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Postprint: Research on the Evaluation Indicator System of User-Perceived Service Quality in Public Archives

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Abstract

[Purpose/Significance] Construct an evaluation index system for public archives user-perceived service quality from the user perception perspective, to provide evaluation criteria and data support for improving public archives service quality. [Method/Process] Through questionnaire survey method, pre-design the evaluation framework and index system for public archives user-perceived service quality, with the aid of SPSS software, using exploratory factor analysis to test the pre-designed evaluation index system, and revise the pre-designed evaluation index system according to the results. [Results/Conclusion] The constructed evaluation index system for public archives user-perceived service quality can comprehensively and holistically measure the service effectiveness of public archives from the user perception perspective.

Full Text

Research on User Perceived Service Quality Evaluation Index System of Public Archives

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Abstract

[**Purpose/Significance**] This study constructs a user-perceived service quality evaluation index system for public archives from the perspective of user perception, providing evaluation criteria and data support for improving public archives service quality. [**Method/Process**] Through questionnaire surveys, we pre-designed an evaluation framework and index system for public archives

user-perceived service quality. Using SPSS software, we employed exploratory factor analysis to test the pre-designed evaluation index system and revised it based on the results. [**Result/Conclusion**] The constructed public archives user-perceived service quality evaluation index system can comprehensively and holistically measure the effectiveness of public archives services from the user perception perspective.

Keywords: public archives; user perception; service quality

With the development of archival undertakings and the enhancement of public archival awareness, archival users have increased dramatically. The service philosophy of archives has shifted from "emphasizing preservation over utilization" to "preservation for utilization." The fundamental task of archival work is to provide users with high-quality and efficient archival services. Consequently, how archives can provide high-quality services to users has become a research hotspot in the field of archival services in recent years. Traditional archives service quality has been mainly evaluated from aspects such as collection resources, internal environment, and staff service capabilities, neglecting user feelings during the service process. This is particularly problematic for public archives that provide services to the public, which need to prioritize user-centered archival services.

Public archives, established and managed by the state and government, hold collections that belong to the state and all citizens. Their resources relate not only to people's property rights, seniority benefits, and pension entitlements, but also bear the important mission of providing archival services for politics, economy, culture, scientific and historical research, social education, and citizens' access to historical knowledge [1]. Based on this context, this study takes public archives as the research object and constructs a user-perceived service quality evaluation index system from the user perspective, providing theoretical basis and support for optimizing public archives service quality.

Literature Review

Our literature review reveals that current archival service research primarily focuses on digital archives and archival network information services, with relatively few studies on public archives service quality. Domestic scholars emphasize evaluating archives service quality from three aspects: service capability, service process, and service effect. Among these, collection resources [2], service facilities [3], staff service capabilities [4], and network services [5] are the key evaluation points for service capability. Service process mainly concentrates on service methods [6], timeliness [7], and personalization [8]. Service effect dimensions primarily cover economic benefits [9], user satisfaction [10], and the degree to which archival information needs are met [11].

Foreign scholars have studied archives service methods, service evaluation, and service models from the user perspective, though the volume of research is relatively small. In 2010, E. Yakel and H. Tibboy used archival measurement tools

and designed questionnaires to construct evaluation indicators for archives service quality, such as access system quality, effectiveness of interaction with archives staff, and professional level of service personnel [12]. In 2011, B. Senturk pointed out that users are the center of archives services. By surveying 60 visitors to the Ottoman Archives, he established new archives user satisfaction standards based on user satisfaction, summarizing first-level indicators such as collections, service environment, and service personnel, and second-level indicators including rapid problem-solving ability, user-friendly retrieval catalogs, and professional competence of service personnel [13]. H. L. Rhee argued that archives users and information sources should be used as evaluation tools to enable archives staff to meet government and user needs [14]. G. Audrone and M. Zinaida were the first to introduce the concept of consumer service quality into the field of archival science, deeply discussing the feasibility of this concept in future archives management activities [15].

