

Research on Resource Information Quality Evaluation for Sharing Service Platforms Based on BP Neural Networks: A Case Study of Short-Term Rental Platforms (Postprint)

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Abstract

[Purpose/Significance] Using short-term rental sharing service platforms as a case study, this research constructs an evaluation index system for resource information quality on sharing service platforms to assist such platform enterprises in efficiently identifying resources with information quality issues and enhancing the overall information quality level of the platform.

[Method/Process] First, based on relevant theories of information communication science, the information dissemination process of sharing service platforms is summarized. Then, through analysis of participants in information dissemination on sharing service platforms and original interview data, an evaluation index system for resource information quality of sharing service platforms is constructed, divided into three dimensions: information source quality, information content quality, and information utility quality. Finally, an information quality evaluation method based on BP neural network is proposed, and Matlab2018a software is utilized to train and conduct simulation verification on 100 sets of collected sample data.

[Results/Conclusion] This study proposes an evaluation index system for resource information quality of sharing service platforms and validates it using BP neural network with short-term rental sharing service platforms as an example. Experimental results demonstrate that the evaluation index system possesses certain feasibility and practicality.

Full Text

Preamble

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Research on Resource Information Quality Evaluation of Shared Service Platforms Based on BP Neural Network: A Case Study of Short-Term Rental Shared Service Platforms

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Abstract

[Purpose/Significance] Taking short-term rental shared service platforms as an example, this study constructs an evaluation index system for resource information quality on shared service platforms to help such platform enterprises efficiently identify resources with information quality problems and improve the overall information quality level of the platform. **[Method/Process]** First, based on relevant theories of information communication, the paper summarizes the information dissemination process of shared service platforms. Then, according to the participants in the information dissemination process of shared service platforms and analysis of interview data, an evaluation index system for resource information quality is constructed, comprising three dimensions: source quality, information content quality, and information utility quality. Finally, an information quality evaluation method based on BP neural network is proposed, and 100 sets of collected sample data are trained and simulated using Matlab2018a software. **[Result/Conclusion]** The study proposes an evaluation index system for resource information quality of shared service platforms and validates it using BP neural network with short-term rental shared service platforms as an example. Experiments demonstrate that the evaluation index system possesses certain feasibility and practicality.

Classification Number: G203

Keywords: Shared service platform; Information quality; Evaluation research; BP neural network

The rapid rise of the sharing economy has achieved substantial development across various industries including transportation, tourism, hospitality, domestic services, and education, giving rise to diverse shared service platforms such as short-term rental platforms, mobility platforms, and living resource platforms. Shared service platforms are internet-based platforms that connect individuals for sharing and exchange. Both resource providers and resources themselves exhibit strong diversity, making it impossible to standardize shared resources

uniformly. Users can only make consumption decisions by judging transaction objects through online resource information. Therefore, resource information quality is particularly crucial on shared service platforms. The “2018 China Online Short-Term Rental Industry Monitoring Report” shows that the authenticity and reliability of platform information is the most important factor users consider when selecting online short-term rental platforms. Short-term rental platforms feature rich resource information that significantly influences users, making them valuable and meaningful for research. Thus, this paper takes short-term rental platforms as an example to construct an evaluation index system for resource information quality on shared service platforms, aiming to assist these platforms in optimizing their information environment and managing information quality from providers.

