

Classification and Supply Priority of Service Content for University Library WeChat Official Accounts Based on the Kano Model: Postprint

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Abstract

[Purpose/Significance] The service content of university library WeChat official accounts is a key factor affecting service quality and user adoption. Research on the classification and supply prioritization of these service contents from the perspective of user satisfaction can enable university libraries to maximize user satisfaction under limited conditions. [Method/Process] Based on a systematic review of existing service content from 42 “Double First-Class” university library WeChat official accounts, this study employs the basic theory of the Kano model—a feedforward control method for user satisfaction—combined with user satisfaction indices and a refined Kano model to analyze the impact and degree of influence of each service content on user satisfaction. [Results/Conclusion] The existing 29 service contents are categorized into 8 high-attractiveness service contents, 10 low-attractiveness service contents, 5 high-expectation service contents, 2 potential service contents, and 4 irrelevant service contents, with management strategies proposed for each category. Through analysis of user satisfaction indices and combination with a four-quadrant scatter plot, the supply priorities for university library WeChat official account service contents are determined and sequenced, aiming to help managers provide quality service content according to actual library conditions with appropriate urgency, thereby achieving the goal of maximizing satisfaction.

Full Text

Research on the Classification and Supply Priority of Service Content for University Library WeChat Public Platforms Based on the Kano Model

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Abstract

[Purpose/Significance] The service content of university library WeChat public platforms is a critical factor affecting service quality and user adoption. Classifying this content and studying its supply priority from the perspective of user satisfaction enables university libraries to maximize user satisfaction under resource constraints.

[Method/Process] Based on a systematic review of existing service content across 42 “Double First-Class” university library WeChat public platforms, this study employs the Kano model—a forward-looking control method for user satisfaction—combined with user satisfaction indices and a refined Kano model to analyze how various service contents influence user satisfaction and to what degree.

[Results/Conclusion] The 29 existing service contents are categorized into eight high-attractiveness items, ten low-attractiveness items, five high-expectation items, two potential items, and four irrelevant items, with corresponding management strategies proposed for each category. Through user satisfaction index analysis and a four-quadrant scatter plot, this study identifies supply priorities for university library WeChat public platform service contents, establishing a priority sequence to help managers provide high-quality content in a timely manner according to their library’s actual situation, thereby achieving the goal of maximizing satisfaction.

2 Literature Review

2.1 Research Status of University Library WeChat Public Platform Service Content Existing research on university library WeChat public platform service content can be divided into four main areas.

2.1.1 Development Status of University Library WeChat Public Platforms

Ma Dayan et al. investigated the push content and service methods of WeChat public platforms for “985 Project” university libraries, finding that service content was relatively monotonous and proposing management strategies to enrich content and innovate service methods [5]. Zhao Yuming et al. conducted a comprehensive survey of 114 “211 Project” university library WeChat public platforms regarding their 开通情况, service functions, and platform construction, concluding that libraries have advantages in providing services via WeChat compared to other new media platforms, but currently suffer from insufficient personalized service content [6]. Zeng Runxi and Yang Xixi analyzed 406 university library WeChat public platforms nationwide, examining push content, interaction forms, and effectiveness, and categorized existing services into four types: library information queries, business processing, activity announcements, and reader interaction. They found that current service provision focuses on self-

service and recommended strengthening the promotion of personalized services [7].

2.1.2 Development Design and Application Patterns of Various Service Contents

Du Hui et al. investigated the current state of WeChat platform services in “211 Project” university libraries, identified problems in subject services, and proposed a subject service model based on library WeChat public platforms [8]. Zhang Xuemei explored how to use library WeChat public platforms to conduct more effective library orientation education [9]. Fu Liyun and Su Jincang proposed utilizing the promotional and interactive advantages of university library WeChat public platforms for reader training to address traditional training issues [10]. Liu Nian, Yue Hong, and Zhang Junyi argued that traditional reader recommendation systems in university libraries suffer from low usage rates and inability to meet personalized needs, suggesting that WeChat public platforms could increase the frequency of reader recommendations and better align library acquisitions with user needs [11]. Yao Shun proposed system design and optimization methods for library WeChat-based book borrowing, enabling users to borrow books without physical library cards [12].

