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Retraction

Retracted: Design and Implementation of Community Pension Service Quality Evaluation System Based on Clustering Algorithm

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] W. Liu, "Design and Implementation of Community Pension Service Quality Evaluation System Based on Clustering Algorithm," *Advances in Multimedia*, vol. 2022, Article ID 5832853, 10 pages, 2022.

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Research Article

Design and Implementation of Community Pension Service Quality Evaluation System Based on Clustering Algorithm

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The healthy development of community elderly care service is very important. Studying the quality evaluation of community elderly care services and establishing a complete, scientific, and objective community elderly care service method can establish the online reputation of enterprises and help elderly users obtain cost-effective elderly care services. This is very important for healthy development. This paper puts forward a new evaluation model for the quality of community elderly care service. The evaluation method based on the model is designed, the quality evaluation model is constructed, and the community evaluation system is developed. From the aspects of requirement analysis, design, implementation, and testing, the specific implementation process of the system is described. This paper puts forward a community evaluation model which accords with the clustering model: community elderly care service quality evaluation method. AIS-OR mathematical modeling is carried out. Under the guidance of the model, the secondary indicators are analyzed and determined, and the mathematical model of indicator evaluation is constructed. We use text mining technology and emotion analysis to determine the relationship between comment emotion and community elderly care service quality online and build a quality emotion feature library. The naive Bayesian algorithm is used to classify the online evaluation of the service quality of community elderly care services, which verified by experiments and completed the design and development of the community elderly care service quality evaluation system based on the project needs.

1. Introduction

With the rapid development of social economy and the reduction of family size in China, the traditional home-based elderly care model cannot meet the actual needs of the elderly. China's aging belongs to the situation of "getting old before getting rich." Due to the serious aging, the country does not have the conditions for social endowment. Therefore, in the current environment, the elderly care service should be managed by the community. The community pension model can better supplement the deficiency of national social pension. Community pension can provide services according to the specific actual needs of the elderly in the community. Such services are more practical than large-scale social pension services. The elderly often have a greater demand for medical care, and the community can provide this type of service for the elderly. It can even provide community-based door-to-door medical services to avoid the trouble of the elderly going to large hospitals for medical treatment. It also avoids medical risks in private clinics. The leisure needs of the elderly can also be well met in the community. The community provides the main venues for leisure activities for the elderly and can also organize the elderly in the community to participate in the elderly activities to meet the spiritual needs of the elderly. With the continuous growth of the elderly population, community pension has become an important way to solve the problem of pension in my country. Driven by both policies and the market, the community elderly care service market has shown an explosive industry development and has become an indispensable part of the development field. The quality and effect of community directly affect it. Prospects and vital interests of the majority of the elderly, studying the quality evaluation system of community elderly care services, and improving the trust of the elderly are the key measures to promote the continuous improvement and

development of community elderly care and ensure the quality of life for the elderly. For such tripartite evaluation system that aggregates, integrates, and publishes the consumer experience and comments on community elderly care service items from the elderly, the system not only provides elderly care service institutions around the community with a platform for obtaining elderly customers, more importantly, it provides a more objective, scientific, and accurate basis for potential elderly consumers to obtain elderly care services that meet their own needs and economic ability from the massive community elderly care service options. The development of career has important theoretical and practical significance. Studying community can further improve and enrich the research theories and systems in the field of community. As the community pension model is in its initial stage, it is still a relatively unfamiliar vocabulary to the vast elderly in China, and the theoretical research on community pension has not formed a complete and comprehensive system.

This paper focuses on the evaluation of community and proposes a community elderly care service quality based on the AIS-OR (Assessment Indicator System-Online Review) model, considering both the evaluation indicators of community as well as comments of elderly users on the service. The new model of evaluation has established it, determined the weights of quality evaluation indicators, studied the relationship between online reviews of community elderly care services and service quality, and enriched the theoretical system of community elderly care services. The design and development of a community elderly care service quality evaluation system can make up for the defect that community elderly care has not embarked on the road of informatization in China. Through the developed Internet, the community elderly care service quality evaluation system integrates scattered community elderly care service resources, establishes a community-centered three-party evaluation system, expands the publicity of community elderly care service providers, and increases the number of visitors. The evaluation system facilitates the investigation and data analysis of the current situation of elderly care and establishes a data foundation for promoting the establishment of a community elderly care service model national conditions.