1. Related Research Status and Review

1.1 Research Status on Shared Service Platforms

Shared service platforms are emerging platforms under new consumption models. Current research on them is limited, focusing mainly on three aspects: First, platform business model research. Zheng Zhilai et al. [?] summarized and analyzed the three major profit points and general business models of the sharing economy, comparing them with traditional economic models. L. Zekanović-Korona et al. [?] analyzed the user structure of sharing platforms and studied their business models. C. Richter et al. [?] conducted qualitative research through interviews with 14 sharing economy entrepreneurs from Germany, Austria, and Switzerland, exploring innovative business models for entrepreneurial platforms under the sharing economy background. Second, consumer participation intention research. He Minghua et al. [?] examined the influence of platform and service provider reputation on consumer trust, attachment, and continuous usage intention in the sharing economy, constructing a research model of consumer continuous usage intention. Xiang Bo et al. [?] empirically tested factors influencing urban individuals' demand for new green transportation from a sharing economy perspective, using bike-sharing as an example. E. Ert et al. [?] studied the impact of host profile photos on consumer decision-making on rental websites, finding that photos help consumers infer host credibility and influence their decisions. Third, research on problems and countermeasures in sharing economy platform development. Nie Shuaijun [?] constructed principles, methods, and measures for government regulation of shared electric bicycles. Hao Yali et al. [?] proposed corresponding measures for actual problems of bike-sharing from three aspects: attributes, subjects, and needs.

1.2 Research Status on Information Quality Evaluation

Information quality evaluation has always attracted attention from information management researchers. With the vigorous development of e-commerce and the arrival of the self-media era, massive online information exhibits characteristics of diversified sources, large volume, and rapid dissemination, but also

presents uneven quality issues. To improve network information quality and optimize the network information environment, scholars have begun to emphasize research on information quality evaluation. Zhang Keyong et al. [?] constructed an information quality evaluation index system for health WeChat public platforms from four dimensions: health information dissemination subjects, WeChat public platforms, health information, and users, with index weights established using principal component analysis. D. Tao et al. [?] proposed that health website information quality should be evaluated from five dimensions: completeness, comprehensibility, relevance, depth, and accuracy. Hu Yuan et al. [?] constructed a WeChat information quality index system based on the dual-path model from source credibility and information quality dimensions, validated using analytic hierarchy process and fuzzy comprehensive evaluation. H. Fu et al. [?] used exploratory factor analysis to construct an information quality evaluation system for Q&A platforms, comprising six dimensions: content characteristics, cognition, utility, information source, external features, and social emotion. Zhang Wan [?] selected Q&A communities as research objects and constructed an evaluation index system from four dimensions: information content quality, information expression quality, information system quality, and information utility quality, using analytic hierarchy process to determine weights. Liu Bing et al. [?] constructed a comprehensive information quality evaluation system based on user experience from three dimensions: technical functional experience, aesthetic emotional experience, and utility value experience.

1.3 Research Status Review

In summary, existing research on information quality evaluation primarily focuses on online review information, WeChat information, academic information, and health information, with few scholars conducting evaluation research on shared service platform resource information. From a research perspective, current domestic and international research on shared service platforms is limited, often approaching from “management” or “economics” angles, with insufficient research from an information perspective. As information is a fundamental element of all activities on platforms and an important factor in reducing consumer uncertainty, constructing an evaluation index system for resource information quality on such platforms helps improve overall information quality levels and implement regulatory measures. Additionally, regarding research methods, most information quality evaluation studies adopt traditional methods such as fuzzy comprehensive evaluation and analytic hierarchy process, which have limitations including high subjective interference and strict requirements for linear relationships between indicators. However, resource information quality on shared service platforms is influenced by multiple conditions including information source, information content itself, and information recipients, representing typical nonlinear problems. Therefore, traditional evaluation methods are not suitable for this research. This paper proposes applying BP neural network to evaluate resource information quality on shared service platforms.

2. Information Dissemination and Adoption Process in Shared Service Platforms

Shared service platforms are derivatives of platform business models under the sharing economy background. They possess traditional market functions while breaking through time and space limitations, playing roles as information integrators, technical supporters, and transaction coordinators. Using internet, cloud computing, big data, and other information technologies, shared service platforms connect supply and demand sides through the business model of redistributing idle resources, matching transaction parties' needs, providing convenience for both user groups, and maximizing benefits for all parties. They provide approaches for both supply and demand sides to access more information about transaction objects, expand information acquisition channels for market participants, improve transaction quality, and reduce transaction costs and information asymmetry between buyers and sellers.