A comprehensive analysis of domestic and foreign research shows that although studies focus on archives service quality evaluation methods, evaluation index systems, and archives service quality optimization, the research approaches are basically consistent. First, most methods for constructing archives service quality evaluation systems and models are qualitative, leaving considerable room for improvement in terms of comprehensiveness and refinement of evaluation systems. Second, the various indicators for evaluating archives service quality are basically selected from the archives' own perspective and cannot directly reflect users' real feelings about archives services, resulting in archives service quality optimization measures lacking strong practicality and specificity. Therefore, through actual investigation and data analysis, we construct a public archives user-perceived service quality evaluation index system from the user perception perspective, providing data support and reference for optimizing public archives service quality.

Construction of Public Archives User Perceived Service Quality Evaluation Index System

To construct a reasonable evaluation index system and ensure the scientific rigor of each indicator, we employed literature review, expert consultation, and questionnaire surveys to pre-design the public archives user-perceived service quality evaluation index system. Based on the pre-designed index system, we developed a questionnaire for a pilot survey. According to the pilot survey results, we made the first revision to the pre-designed index system. Using the revised index system, we designed the formal questionnaire and used SPSS software with exploratory factor analysis to test the first revised evaluation index system. Based on the formal survey results, we made a second revision to the public archives service quality evaluation index system.

Proposing the Evaluation Index System

Preliminary Design of the Evaluation Index System Users' evaluation of public archives service quality is essentially a psychological process of perception and judgment. Based on the analysis and summary of previously applied evaluation indicators in existing research, combined with the characteristics of public archives, we conducted literature research, questionnaire surveys, and expert consultations on issues such as the differentiation of first-level indicator dimensions in the evaluation framework. The questionnaire distribution lasted for one month, targeting mainly public archives users and actual archival workers. We also conducted telephone consultations and face-to-face interviews with experts who have rich practical experience. Based on survey data and expert consultation results, and following the principles of easy understanding, easy operation, and easy data acquisition, we selected 41 operational second-level evaluation indicators and classified them into 10 first-level indicators according to their definitions and scope, as shown in .

By reviewing domestic and foreign literature on public archives service quality evaluation, we preliminarily constructed a public archives user-perceived service quality evaluation index system from the user perception perspective, laying a foundation for the pilot survey.

First Revision of the Evaluation Index System Using the 41 second-level evaluation indicators in as the object, we designed relevant questions for the pilot survey. With the "Wenjuanxing" online questionnaire platform, we designed the pilot survey questionnaire and added open-ended questions to collect indicator elements not covered in the questionnaire but that would affect users' evaluation of public archives service quality. A total of 180 questionnaires were collected, including 156 valid ones. We collected and organized the answers to the open-ended questions, deleted elements that were repetitive or homogeneous with the existing 41 indicators, and finally obtained 9 valuable new second-level evaluation indicators: richness of archival types, hierarchical nature of archival sources, broadness of archival sources, completeness of supporting facilities, self-service inquiry, professional background of archivists, degree of user suggestion adoption, primary archival literature development, and secondary archival literature development.

We merged these 9 new indicators into the public archives user-perceived service quality evaluation index system according to their nature and scope. First, the three second-level indicators of richness of archival types, hierarchical nature of archival sources, and broadness of archival sources were grouped under the first-level indicator of archival sources. Second, primary and secondary archival literature development both belong to the first-level indicator of archival development. To maintain consistency in second-level indicator names, we interpreted the "compilation results" indicator as tertiary archival literature development. The first revised public archives user-perceived service quality evaluation index system is shown in .

According to the pilot survey questionnaire data, the first revised public archives user-perceived service quality evaluation index system includes 11 first-level indicators covering 50 second-level indicators, providing a benchmark for designing the formal questionnaire.

Data Analysis and Testing of the Evaluation Index System

To ensure that the revised evaluation indicators can truly and reliably reflect users' feelings when receiving services in archives, we conducted a formal questionnaire survey using the indicators from the first revised public archives user-perceived service quality evaluation index system as research objects.