2. State of the art

2.1. Current Status of Research on Quality Evaluation of Community Elderly Care Services. In developed countries such as Europe, America, and Japan, due to the early start of community, a relatively complete service content system has been formed, which has laid a good foundation for the research on service quality evaluation [4]. Japan, which entered an aging society in the 1970s, has gradually formed a rich content and distinctive features after more than 50 years of development. According to the smooth development for community, the government has established sound policies and legislation: "Nursing Care Law," etc. [5]. It is stipulated that the access mechanism is used to strictly evaluate the community which will be effectively guaranteed; for service evaluation methods, a tripartite evaluation mechanism is introduced, and a combination of clinical intervention and compliance intervention is used to conduct community elderly care [6]. The quality evaluation is divided into two parts: preevaluation and postevaluation. The specific standards are formulated by the Bureau of Health and Welfare of the Elderly of the Ministry of Health and Welfare of Japan [7].

As a high welfare country, the United Kingdom proposed a community pension scheme in the early 20th century, and the government played a leading role in the smooth implementation of the guarantee scheme. In the community aged care, the British government has formulated to ensure the standardization of the service process and the quality of service results [8]. The institutions are related in a contractual manner [9]. The government stipulates that service institutions need to bear certain legal and civil liabilities in the event of an accident. The British government has established a well-regulated management and evaluation mechanism for service projects from declaration to evaluation and from service personnel to volunteers, which are regularly inspected by government staff, and fund-providing organizations will also conduct random inspections from time to time [10].

The American community pension started relatively late, but it has developed rapidly [11]. In the American community aged care service system, the elderly affairs management and evaluation center, which has the functions of management, evaluation, and guidance [12]. The United States has improved the relevant legal system in the area of community-based elderly care, such as the "Elderly Welfare Law," "Community Law," "The Social Work Association Ethics Outline," and human dignity [13]. Sweden, as a sample country of pension service security, has always pursued a high-welfare community pension model. Sweden has a sound pension service evaluation system [14]. The government has established a tracking agency to evaluate the quality of pension services [15]. According to the relevant content of the "Social Service Law," the evaluation of elderly care services is carried out. Under the influence of Confucianism, Singapore adheres to the community-based elderly care model with family as the central element. In order to ensure the implementation of services, Singapore has formulated laws and regulations such as the "Law on Supporting Parents" and "Orders of Nursing Homes" and established a strict evaluation of elderly work: mechanism and supervision and accountability mechanism and set service standards for elderly care services [16].

Community pension in my country is in the early stage of exploration, the relevant policies and systems for various service quality evaluations are not perfect, and the development of laws and policies related to community pension is lagging behind [17]. However, the research on the quality evaluation of community elderly care services in my country has still achieved certain results [18]. After analyzing the feasibility of the extension theory to evaluate the community elderly care services, the literature [19] constructed a community elderly care service quality evaluation model based on the extension theory [20]. The AHP process determines

the weight values for the indicators in the model. The literature investigates the day care for the elderly in four communities through questionnaires and field interviews and finds that community day care depends on factors such as government management and the single operator. Literature conducted a survey on the elderly in the eastern, central, and western regions by means of stratified sampling and overall sampling and summarized and analyzed the factors that affect the well-being of the elderly in the community-based elderly care in different regions. The literature assesses the impairment relationship between applicants and users of integrated services in Hong Kong, reveals higher-level latent needs that may be hidden in community aged care services, and proposes ways to improve community care services based on the assessment results. Take the community elderly as the main service object and save all relevant resources in the community elderly care activities in the form of electronic records. Facilitate statistics, inquiry, and other work and improve management efficiency and reduce workload. Make full use of modern information technology and network technology and integrate the strength and service resources of all sectors of society. "Based on the community, with the elderly as the core, and based on technology, establish an all-round information-based community pension system," truly ensure that the elderly care activities can effectively meet the needs of the elderly in the community, make the life of the elderly more comfortable, and make the children more comfortable, so as to promote family harmony, community harmony, and national harmony.

To sum up, the development of community pension models in developed countries such as Europe, America, and Japan is relatively mature, and they have relatively complete legal guarantees in terms of service quality evaluation. At the same time, the government has established corresponding regulatory agencies and formulated the standards and procedures for service quality evaluation. The evaluation of community elderly care service quality has embarked on a standardized and standardized path. However, the research on the quality evaluation of community elderly care services started late and mostly stayed at the theoretical level. Although there are some studies on the quality evaluation of community elderly care services, the evaluation granularity is rough, and it is difficult to meet the needs.