As a medium, shared service platforms follow traditional media communication patterns. According to information dissemination theory, the communication process involves information sent from a source, transmitted through a channel, and delivered to a receiver. Drawing on this process, this paper constructs the resource information dissemination process for short-term rental shared service platforms, as shown in Figure 1 [Figure 1: see original paper]. Based on this model, resource providers are the main body of information dissemination and the source of resource information; short-term rental platforms are the medium for resource information transmission, i.e., the channel in the communication process; users are the receivers of resource information, i.e., the destination. Resource providers publish information about idle resources through the platform; users search, process, and handle information according to their needs, ultimately making consumption decisions.

3. Connotation and Evaluation Index System of Resource Information Quality on Shared Service Platforms

3.1 Connotation of Resource Information Quality on Shared Service Platforms

Shared service platforms contain substantial information resources, which can be simply divided into platform information, resource information, and user reviews according to different publishers. Platform information refers to information released by the platform, such as platform rules and guidelines. Resource information refers to information about shared resources published by providers. User reviews refer to comments posted by users after offline experiences. The dual nature of short-term rental platforms gives them two user groups: hosts and guests. Platform information includes three parts: platform guidelines, hosts' descriptions of housing resources, and guests' evaluation information. This paper focuses on resource information content to construct evaluation indexes.

Information quality is a key indicator for information evaluation. Cao Ruichang et al. [?] measured and evaluated information quality from four dimensions—content, expression, collection, and utility—based on previous research and information structural characteristics. Gao Zhiyong et al. [?] defined information quality from user needs, considering it as the degree to which information satisfies users, which can be divided into quality and quantity dimensions. The former evaluates how well information content itself meets users' information needs, while the latter refers to how much content information recipients actually obtain. Researchers from various fields have conducted relevant studies on information quality, but due to the diversity of information, no clear and consistent definition has been established. Based on previous definitions, this paper defines resource information quality on shared service platforms as the degree to which information—such as text, images, and videos—published by providers (resource owners) through the platform satisfies consumption users.

3.2 Construction of Resource Information Quality Evaluation Index System

The connotation of information quality on shared service platforms shows that it reflects users' overall satisfaction with information. Evaluating information quality should include not only source and information content quality but also the utility that resource information brings to consumption users. Based on the information dissemination process of shared service platforms, this study selects indicators from three dimensions: resource information source, resource information itself, and consumption users. Since this paper discusses the evaluation index system for resource information quality from different providers on the same platform, the platform dimension is not considered.

Taking short-term rental shared service platforms as an example, this study constructs an evaluation index system for resource information quality on shared service platforms. Drawing on previous information quality evaluation research and applying interview methods, we conducted in-depth interviews with 10 users who have extensive experience using short-term rental platforms. Interviews were recorded, and original written texts were formed afterward. Based on grounded theory, we coded and organized the raw data. The coding team consisted of two doctoral students from Jilin University School of Management. Inter-coder reliability consistency coefficient was tested, with only one indicator (information appropriateness) having a consistency coefficient below 0.8. After discussion, the coding team concluded that this indicator correlated with others and should be deleted. Indicators with consistency coefficients above 0.8 are shown in Table 1.

3.2.1 Information Source Quality Specific indicators under the information source quality dimension include: official certification, resource order volume, total resource quantity, resource rating, host order acceptance rate, and host response rate. The source of resource information on shared service plat-

forms is resource providers who send information to the platform. Users' first judgment of resource information reliability involves evaluating relevant information about the resource provider, making information source quality crucial for users' information quality assessment. To eliminate user concerns, platforms verify resource providers and resources themselves, and resources and providers with verification marks more easily gain user trust. Order volume and total resource quantity reflect the duration and experience of resource providers on the platform, and users tend to choose providers with larger resource quantities or more orders. Resource ratings reflect evaluations from users who have completed consumption experiences, demonstrating the actual situation of shared resources. Due to herd mentality, people prefer shared resources with higher ratings. Resource providers with high online response rates and order acceptance rates can respond to user booking demands more promptly and gain user trust more easily.