Research Design and Methods Using SPSS software, we employed exploratory factor analysis to organize and analyze the data from the formal questionnaire, revise the public archives user-perceived service quality evaluation index system, and establish an evaluation index system that truly reflects users' real perceptions and experiences.

The questionnaire designed based on includes two parts: the first part is respondents' personal information; the second part consists of 50 specific questions designed with reference to the second-level indicators in the first revised public archives user-perceived service quality evaluation index system, plus open-ended questions for respondents to add elements affecting service quality evaluation that we had not considered, with the degree of influence indicated. All question items used a 5-point Likert scale, with 1-5 points indicating the degree of influence of evaluation indicator elements on public archives service quality evaluation, where 5 points indicates a very large influence and 1 point indicates no influence. Users only needed to fill out the second part of the questionnaire based on their real feelings and experiences. After collecting the questionnaire data, we tested the public archives user-perceived service quality evaluation index system.

Data Collection and Descriptive Statistical Analysis This study conducted surveys through two channels: online and physical distribution. Online surveys were designed through the "Wenjuanxing" platform and distributed via social platforms such as WeChat and QQ, breaking geographical restrictions and covering Northeast, North, South, and East China regions. A total of 253 questionnaires were collected, including 211 valid ones. Simultaneously, we distributed paper questionnaires at public archives to archival users and staff, collecting 169 questionnaires with 133 valid ones. In total, 422 questionnaires were collected, with 344 valid ones, yielding an effective rate of 81.52%, which meets the sample size requirement.

(1) Sample descriptive statistical analysis. In the valid sample, we first conducted descriptive statistical analysis on five basic characteristics of respondents: gender, age, education level, occupation, and frequency of visiting public

archives. The analysis revealed the distribution of the collected sample, as detailed in .

As shown in , the male and female proportions are 40.41% and 59.59% respectively, indicating a basically even distribution. In terms of age distribution, the 18-30 and 31-40 age groups have higher proportions, with their combined total reaching 90.41%. Regarding education level, the proportion of university undergraduates is the highest, followed by postgraduates, reflecting that questionnaire respondents have relatively high educational backgrounds and cultural literacy, which enhances questionnaire validity. In terms of occupation, the distribution across various occupations is relatively even, representing a wide coverage of sample distribution that comprehensively reflects evaluations of public archives service quality from various professions. Regarding frequency of visiting public archives, the combined proportion of those who have actually visited archives is 76.45%, fully demonstrating that respondents filled out the questionnaire based on their real perceptions of public archives services, once again validating the effectiveness of the collected questionnaires.

(2) Observation variable descriptive statistical analysis. Using SPSS software for descriptive statistical analysis of each indicator, we found that the mean value represents the degree of influence of second-level indicators on archives service quality evaluation—the larger the mean, the greater the influence. Standard deviation is used to judge the degree of understanding among users regarding the same indicator. The larger the standard deviation, the greater the deviation in users' understanding of the indicator. Typically, when the standard deviation is less than 1, the degree of consistency is considered high. The analysis results of the collected questionnaire data are shown in .

As shown in , among the 50 evaluation indicators, 26 have mean values greater than 4. The indicators with larger mean values are authenticity and reliability of archival content, usability of archival content, and completeness of archival content, all belonging to the first-level indicator of archival content, indicating that archival content has a relatively large influence on public archives service quality evaluation. Only two indicators have standard deviations greater than 1: archivists' education level and service fee collection, indicating that users have relatively large deviations in understanding these two items. Since users inherently have strong subjectivity in evaluating the same service, these deviations are completely understandable and consistent with the highly subjective nature of user perception.

Evaluation Index System Testing and Analysis We used exploratory factor analysis to test the first revised public archives user-perceived service quality evaluation index system.

(1) Reliability and validity testing. To ensure the scientific rationality of the final constructed public archives user-perceived service quality evaluation index system, we first used Cronbach's alpha coefficient to test the reliability and

validity of the questionnaire data before conducting dimensionality reduction analysis with exploratory factor analysis, as shown in .

