariage d’amour,” “Hometown’s Original Scenery,” and “Going Home,” satisfying readers’ diverse and personalized demands. Harbin Institute of Technology Library’s “Human Library” activity, guided by the principle that “reading thousands of books is 不如 (not as good as) traveling thousands of miles, and traveling thousands of miles is 不如 (not as good as) meeting countless people,” invites monthly “readers” to spread knowledge, share experiences, promote interaction, and facilitate learning exchange as “human books”—representing an important attempt to enhance interactive functions and multi-element integration in university libraries.

4.6 Official Accounts Should Highlight University Libraries’ Educational and Research Support Functions

The 36 “Double First-Class” university libraries surveyed differ significantly from public libraries in positioning, characteristics, and scale. As an important component of the public cultural service system, the “Public Library Manifesto” adopted by IFLA and UNESCO states that public libraries are channels for knowledge seeking, providing basic conditions for lifelong education, free decision-making, and cultural development for individuals and social groups. Public libraries establish different positions based on local residents’ educational backgrounds, economic capabilities, and knowledge structures to serve practical needs. Beyond adhering to public library cultural orientation and social service functions, “Double First-Class” university libraries more prominently feature educational and research support functions. In research assistance, university libraries play roles in resource management, academic archiving, academic achievement dissemination and evaluation, safeguarding academic research diversity and improving academic exchange efficiency. Analysis of university official account content shows that cultural publicity and basic service messages dominate, primarily including reading promotion, expert lectures, exhibition information, and original reposts. The educational and research support function positioning is less reflected in content, suggesting increased 推文 (articles) on technology policies, scientific innovation service support, technology frontier tracking, and discipline analysis services.

References

- [1] The 47th Statistical Report on China’s Internet Development [EB/OL]. [2021-03-10]. <http://www.cnnic.net.cn/hlwfzyj/hlwzxbg/hlwtjbg/202102/P0202102020334633480104.pdf>.
- [2] 2019 WeChat Annual Data Report: 1.01 Billion Users Log in to WeChat Daily [EB/OL]. [2021-03-10]. http://www.xinhuanet.com/zgjx/2019-01/10/c_{137732668}.htm.

- [3] Guo Chunxia, Li Shiqi. Analysis of WeChat Platform Services in Domestic Provincial Public Libraries [J]. *Modern Information*, 2016, 36(4): 128-133.
- [4] Liu Gang. Research on Current Status and Countermeasures of Public Library WeChat Services [J]. *Library Work and Research*, 2016(7): 56-58, 77.
- [5] Wen Bo, Zhou Haichen, Wang Xu. Research on Push Articles from Domestic Provincial Public Library WeChat Official Accounts: Analysis Based on Tableau and WCI [J]. *Library Journal*, 2018, 37(4): 58-65.
- [6] Zhou Haichen, Lu Hejian. Research on WeChat Official Accounts of “985 Project” University Libraries [J]. *Journal of Academic Libraries*, 2017, 35(1): 46-52.
- [7] Wan Muchen, Ou Liang. Empirical Research on University Library Reading Promotion Effectiveness Based on WeChat Official Platform [J]. *Library and Information Service*, 2015, 59(22): 72-78.
- [8] Cai Liping, Kong Dechao. Research on Provincial Public Library WeChat Reading Promotion Based on WCI [J]. *Library Work and Research*, 2016(10): 90-95.
- [9] Jiang Ling. Research on Excellent Cases of WeChat Reading Promotion in Art Academy Libraries [J]. *Library and Information Service*, 2018, 62(23): 78-86.
- [10] Zhang Qiu, Yang Ling, Mao Lijie, et al. Practice Exploration and Development Strategies of Human Library in First-Class University Construction: Taking “Learning at Tsinghua · Human Library” as an Example [J]. *Journal of Library Science*, 2020, 42(3): 85-92.
- [11] Li Shanshan, Gao Yingying, Deng Wenjian. Constructing a Full-Process Reading Promotion Model from the Perspective of “Reading Life Cycle” [J]. *Journal of Academic Libraries*, 2021, 39(1): 110-115.

Author Contributions

Zhang Wei: Conceptualized research, designed methodology, cleaned data, wrote and revised manuscript.

Chen Jing: Conceptualized research, designed data collection, revised manuscript.

Huang Shiqing: Collected and analyzed data, revised manuscript.

Dong Ying: Conceptualized research, designed methodology, revised manuscript.

Zhang Lin: Refined design, collected and analyzed data, wrote, reviewed, and revised manuscript.

Note: Figure translations are in progress. See original paper for figures.

Source: ChinaXiv — Machine translation. Verify with original.