3.2.2 Information Content Quality Information content quality is discussed from the perspective of information itself. Short-term rental platforms are popular among consumption users due to their personalization and unique characteristics, but they also involve unpredictability. Users can only make preliminary judgments about resources through hosts' descriptions in text, images, and other forms. Interview content analysis reveals that evaluation indicators at the information content level mainly focus on text content quality, expression quality, and image information quality. Specific indicators include resource title quality, text information comprehensiveness, text information authenticity, image clarity, image completeness, image authenticity, expression consistency, understandability, expression accuracy, and expression conciseness.

Title quality refers to whether resource titles include housing characteristics or advantages that can arouse users' interest in learning details. Text information comprehensiveness means hosts provide comprehensive information, including not only specific conditions of the house interior and details but also the resource's geographic location, surrounding facilities, transportation, and various useful information about paid and unpaid services hosts can provide to facilitate guests. Text information authenticity refers to whether online information provided by hosts matches content in images and reviews; stronger authenticity means higher credibility, while discrepancies seriously affect consumption users' trust in hosts. Image clarity refers to whether images provided by resource providers are clear enough for users to understand basic housing conditions. Image completeness refers to whether images include overall and partial house pictures, as well as detail images that guests care about, such as bathrooms and kitchens. Image authenticity refers to whether images show signs of artificial synthesis or post-processing modifications. Expression consistency means content is consistent with all previously appearing related content; hosts often describe resources using multiple forms such as images and text, and this indicator mainly examines whether descriptions of the same thing in different forms are consistent. Understandability means resource information is

easy to understand without obscure professional vocabulary. Expression accuracy means resource information is expressed accurately without ambiguity or vague terms. Expression conciseness means resource information is expressed succinctly without redundancy. Since users need to screen housing resources that meet their needs from massive resource information in a short time, this indicator mainly examines whether housing descriptions are concise enough and whether large amounts of repetitive information appear. Real and complete images and high-quality text content affect users' overall perception of information content quality, making the measurement of information content itself an important dimension of resource information quality evaluation.

3.2.3 Information Utility Quality Users are the main body that perceives information. The core of evaluating platform information quality is judging the degree to which housing information satisfies users. Previous evaluations of information utility quality on transaction platforms focused on whether product attribute descriptions met users' actual needs, reflecting information practicality. However, on shared service platforms, users' information needs are not only for resource information itself but also for emotional and cultural experience needs at the emotional level. Particularly for short-term rental platforms, personalized humanistic care is a prominent feature. Platforms not only provide users with cost-effective resources and services but also transform products without emotional color into existences with certain warmth and emotion. A major reason users choose short-term rental platforms over traditional standardized hotel accommodations is to have a rich and regionally distinctive home experience. Therefore, in the information utility quality dimension, besides information usefulness, this paper adds emotional support as an evaluation indicator to highlight the characteristics of shared service platform information. This indicator previously appeared only in information quality evaluations of non-transaction platforms such as "virtual communities" or "Q&A websites." This paper breakthroughly applies this indicator to transaction platform information quality evaluation because information on shared service platforms has more "warmth" than traditional transaction platforms.

Specifically, the information utility dimension will be measured through three indicators: emotional support, information usefulness, and information timeliness. Emotional support refers to whether resource providers can reflect personal characteristics, interests, hobbies, or personal experiences in published resource information content, triggering resonance in information recipients. Information usefulness is users' perception of the practicality of housing information—whether resource providers' housing information can meet consumption users' information needs when selecting accommodations. Information timeliness: since shared housing itself and its surrounding environment are not static, whether resource providers can update information promptly and provide the latest effective information is the measurement standard. Information with strong timeliness is closer to the current state of housing and more valuable for users.

Based on the above analysis, the resource information quality evaluation index system for shared service platforms includes 3 first-level indicators and 19 second-level indicators. The specific index system and indicator explanations are described in Table 2 .