2.1.3 Construction of University Library WeChat Public Platforms

Zhang Zheng proposed improving library WeChat public platform service content from a user needs perspective, dividing service functions into three aspects: automatic response, information push, and interactive communication, with specific content and management strategies for each [13]. Kong Yun et al. categorized services based on library WeChat public platforms into seven types: active push, business processing, query assistance, online consultation, social platforms, intelligent Q&A, and mobile portals, and proposed principles, methods, and technologies for platform function design [14]. Wu Jinhui divided library WeChat public platforms into three types—self-media, interactive communication, and mobile portal—analyzed the construction priorities for each platform’s service content, and suggested that the three types could cross-complement each other to enrich library WeChat public platform service content [15].

2.1.4 Empirical Research on User Needs

Ye Peizhen and Liao Mei, using Guangxi Normal University as an example, surveyed user needs regarding library WeChat public platform service content and methods, finding strong user demand for disciplinary and personalized content, with information timeliness and interactive functions being key concerns [16]. Liu Yao and Guo Yang, using “211 Project” university library WeChat public platforms as examples, proposed categorizing service content from a user needs perspective into core functional needs and social needs. Through empirical research, they found that users most needed services belonging to core functional needs and proposed corresponding management strategies [2, 17]. Hu Anqi and Ji Shunquan, using Suzhou University of Science and Technology as an example, understood user needs for library WeChat public platform operation and service function design, proposed dividing service content by function type into

basic services, value-added services, and innovative services, and calculated user demand intensity through surveys to identify the most important services [18].

Overall, research on classification and supply priority of library WeChat public platform service content has accumulated some results, but empirical studies from the user perspective are insufficient. Articles analyzing service content classification and supply priority from the user satisfaction angle remain scarce. While determining supply priorities based solely on user demand surveys (i.e., the “quantity” of demand) has some rationality, user needs are not necessarily important, especially when library resources are limited and cannot satisfy all demands, which can easily lead to user dissatisfaction. Therefore, it is necessary to study which service contents should be prioritized to improve user satisfaction with library WeChat public platforms, aligning with the library’s service purpose of satisfying users.

2.2 Kano Model Theory of User Satisfaction The Kano model [19] refers to elements constituting product/service quality as quality attributes. Its innovation lies in proposing a non-linear relationship between product/service quality attributes and user satisfaction. Based on how different service quality attributes affect user satisfaction, the model categorizes them into: Attractive Quality (A), Expected Quality (O), Must-be Quality (M), and Indifferent Quality (I). Applied to university library WeChat public platform service content: (1) Attractive service content (A): Not providing this content will not cause user dissatisfaction; providing it will significantly increase user satisfaction. (2) Expected service content (O): The provision and quality of such content have a linear relationship with user satisfaction—providing it satisfies users, and more/higher quality content leads to higher satisfaction; conversely, its absence causes dissatisfaction. (3) Must-be service content (M): Content users consider essential for university library WeChat public platforms. Not providing it drastically reduces satisfaction; providing it or improving its quality does not increase satisfaction beyond a neutral level. (4) Indifferent service content (I): Whether provided or not has no impact on user satisfaction.

2.3 Application of Kano Model in the Library Field The Kano model, being survey-based with simple analysis methods and comprehensive integration of user expectations, social culture, psychology, and other factors [20], has attracted significant attention from Chinese scholars and been widely applied in manufacturing and service industries. In China’s library field, Yang Jialu used the Kano model to study public library user needs [21]; Shi Guohong et al. [4, 22] and Chen Li et al. [23] applied the Kano model to evaluate traditional university library service quality; Qi Xianghua et al. [24] used it to classify electronic service quality attributes; Tang Na [25] evaluated digital reference service quality; Shi Guohong et al. [26] combined the Kano model with IPA analysis to study mobile library service quality; Qi Xianghua and Huang Lijuan [20] applied it to classify user mobile reading content needs; Tang Xiaoling et al. [27] combined the Kano model with the QFD model to analyze digital library service

quality; and Sun Ziqing et al. [28] constructed a university librarian competency evaluation system.