2.2. Research Status of the Evaluation Index System of Community Elderly Care Service Quality. Emergency response and cultural and entertainment services include basic services such as personal care, daily shopping, legal help, and disease diagnosis. Daily life care is one. The literature indicates that day care for the elderly should meet the requirements of the "ten-minute elderly care service circle." In other respects, it strives to meet the two-way needs of "menu-style" and "specialized" services and into four aspects, life care, medical care, spiritual comfort, and recreational and sports, and studies and analyzes the factors that affect the needs of the elderly in community care for the elderly. Reference integrates "filial piety culture" and "Confucianism" into day care services in consideration of China's national conditions, taking into account the psychological needs and cultural needs of the elderly. Due to the decline of physical function, the elderly have an increasingly strong demand for medical care. Through research and statistical analysis of the data of the elderly, the literature divides the content of medical care services into health consultation, daily consultation, medication guidance, psychological and spiritual consolation, and personalization. Guidance and other aspects improve the security level and service scale of community elderly medical care. Literature conducted a field investigation on the community medical station in Yulong Community, analyzed its existing problems, designed a medical service model for the elderly, and analyzed the feasibility of the medical station under this model from the aspects of supply and demand. In view of the needs of health management and rehabilitation nursing in community elderly care, the literature stipulates 6 basic items and 2 working methods of community elderly care medical care and builds a relatively complete system, which is very popular among the elderly. Literature comparison, analysis, and summarization of the similarities and differences between elderly rehabilitation nursing and clinical nursing expound the specific service content and points of attention and gradually build a nursing and rehabilitation system focusing on elderly prevention, medical treatment, and rehabilitation. The literature takes the elderly in the community of Xianning, and questionnaire survey, and summarizes the cultural and entertainment, including physical fitness, group activities, book reading activities, tourism activities, and other 8 items.

The community elderly care service model appeared relatively late and has a relatively short development time compared with other industries, but the research on the service quality evaluation index system has still achieved certain results. The Japanese community elderly care service quality evaluation system includes four dimensions, "investment resources," "service process," "service results," and "service effects", six aspects, and 100 evaluation items, involving daily life, professional skills, and business management. The United States uses the Minimum Number Set (MDS) quality evaluation system to evaluate service quality. The system includes 175 evaluation indicators such as clinical treatment, physical function, and nutritional eating. After continuous improvement, it was reduced to 24. The quality evaluation system has been widely used in the United States and old-age security. The literature draws on the relatively complete service quality evaluation index system which includes four dimensions of service basic standard, service provision standard, service management standard, and service guarantee standard and 28 evaluation indicators. The SERVQUAL scale formed by PZB through research and empirical evidence is widely used in the field of service quality evaluation. Based on the five dimensions of SERVQUAL and the scientific index selection principle, the literature constructs a community elderly care service quality evaluation index system. The system involves six service contents: meal assistance, cleaning assistance, bath assistance, walking assistance, emergency assistance, and medical assistance, each of which is designed with evaluation indicators from five dimensions. Reference divides the content of

community elderly care services into three elements: life care, medical care, and social connection. On this basis, indicators are designed from the three dimensions of hardware facilities, software foundation, and service results. The resulting quality includes the 3C elements of living care, medical care, and social connection, and 53 three-level evaluation indicators were designed based on each element. Based on the fuzzy comprehensive evaluation and analytic hierarchy process, the elderly community pension service is quantified and completed in 20 communities in Nanchang through this index system. The data mining technology of community pension service quality based on rough set is adopted. The evaluation indicators are simplified from the aspects of day care, medical rehabilitation care, safety measures, and participation in spiritual, cultural, and social activities. The literature expounds the quality influencing factors of community care for the elderly and excavates the influencing factors from the aspects of the results, process, and structure of care for the elderly.

The service quality abroad is relatively complete one of "getting old before getting rich" control. How to construct a service quality evaluation index system in line with China's community-based elderly care needs to learn from experience and consider the needs and concerns of Chinese elderly groups and community-based elderly care.