4. Resource Information Quality Evaluation Method for Shared Service Platforms Based on BP Neural Network

4.1 BP Neural Network Principle

In 1986, the BP neural network was proposed by D.E. Rumelhart and J.L. McClelland [?]. It is a multi-layer feedforward neural network trained according to error backpropagation algorithm, widely applied in classification, prediction, evaluation, and other research. A typical BP neural network structure consists of three layers: input layer, hidden layer, and output layer, as shown in Figure 2 [Figure 2: see original paper]. BP neural networks feature self-learning capabilities, and their operation includes forward propagation and backpropagation processes [?]. In forward propagation, learning sample data are provided to the input layer, which passes them to the hidden layer. The hidden layer processes the data through weights between neurons and transfer rules (activation functions) and then transmits it to output layer units [?], obtaining the difference between expected and actual values (error). The error value is judged against network expected precision requirements. If the network precision value is satisfied, training ends; otherwise, backpropagation begins. The backpropagation process goes from the output layer back through hidden layers to the input layer, continuously adjusting network node weights during training until the error approaches ideal precision and training can end [?].

4.2 Training Steps for Short-Term Rental Shared Service Platform Resource Information Quality Evaluation Model Based on BP Neural Network

The Matlab training steps for the short-term rental shared service platform resource information quality evaluation model based on BP neural network are as follows:

Step 1: Obtain data samples and perform normalization and preprocessing.

Original sample data have differences in magnitude. To ensure unified data magnitude, data need normalization processing to limit values within intervals. This study uses the `mapminmax` function for data normalization.

Step 2: Determine the number of neurons in input, output, and hidden layers.

This study selects a 3-layer BP neural network for the short-term rental platform resource information quality evaluation model, including input, hidden, and output layers. The number of input neurons equals the number of evalu-

ation indicators. The short-term rental platform resource information quality evaluation indicators are divided into 3 dimensions with 19 second-level indicators, so the input layer has 19 neurons. The output layer neurons correspond to evaluation results. Since the shared service platform resource information quality evaluation result is only the comprehensive evaluation score, the output layer has 1 neuron. For hidden layer neuron determination, this paper draws on previous research experience [?], using the formula $M = n + \sqrt{m} + a$ to calculate, selecting the number of hidden layer neurons when mean square error is smallest. In the formula, M is the number of hidden layer nodes, n is the number of input layer neurons, m is the number of output layer neurons, and a is a constant between 1 and 10.

Step 3: Set training functions and parameters.

After the first step of normalization, research sample data values fall within the $[0,1]$ range, meeting the value range requirements for S-type or tangent functions. Therefore, hidden layer and output layer functions are selected as `tansig` and `logsig` respectively, with the `trainingdm` function as the network training function and the default MSE function as the performance function.

Step 4: Train the BP neural network using training sample data.

After inputting short-term rental platform resource information quality indicators into the input layer, data are processed through the hidden layer and output at the output layer to obtain actual output values.

Step 5: Compare actual output values with expected output values.

Calculate the error rate between actual and expected values. If the error meets training requirements, training ends; otherwise, repeat Steps 3 and 4, continuously adjusting training parameters until the error meets training requirements, making actual output values gradually approach expected output values.

Step 6: Simulation.

Input test sample data into the input layer to verify whether the trained network can accurately predict new samples.

5. Matlab Training and Simulation

5.1 Sample Selection and Data Acquisition

This study selects the domestic Xiaozhu short-term rental platform as the research object and uses the top 100 housing resource information items recommended on the platform's homepage for popular travel destination Xiamen as research samples. Data acquisition adopts a combination of qualitative and quantitative methods. For quantitative indicators A1-A6, data are directly obtained from housing and host interfaces on the platform. For qualitative indicators B1-B10 and C1-C3, 20 users with shared accommodation experience (including 10 researchers in information quality and information management, and 10 experienced users with more than 10 shared accommodation experiences) are invited to score on a ten-point scale, where higher scores indicate better per-

formance of housing information on that indicator. Users score the source, content, and utility of the 100 housing information items based on the indicator descriptions constructed in this paper, and provide comprehensive scores for housing information quality. The geometric mean of all user scores is taken as quantitative data. Partial sample data are shown in Table 3 .