In summary, as libraries develop, the Kano model's application in the library field continues to broaden, increasingly being used for emerging library services. However, no in-depth research has yet applied the Kano model specifically to university library WeChat public platform service content.

3 Empirical Research

3.1 Summary and Classification of Service Content The “Double First-Class” initiative represents China’s latest national higher education strategy following the “211 Project” and “985 Project,” symbolizing universities with leading comprehensive strength and international competitiveness. The 42 “Double First-Class” universities officially established on September 21, 2017, serve as exemplars of Chinese higher education [29]. Their libraries similarly play a pioneering role among university libraries nationwide, making their WeChat public platform service content highly representative and important for understanding service content across Chinese university libraries.

Therefore, from May 14-16, 2018, the authors followed these 42 university library WeChat public accounts on mobile WeChat. Among them, 40 [Figure 40: see original paper] had 开通微信公众号, representing a 95.2% adoption rate. From the perspective of actual services users obtain through these platforms, this study summarized and statistically analyzed the existing service content of these 40 libraries, drawing on other scholars’ research on library WeChat platform service content construction and classification [7-15]. Ultimately, 29 service contents were identified, as shown in Table 1 .

3.2 Questionnaire Design This study designed two questionnaires: a Kano questionnaire and an importance judgment questionnaire. Both consisted of two parts: (1) Basic user information, including gender, university, education level, and frequency of using the university library WeChat public platform; (2) Investigation of university library WeChat public platform service content, the main body of the questionnaire comprising the 29 service contents from Table 1.

The Kano questionnaire is a standardized structured questionnaire designed by Professor Kano, where each item consists of positive and negative questions asking users how they would feel if the university library WeChat public platform provided/did not provide a certain service content. Each question has five options: like, should be that way, neutral, can accept, dislike [19]. C.C. Yang proposed that when classifying service quality attributes using the Kano model, user surveys on the importance of these attributes should be conducted simultaneously, as the relationship between service quality attributes and user satisfaction is typically influenced by users’ importance judgments [30]. Therefore,

this study designed a second questionnaire: importance assessment of university library WeChat public platform service content from the user perspective, using a 5-point Likert scale where 1 = very unimportant, 2 = unimportant, 3 = neutral, 4 = important, and 5 = very important.

3.3 Questionnaire Collection Survey Object Selection: Due to time and resource constraints, a comprehensive survey of all domestic universities with WeChat public platforms was impossible, so representative subjects were selected. Following comparability and diversity principles, five “Double First-Class” universities were chosen: Peking University, Renmin University of China, Zhejiang University, Wuhan University, and Tianjin University. These libraries have relatively sufficient funding, high service levels, rich service content, and high reader attention, showing similarity; they also exhibit diversity in geography and specific service content.

Target Group Establishment and Representativeness: WeChat users are predominantly young people aged 15-29, with university students being representative of this age group. Exploring college students’ attitudes and behaviors can reflect overall current status and future development trends from a societal perspective [20], and users who follow a particular WeChat public account generally have actual needs or interest in it. Therefore, questionnaires were distributed to students at these five universities who followed their library’s WeChat public account.

The survey was conducted from May 18 to June 2, 2018, using paper questionnaires. To avoid respondent fatigue from overly long questionnaires affecting results, the two questionnaires were distributed separately. To ensure quality and validity, the authors specifically invited target respondents to complete them. The Kano questionnaire distributed 400 copies, recovering 380 (95% recovery rate). After excluding 35 invalid questionnaires with missing answers or identical responses, 345 valid questionnaires remained (90.78% validity rate). The importance questionnaire distributed 300 copies, recovering 260 (86.66% recovery rate). After excluding 32 invalid questionnaires, 228 valid questionnaires remained (87.69% validity rate). Basic information and behavioral characteristics of respondents are shown in Table 2 . The data shows respondents have appropriate proportions in gender, university, and education level, with high educational attainment enabling good questionnaire comprehension. Behavioral characteristics show usage frequency across all levels, indicating the data is representative and reliable for statistical analysis.