3. Methodology

3.1. System Business Process Analysis. The core of the system revolves around the process of quality evaluation of online comment information after the use factors affecting implementation of elderly care service items. Therefore, the one should cover both online reviews of and quality indicators. The online review and quality indicators of elderly care service project implementation are divided into two parts. The first part is the natural attribute variables including gender, age, health status, and self-care level and the social attribute variables including education level, spouse status, number of children, income status, income source, and living style. The second part is the elderly's evaluation of service quality, which is the form of the service quality evaluation scale. The scale summarizes the topics that belong to the same dimension and arranges the four dimensions in the order of tangibility, reliability, assurance, and empathy.

At the beginning establishment institutions in the system, the relevant service quality evaluation content is empty, and system administrators, community, or government staff can evaluate the elderly care service items of service institutions through the evaluation indicators and evaluation standards of institutions. After that, the system will also periodically evaluate the indicators to ensure the timeliness of the indicators evaluation results. The method can also be used to investigate the quality results of the elderly who do not know how to use the Internet.

On the other hand, the elderly or their family members who have received community elderly care services online and offline can make online comments of the system. After users submit online comments on community items, they will evaluate the quality of community elderly care services through relevant online comment service quality evaluation methods in the background of the system and obtain online comment quality results and store them in the system.

In order to ensure high-quality service quality evaluation, the community adopts an online comment point reward mechanism. When the elderly or their family members make online comments on community elderly care service items, the comments are submitted to the background and reviewed by the system administrator on the system side. For online comment content, 50 points will be awarded for online comments of users who meet the requirements of more than 100 words, more than 3 uploaded pictures, and the content is true and comprehensive. Points from online reviews can be exchanged for products of corresponding value in the system. The business process of community elderly care service quality evaluation is shown in Figure 1.

3.2. Clustering Quality Evaluation Model. Internal evaluation index refers to evaluating the quality of clustering effect by calculating intracluster, intercluster, or overall similarity without involving any external information and only relying on the characteristics and metric values of the dataset itself. The ideal clustering effect is the main idea of the existing internal evaluation index that will be the average distance of the sample set. Common internal evaluation indicators and their characteristics are analyzed as follows:

3.2.1. DB Indicator (Davies-Bouldin Index).

$$\mathrm{DB}(K) = \frac{1}{K}\sum_{i=1}^{k} \max i, j \neq i \frac{1/n\sum_{x\in C_i} d(x, v_i) + (1/n)\sum_{x\in C_i} d\left(x, v_j\right)}{d\left(v_i, v_j\right)}. \tag{1}$$

The DB indicator first takes the sum of the average distances then takes the maximum ratio of the two as the distance: the similarity of the clusters, and finally, the average of the similarities of all clusters to obtain the DB index of the sample set. It can be seen that the smaller the index, the lower the similarity between the clusters, and the more ideal the corresponding clustering results. It is often used to evaluate datasets that are "compact within clusters and far away from each other." However, when the overlap of datasets is large, such as when encountering circularly distributed data, because the centers of each cluster overlap, it is difficult for the DB indicator to compare the clustering results that form an effective evaluation.

3.2.2. CH Indicator (Calinski-Harabasz).

$$\mathrm{CH}(K) = \frac{\sum_{i=1}^{K} n_i d^2(v_i, c)/(K-1)}{\sum_{i=1}^{K}\sum_{x\in C_i} d^2(v_i, c)/(N-K)}. \tag{2}$$

The CH indicator uses the sum of the squares of the distances between the center points of each cluster and the mean center of the sample set as the separation degree of the dataset, the sum of the squares of the distances between the points' closeness within the cluster, and the difference between the separation and the closeness. The ratio is