5.2 Determination of Input, Output, and Hidden Layers

In numerous BP neural network evaluation studies, the number of input layer neurons equals the number of evaluation indicators, and output layer neurons equal the number of evaluation results. Therefore, this paper uses 19 indicator factors related to resource information quality evaluation as input layer neurons and uses comprehensive evaluation scores as the output layer (1 neuron). When determining the number of hidden layer neurons, this study referenced the common empirical formula $M = n + \sqrt{m} + a$. According to the trial-and-error method, the number of hidden layer neurons is between 6 and 15. By comparing MSE values of output errors, the MSE value is smallest when the number of hidden layer neurons is 11, indicating optimal neural network performance. Therefore, the number of hidden layer neurons is set to 11.

5.3 BP Neural Network Training

Sample indicator data are used as input values, and users' comprehensive scores for information quality serve as output values. First, Matlab2018a is used to read data; then the `mapminmax` function normalizes data, with the first 80 samples used as training data. Next, training functions and parameters are set. The hidden layer neuron transfer function is `tansig`, the output layer neuron transfer function is `logsig`, and the improved training function `trainingdm` with momentum gradient descent is adopted as the network training function. The learning rate is set to 0.4, maximum allowed iteration training times is 50,000, display training times is 100, training precision is 0.001, initial weights and thresholds are set to system defaults, and other parameters use default values. After training completion, the `sim` function simulates output for test data, and output values undergo reverse normalization. Finally, output values are compared with expected values to calculate error rates. Training results are shown in Figure 3 [Figure 3: see original paper], where the horizontal axis represents training times and the vertical axis represents mean square error. The figure shows that after 2,912 training steps, the target error of 0.001 was achieved.

5.4 Output Results and Result Analysis

Housing information quality data for samples 81-100 (20 items) are selected as test samples to verify the accuracy of the constructed network in testing new unfamiliar samples. Figure 4 [Figure 4: see original paper] compares expected and actual output values for test samples, showing that the BP neural network simulation effect is excellent. The error between expected and actual output values is small, with error rates within 7% (see Table 4). The model's evaluation

values for short-term rental platform resource information quality are very close to user scores, achieving ideal prediction precision. This demonstrates that the short-term rental platform resource information quality evaluation model based on BP neural network constructed in this paper has certain feasibility and can be applied to platforms' accurate prediction of housing information quality.

Since BP neural network obtains indicator weights through training sample learning, it cannot determine actual weight magnitudes or rank indicator importance. However, evaluation results show that among samples 81-100, sample 85 has the lowest comprehensive score. Comparing the 19 evaluation indicator scores between this sample and the better-performing sample 100 reveals that sample 85 scores significantly lower on all indicators, particularly B1 Resource Title Quality (sample 85: 7.2, sample 100: 9.3), B2 Text Information Comprehensiveness (6.4 vs. 9.4), B3 Text Information Authenticity (7.1 vs. 9.3), B5 Image Completeness (7.2 vs. 9.1), B10 Expression Conciseness (7.2 vs. 9.2), and C1 Emotional Support (7.1 vs. 8.4). This indicates that sample 85's housing text information quality and image completeness are poor, failing to meet users' basic housing information needs. The text contains substantial repetitive content with insufficient conciseness, resulting in low information acquisition efficiency. Additionally, the title design lacks appeal to users, and the information content lacks personalization, thematization, or regional cultural expression, failing to resonate emotionally with users, leading to low interest and overall perceived information quality. Sample 100 performs excellently across all indicators but scores average on official certification (A1) and resource order volume (A2), suggesting that while its overall resource information quality is good, it has fewer official certification credentials, which may affect user trust and order volume. The recommendation is to increase official certification credentials to enhance user trust in the information source and obtain more orders.