Reliability testing: The Cronbach's alpha coefficient is $0.958 > 0.7$, representing high questionnaire reliability, allowing us to continue with further analysis and research. Validity testing: Since all questionnaire items were based on preliminary pilot survey analysis and revised data, the scientific validity of the questionnaire was already ensured.

(2) Applicability test for factor analysis. We used KMO (Kaiser-Meyer-Olkin) sampling adequacy measure and Bartlett's test of sphericity to test whether the sample data was suitable for factor analysis, as shown in .

The KMO test value for the formal questionnaire data is 0.926, far greater than 0.5, indicating that there are enough common factors among the 50 indicators and that factor analysis is appropriate. The significance level is less than 0.001, reaching the significance level and again proving that factor analysis is suitable.

(3) Principal component analysis. In this exploratory factor analysis study, we used principal component analysis to extract common factors, with eigenvalues greater than 1 as the standard for factor extraction, without limiting the number of common factors extracted, so that the extracted common factors could explain at least one variable. We used the varimax method for orthogonal rotation and determined common factors based on the rotated factor loading matrix to merge and integrate indicator variables.

Using SPSS for dimensionality reduction-factor analysis on formal questionnaire data, we obtained common factor variances (see). According to the Kaiser criterion, if the sample size is greater than 250 and the average communality is above 0.60, it meets the requirements [16]. The survey sample in this study is 344, with the highest indicator variable common factor variance at 72.2%, the lowest at 46.8%, and the average communality at 60.02%, indicating that the extracted common factors' descriptive degree of indicator variables meets requirements and that information loss for each indicator variable is within an acceptable range.

Using eigenvalues greater than 1 as the standard for factor extraction, we extracted 7 common factors. The statistical analysis results show that the cumulative total variance explained by the extracted 7 common factors is 60.019%, meeting the requirement of representing original indicator variable information (see).

Based on principal component analysis with eigenvalues greater than 1 as the extraction standard and using varimax orthogonal rotation, we extracted common factors. After multiple rotations, we obtained the factor loading matrix. Among the 50 variables, 13 variables had highest load coefficients below 0.45: archival content openness, traditional archival carriers, new archival carriers, retrieval method diversity, service system usability, online-offline service integration, archivist proactive service, service guide provision, archival utilization

form, archival utilization quantity restrictions, service fee collection, deposit service, and personalized service. These were eliminated, and the rotated component matrix is shown in .

As shown in , some factor loading results differ from the first revised evaluation index system.

Second Revision of the Evaluation Index System

The public archives user-perceived service quality evaluation index system includes 7 loading factors covering 37 second-level indicators. The differences from the first revised evaluation index system are specifically reflected in the following seven aspects:

(1) Loading factor 1 includes six indicators: archival content completeness, authenticity and reliability, usability, relevance, systematicity, and clarity/easy understandability. Compared with the first revised evaluation index system, one indicator—archival content openness (with highest loading below 0.45)—was eliminated. These indicators reflect archival users' requirements for archival resources' content and value, showing that archival resources are the basic guarantee for archives to provide services to users. Loading factor 1 retains its original name: archival content.

(2) Loading factor 2 includes five indicators: total collection volume, broadness of archival sources, collection structure, richness of archival types, and hierarchical nature of archival sources. Compared with the first revised evaluation index system, we found that loading factor 2 was formed by integrating indicators from archival sources and collection resources, reflecting users' specific requirements for archives' nature and collections. Therefore, loading factor 2 was renamed collection resources.

(3) Loading factor 3 remains the same as in the first revised evaluation index system, including six indicators: environmental comfort, sign visibility, transportation convenience, functional zoning, hardware equipment, and completeness of supporting facilities. Among these, hardware equipment appears on both loading factor 3 and loading factor 7, but it is clearly more reasonable to include hardware equipment in loading factor 3. Therefore, loading factor 3 retains the name overall environment.