3.4 Questionnaire Validation SPSS 22 software was used to test reliability and validity, with results shown in Table 3 . Both the Kano questionnaire and importance questionnaire demonstrate good reliability and validity, with considerable internal consistency among items for each variable, meeting analysis requirements.

3.5 Classification Results of University Library WeChat Public Platform Service Content This study classifies service content based on their different impacts on user satisfaction. Using traditional Kano theory as the foundation, data were collected through Kano questionnaires and importance judgment questionnaires. Final classification results were determined based on the Kano evaluation table, user satisfaction index, and refined Kano classification, as shown in Table 4, where asterisks in the importance column mark values above the mean importance.

3.5.1 Kano Model Classification

The Kano model classifies each service content based on the maximum frequency value. In Table 4, columns A, O, M, I, R, and Q represent the frequency of each service content belonging to attractive (A), expected (O), must-be (M), indifferent (I), reverse (R), and questionable (Q) categories. Column C1 lists the classification results based on this method.

3.5.2 User Satisfaction Index

Traditional Kano model classification only uses the maximum frequency value, ignoring other category frequencies and influence, resulting in overly general classifications that cannot determine the degree of impact on user satisfaction or effectively apply to practical problems. Therefore, this study adopts the user satisfaction index proposed by C. Berger et al. [31], also known as the better-worse index. Its two indicators, derived from frequencies of the four main categories (A, O, M, I), can calculate the degree to which each service content improves user satisfaction (better) or eliminates dissatisfaction (worse), and the better-worse composite coefficient to determine supply priority under limited conditions. The formulas are:

better = $(A + O) / (A + O + M + I)$: indicates the degree to which providing a service improves satisfaction (positive value, closer to 1 = greater impact).

worse = $(O + M) / (A + O + M + I) \times (-1)$: indicates the degree to which providing a service prevents dissatisfaction (negative value, closer to -1 = greater impact).

better-worse composite coefficient: the difference between better and worse values, comprehensively reflecting a service's effect on improving satisfaction and eliminating dissatisfaction. Table 4 shows the calculation results for better, worse, and b-w composite values.

3.5.3 Refined Kano Model Classification

C.C. Yang [30] noted that users' importance judgments of service quality attributes affect their satisfaction. Based on Kano classification and combined with users' importance judgments, attributes above the importance mean should be designated high-importance elements (marked with asterisks in Table 4), and those below as low-importance elements. This further divides A, O, M, and I into: A (high-attractiveness, low-attractiveness), O (high-expectation, low-expectation), M (critical, needed), and I (potential, irrelevant). Column C2 in Table 4 shows the final classification results based on the refined Kano model. A summary comparing traditional and refined Kano classifications is shown in

Table 5 .

Table 5 reveals that among the 29 service contents, most are attractive (8 high-attractiveness and 10 low-attractiveness), indicating respondents are highly interested in most library WeChat public platform services. Five high-expectation items show users have actual needs for only a few services but don't consider them mandatory. The 18 attractive items reflecting potential user needs suggest many followers don't frequently use or understand some platform services. Notably, no must-be service content was identified, indicating current service content is individually prominent but overall insufficient, necessitating multi-angle analysis and management strategy recommendations.

4 Management Strategy Analysis

4.1 Management Strategies Based on Kano Classification Results

4.1.1 High-Quality, High-Quantity Provision of Expected Service Content

Expected service content represents explicit user needs—users have clear demands and requirements for such content. Libraries should not only provide as much as possible but also optimize it, as its provision reflects the operational level of university library WeChat public platforms. Platforms in early stages or with average development should focus on expected service content. By importance, these can be divided into high-expectation and low-expectation service content.