6. Discussion and Analysis

- (1) The short-term rental platform resource information quality evaluation model based on BP neural network has an error rate within 7%, demonstrating certain feasibility and practicality. This method avoids the excessive subjectivity drawbacks of traditional evaluation methods such as analytic hierarchy process and fuzzy comprehensive analysis. BP neural network has strong nonlinear mapping capabilities, making the evaluation model more consistent with users' actual evaluation processes, with results more accurately approaching actual scores, thus achieving higher accuracy and practicality.
- (2) Improving resource information quality on short-term rental platforms requires efforts from three aspects: information source quality, information content quality, and information utility quality. Platforms should emphasize enhancing host credibility while focusing on reviewing information comprehensiveness and accuracy to provide high-utility resource information for consumption users. Based on specific scores from the evaluation

index system, platforms can target improvements to enhance information quality.

- (3) Analysis of user interview results about resource information quality reveals that consumption users place greater emphasis on the completeness of resource images and comprehensiveness of resource text information. More comprehensive image content helps users perceive the overall and detailed interior environment of housing, enabling them to receive more valuable information that aids consumption decisions. Additionally, if resource text information includes not only interior house introductions but also surrounding transportation, dining, shopping, and attractions, users' perception of overall resource information quality is greatly enhanced. Therefore, platforms should focus on reviewing the completeness of housing image information and comprehensiveness of resource text content to strengthen overall platform resource information quality and provide users with more valuable information.

7. Conclusion

This paper employs information dissemination theory to analyze the resource information dissemination process on short-term rental platforms, constructs a resource information quality evaluation index system based on participants in the information dissemination process and interview results, selects 19 evaluation indicators from three dimensions (information source quality, information content quality, and information utility quality), builds a shared service platform resource information quality evaluation model based on BP neural network, and verifies the model's accuracy and feasibility through 80 training samples and 20 test samples, enabling practical application in current shared service platforms' resource information quality evaluation.

Theoretically, this paper enriches the application field of information quality theory by analyzing the information dissemination process, dividing dimensions of resource information quality on shared service platforms, and constructing an evaluation index system with short-term rental platforms as an example, providing theoretical support for resource information quality management on shared service platforms. Practically, this paper provides evaluation methods and systems for platforms to review and evaluate supply-side resource information quality, offering reference value for improving overall platform information quality and optimizing platform information environments. It also helps supply-side users understand dimensions and indicators affecting receiving-end users' perceived information quality, enabling them to conduct self-inspection and improvement of information quality, thereby enhancing resource transaction volumes while improving platform-provided resource information. However, this study has limitations, such as small sample size and lack of universality in parameter selection due to focusing only on short-term rental platforms. Future research should design personalized evaluation methods for different types of shared service platforms and expand application fields. Additionally, this

evaluation system focuses on supply-side resource information management and quality improvement within platforms, with research objects being supply-side resource information. However, platforms also contain other information such as user reviews. Future research could construct information quality evaluation indexes for entire platforms to measure information quality level differences between platforms. Moreover, this paper only validates indicators with short-term rental platform data; future research should study and analyze data samples from other categories of shared service platforms.

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Author Contributions

Li Quanxi: Responsible for theoretical and methodological guidance and paper revision.

Xu Jiahui: Responsible for topic selection and main content writing.

Wei Junwei: Responsible for data collection and organization.

Zhang Jian: Responsible for English translation.

English Abstract

Abstract: [Purpose/significance] This paper takes the short-term rental shared service platform as an example, and constructs an evaluation index system for resource information quality of shared service platforms, so as to help such platform enterprises efficiently identify resources with information quality problems and improve the overall information quality level of the platform. [Method/process] Firstly, using the theory of information dissemination, the paper analyzed the process of information dissemination of the shared service platform. Then, according to the participants in the information dissemination process and interview data, an evaluation index system was established from three dimensions: source quality, content quality, and utility quality. Finally, an information quality evaluation method based on BP neural network was proposed, and 100 sets of collected sample data were used for training and simulation verification by Matlab2018a software. [Result/conclusion] The evaluation index system for resource information quality of shared service platforms is proposed and validated by BP neural network. Taking the short-term rental platform as an example, the final results prove that the evaluation index system has certain feasibility and practicality.

Keywords: Shared service platform; Information quality; Evaluation research; BP neural network

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

Source: ChinaXiv — Machine translation. Verify with original.