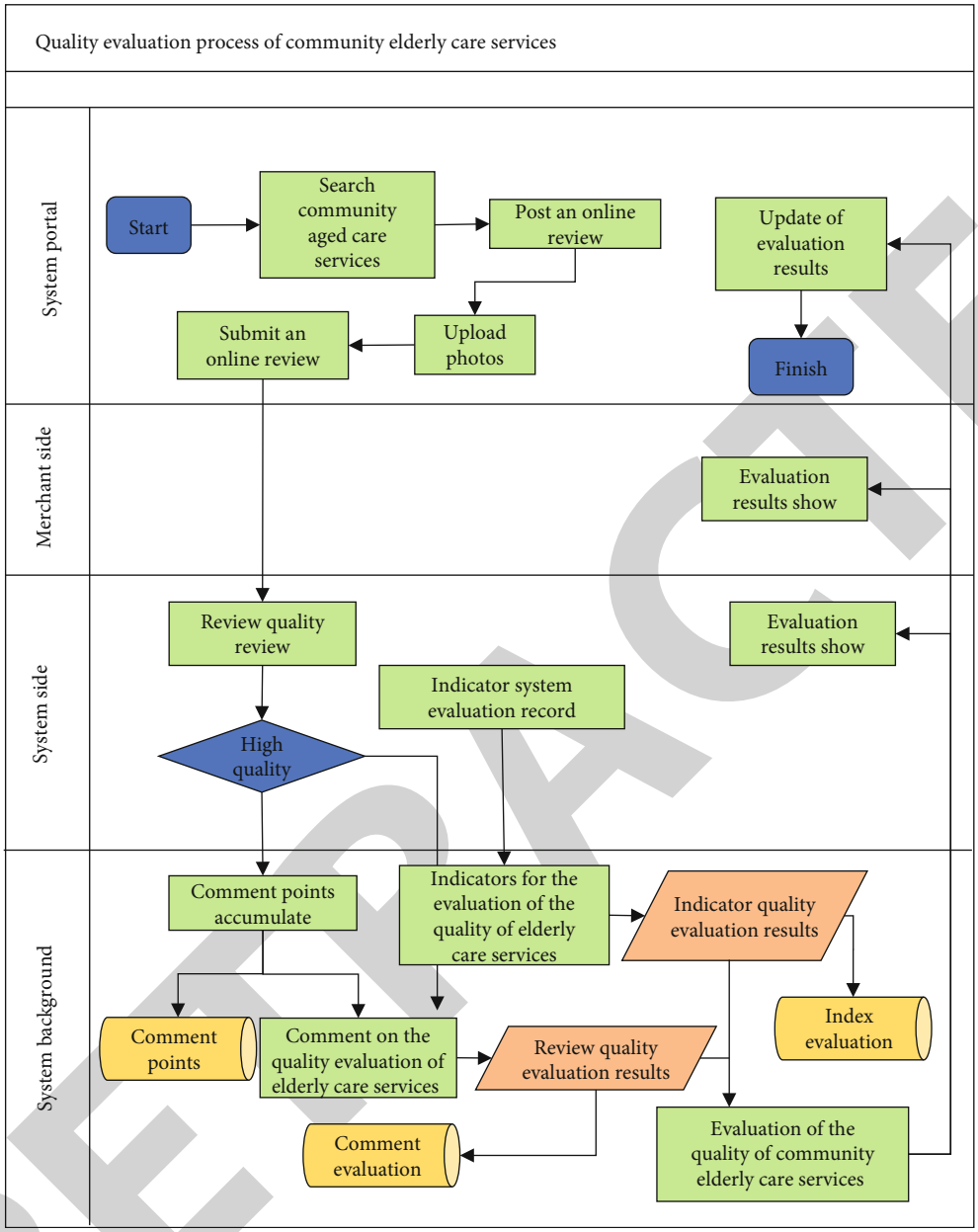

Figure 1: Schematic diagram of the business process of the community elderly care service quality evaluation system.

regarded as the final index. The larger the index, the higher the degree of dispersion between clusters. From the function expression of the CH index, it can be seen in the number of clusters that approaches the sample. When the capacity is N, each sample forms a cluster by itself, and the center of the cluster is each sample itself. At this time, the sum of the distances within the cluster is approximately 0, the denominator is a minimum value, and the CH index will tend to be the largest. At this time, the clustering evaluation results are not practical.

3.2.3. F_r Indicator.

$$F_r = \mathrm{CH}.\lg K. \tag{3}$$

Aiming at the problem that the sum of the intracluster distances in the CH index may tend to be 0, the literature has improved it, multiplying the factor lg K on the basis of the original index to adjust the extreme value of CH when the value of K tends to be N. Generally, in the case of $K \geq 2$, lg K is greater than 0; so, the change trend of the Fr index is similar to that of the CH index; that is, the larger the index value, the better the clustering quality.

3.2.4. Dunn's Indices.

$$\mathrm{DVI} = \min_{1 \leq i \leq K} \left(\min_{1 \leq i \leq K, i \neq j} \left(\frac{d(C_i, C_j)}{\max_{1 \leq i \leq K} (\delta(C_t))} \right) \right). \tag{4}$$

The Dunn index is expressed in the clustering quality. In fact, the Dunn index, like the CH index, is not suitable for scatter. In the data, that is, when the samples in the cluster tend to be 1, the distance within the cluster is close to 0, and the index value is the largest, which means that the clustering result is the best, but the clustering result at this time obviously deviates from the real distribution. In addition, when the data is distributed in a ring or strip, because the distance between clusters is small, but the maximum distance within the cluster is large, the clustering results are ideal, but the evaluation index is very low. On the other hand, due to Dunn's index, the maximum diameter of all clusters in the clustering results is adopted, and the difference in diameters between different clusters is ignored, thus reducing the accuracy of clustering evaluation to a certain extent.