This study identifies five high-expectation items: collection queries, library overview queries, personal history queries, library card loss reporting/activation, and academic resource retrieval. These are highly favored services users hope library WeChat public platforms will provide. University libraries should provide these with high quality and quantity to significantly improve user satisfaction, usage rates, and create positive impressions. These “signature” services are powerful promotional tools for library WeChat public platforms.

This study found no low-expectation service content.

4.1.2 Actively Provide Attractive Service Content

Attractive service content represents services users haven't considered but potentially need, used to attract users and cultivate loyalty. As key factors for improving satisfaction, these should be prioritized when library WeChat public platform development exceeds industry averages. By importance, these are divided into high-attractiveness and low-attractiveness service content.

This study's eight high-attractiveness items include: smart reminders, book renewal, lost-and-found information queries, mobile library links/downloads, exam study databases, book/appointment reservations, library space reservations, and book borrowing. Providing these can substantially increase user

satisfaction, so libraries should offer as many as possible according to their capabilities to meet advanced needs, enhance user experience, and increase loyal users.

The ten low-attractiveness items include: GPS directions, virtual campus cards, reader recommendations, open courses, self-consultation/intelligent response, social life services, subscription services, book recommendations, library souvenir customization, and micro-book reviews. While also attractive, these have less impact on satisfaction and should be provided moderately when funding is limited.

4.1.3 Pay Attention to Indifferent Service Content

Traditional Kano models consider indifferent service content merely increases costs and wastes resources, suggesting elimination. However, C.C. Yang argued this judgment is too general and should be further divided into potential and irrelevant service content based on importance. Over time and with environmental changes, potential service content may transform into attractive content [30], so these can be selectively provided now to attract potential users and become future priorities, expanding the user base and increasing usage.

This study identifies two potential items: latest news notification services and consultation/feedback. These are considered important by library professionals and represent WeChat platform advantages, but users don't recognize their importance, indicating serious problems with service effectiveness that require analysis and improvement to enhance satisfaction.

The five irrelevant items include: library activity registration, account statements, my reading aloud service, and interactive sharing platforms. These innovative services with low current adoption rates aim to enrich campus life. This aligns with the Kano model's dynamic principle that at a product/service's introduction, users may consider it irrelevant due to unfamiliarity. Therefore, strengthening promotion, guiding usage, and adding incentives could improve the situation, though managers may temporarily ignore these to reduce costs.

4.1.4 Track Must-Be Service Content

Notably, this study found no must-be service content, which users consider essential basic services. This likely reflects timing—based on the Kano model's dynamic principle, user needs and satisfaction evolve along the trend $I \rightarrow A \rightarrow O \rightarrow M$ over time and with environmental changes. Current library WeChat public platform service content may not have reached the must-be stage, still being in the $I \rightarrow A \rightarrow O$ phase. Moreover, in the internet era, the evolution of library WeChat public platform service content Kano types accelerates even faster [32].

Therefore, service provision cannot remain static based on current classifications and priorities. Continuous user surveys are necessary to track changes in service content classifications, enabling timely adjustments to form precise, user satisfaction-based management strategies that enhance the service value of university library WeChat public platforms.

4.2 Management Strategies Based on User Satisfaction Index Analysis Building on traditional and refined Kano classifications, user satisfaction index analysis by C. Berger et al. is necessary because its better and worse indicators can calculate each service content's degree of improving satisfaction and eliminating dissatisfaction, helping determine supply priorities and sequences in practical applications. For further analysis, a four-quadrant scatter plot illustrates the distribution of the 29 service contents: the x-axis represents better values, the y-axis represents absolute worse values, with the intersection of the two indicators' averages as the origin, as shown in Figure 1 [Figure 1: see original paper].

Based on the four-quadrant division, service contents in each quadrant are sorted by better-worse composite coefficient from largest to smallest, as summarized in Table 6 .