(4) Loading factor 4 includes five indicators: user opinion handling effectiveness, user complaint handling effectiveness, user suggestion adoption degree, archivist communication expression ability, and archivist work efficiency. Compared with the first revised evaluation index system, this new loading factor contains all indicators of service feedback and two indicators from archivist professional competence. From these indicators, we can see that this loading factor focuses on the interaction quality between archivists and users. Archivist communication expression ability and work efficiency were loaded onto this factor because, from the per-

spective of user-perceived service experience, archival users believe that feedback effectiveness during the service process affects archivists' work efficiency, which is also a partial manifestation of archivists' professional competence. Therefore, loading factor 4 is named archivist professional competence and service feedback.

(5) Loading factor 5 includes six indicators: primary archival literature development, archival publicity, archivist education level, archivist professional background, tertiary archival literature development, and secondary archival literature development. Compared with the first revised evaluation index system, this factor was reloaded from some indicators of archival development and basic competence indicators from archivist professional competence. This indicates that in the process of perceiving service quality, users believe that archivists' basic competence has a positive impact on archival development quality, and the correlation between the two is strong. Therefore, loading factor 5 is named archivist basic competence and archival development.

(6) Loading factor 6 includes five indicators: document delivery, diversification of archival access channels, diversification of consultation methods, simplicity of archival access, and current file utilization services. Compared with the first revised evaluation index system, this loading factor was formed by integrating four indicators from archival provision and utilization and one indicator from archival development. From the perspective of archives providing various archival resources to users within the archives, loading factor 6 is named archival provision and utilization.

(7) Loading factor 7 includes four indicators: archival digitization degree, database construction degree, automated file retrieval, and self-service inquiry. Compared with the first revised evaluation index system, three indicators were eliminated: retrieval method diversity, service system usability, and online-offline service integration. Therefore, the name information construction is retained.

Based on the above analysis, according to the level and internal relationships of the revised evaluation indicators, we explained and described each evaluation indicator and finally established a scientific, reasonable, and effective public archives user-perceived service quality evaluation index system, as shown in .

Compared with the first revised public archives user-perceived service quality evaluation index system, the second revised evaluation system is more consistent with users' habits in evaluating public archives service quality from the user perspective. From the perspective of internal relationships among evaluation indicators, the second revised evaluation system has clearer hierarchy, closer internal relationships among indicators, and stronger logic.

Conclusion

This study evaluates public archives service quality based on user perception and constructs a public archives user-perceived service quality evaluation index system containing 7 first-level indicators and 37 second-level indicators according to questionnaire surveys and exploratory factor analysis. The evaluation index system constructed in this study evaluates public archives service quality from the user perception perspective from seven angles: archival content, collection resources, overall environment, archivist professional competence and service feedback, archivist basic competence and archival development, archival provision and utilization, and information construction, promoting the process of public archives truly realizing user-centered archival services.

Since users' most common and substantial needs for archives mainly come from archival content [17], and collection resources are the foundation of archives' self-construction, their quality is key to whether they can provide high-quality services to users. To some extent, the more collections, the broader the sources, the richer the types, and the more levels involved, the stronger the satisfaction users feel during archival utilization, the higher the frequency of users visiting archives, and the more conducive to shaping the people-friendly image of archives. Overall environment includes users' demands for archives' internal and external environments, and users also attach more importance to humanized services in archives. Archivist professional competence and archival provision and utilization are also indispensable in service construction. Archivist basic competence discusses the impact of archivists' professional background and education on archival development. Archival provision and utilization focuses on technical requirements for archives, especially with the rise of new social media such as archival websites, WeChat public accounts, Weibo, and APPs, which have gradually become tools for users to evaluate public archives service quality.

Due to limitations in the author's own level and differences in user perception dimensions, some evaluation indicators affecting public archives service quality may have been omitted, making the evaluation index system incomplete. Therefore, this paper still has deficiencies in the comprehensiveness of evaluating public archives service quality and needs further improvement through future research.

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Author Contributions

Deng Jun: Determined the research topic and proposed the research framework. Meng Xinxin: Wrote the paper and analyzed the data.

Shen Yong: Collected materials.
Sun Zhenjia: Collected materials.

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

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