Quadrant I (High better, High worse) includes seven items: personal history query, academic resource retrieval, collection query, book renewal, lost-and-found information query, mobile library link/download, and exam study database. These significantly improve satisfaction and prevent dissatisfaction, representing the highest priority services. All are high-expectation and high-attractiveness contents that libraries should strive to provide despite limited technology and funding, as they are crucial for user satisfaction and demonstrate library service value in the WeChat era.

Quadrant II (Low better, High worse) includes five items: library overview query, library card loss reporting/activation, lost-and-found information query, latest news notification service, and consultation/feedback. These greatly reduce dissatisfaction but have limited impact on improving satisfaction. Sorted by better-worse composite coefficient, these include high-expectation, high-attractiveness, and potential service contents. When the management goal is maximizing dissatisfaction prevention, these should be prioritized.

Quadrant III (Low better, Low worse) includes nine items: self-consultation/intelligent response, social life services, library souvenir customization, library activity registration, interactive sharing platform, my reading aloud service, mobile library link/download, exam study database, GPS directions, and virtual campus card. These have minimal impact on both satisfaction improvement and dissatisfaction prevention. Sorted by composite coefficient, these are low-attractiveness and irrelevant services that should be selectively provided (low-attractiveness) or temporarily ignored (irrelevant) under limited conditions.

Quadrant IV (High better, Low worse) includes eight items: smart reminders, book renewal, lost-and-found information query, mobile library link/download, exam study database, library space reservation, book borrowing, and subscription services. These significantly improve satisfaction but have little effect on eliminating dissatisfaction. Sorted by composite coefficient, these are all attractive service contents. When the management goal is maximizing

satisfaction improvement, these should be emphasized.

Before the Kano model for user satisfaction, the relationship between service content provision and user satisfaction was considered linear, leading managers to believe that providing as much content as possible would increase satisfaction. However, this “as much as possible” strategy, while not unimportant, is less critical than providing content with maximum satisfaction impact under limited technology and funding. University library WeChat public platform managers should:

If in early stages, focus on Quadrants I and II; if well-developed with established followers and loyal users, emphasize Quadrants III and IV.

If the strategy is maximizing satisfaction, prioritize Quadrants I and IV; if minimizing dissatisfaction, focus on Quadrants I and II.

Use Quadrant III services as supplements, optimizing and providing low-attractiveness content.

Under cost and resource constraints, provide services sequentially based on the better-worse composite coefficient.

This study is limited to student respondents, though university library WeChat public platforms also serve faculty. While students are representative, conclusions based on them may not fully apply to faculty. Future research should survey broader user groups for comparative analysis to obtain more universally applicable findings.

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Li Mengnan: Responsible for research positioning, literature retrieval, data analysis, and paper writing.

Zhou Xiuhui: Provided guidance and reviewed the paper.

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Abstract: [Purpose/significance] The service content of university library WeChat public platform is the key factor that affects the service quality and users’ use. From the perspective of user satisfaction, the classification and supply priority of service content of university library WeChat public platform can maximize user satisfaction under limited conditions. [Method/process] Based on systematically reviewing the existing service content of WeChat public platform in 42 “Double First-Class” university libraries, this paper adopts the forward control method of user satisfaction—Kano model, combines the user satisfaction index and refined Kano model, and analyzes the impact and extent of each service content on user satisfaction. [Result/conclusion] The results show that among the 29 service contents, 8 are high-glamour

service contents, 10 are low-glamour service contents, 5 are high-expectation service contents, 2 are potential service contents, and 4 are irrelevant service contents. Through the analysis of user satisfaction index and the combination of four-quadrant scatter diagram, the key and priority order of WeChat public platform service content in university library is determined, aiming to help managers provide high-quality service content in a timely manner according to the actual situation of the library, so as to achieve the goal of maximizing satisfaction.

Keywords: university libraries; WeChat public platform; Kano model; service content; supply priority

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

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