3.2.5. IGP Indicator (In-Group Proportion).

$$\mathrm{IGP}(K) = \frac{1}{K}\sum_{i=1}^{K} \mathrm{igp}(i, X). \tag{5}$$

IGP uses the ratio of the two closest samples to the same cluster as the criterion for judging the quality of clustering. The basis is that when a sample is clustered, other objects in the same cluster as the sample should be the same as the sample with the highest similarity.

$$\mathrm{igp}(i, X) = \frac{\{j | \mathrm{Class}x(j) = \mathrm{Class}x(j^N) = i\}}{\{j | \mathrm{Class}x(j) = i\}}, \tag{6}$$

where igp (i, X) represents the index value of the i-th class in the dataset X, jN is the sample closest to the sample j, and class $X(j)$ represents the class to which the j-th sample in the dataset X belongs since IG P only pays attention to the consistency of the nearest neighbors. When the K value gradually increases, this indicator will continue to decrease. In actual use, the number of clusters obtained by using this indicator is often less than the real number.

3.3. Clustering Quality Evaluation Model. Aiming at the problem that the current clustering algorithms spend too much time in clustering analysis of large datasets, a dataset compression algorithm based on nearest neighbor similarity is proposed. By dividing several similarity nearest neighbor data points into a data cluster and randomly selecting cluster heads to form a new dataset, the data size is greatly reduced. Then, the AP algorithm is used to cluster the compressed datasets. In this paper, the preliminary clustering results obtained by the AP algorithm are merged according to the similarity, and the clustering interval is compressed to a reasonable range by reducing the clustering upper limit kmax to improve the clustering accuracy. Figure 2 shows the clustering quality evaluation model. The basic idea is first use the AP algorithm to cluster the sample set and then calculate the ratio α between the distance between the farthest boundary point between any two clusters and the average distance of the sample set, where α represents the relative spatial

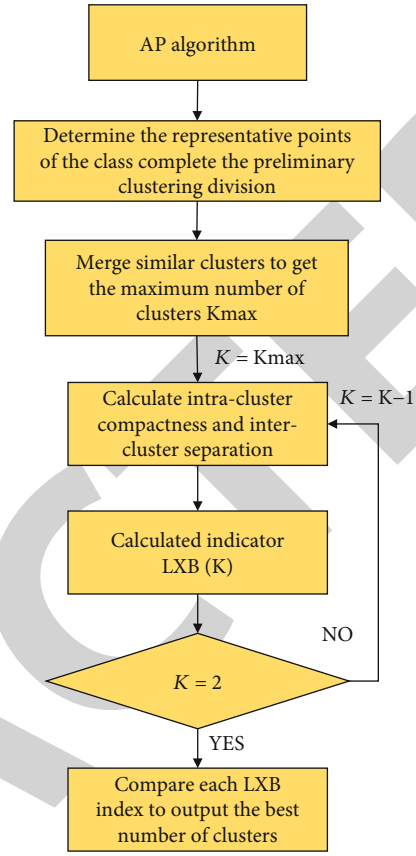

Figure 2: Clustering quality evaluation model.

structure of the adjacent two clusters and the sample set. The smaller the value, the higher the relative similarity of the two clusters. After traversing all clusters, if the minimum α is within the specified threshold range, the two clusters will be combined into one; otherwise, it will remain unchanged and new. The definition and formula of the algorithm are as follows:

$$d(x_i, x_j) = \sqrt{\sum_{p=1}^{l} \left(x_i^p - x_j^p\right)^2}, \tag{7}$$

where $i = 1, 2, \cdots, N$; $j = 1, 2, \cdots$, and N; l represents the feature dimension of the sample.

The average distance of the sample set is defined as the ratio of the sum of the distances between the data objects to the number of sample pairs.

$$\mathrm{Dist} = \sum_{i=1}^{N}\sum_{j=1}^{N} d(x_i, x_j)/A_N^2. \tag{8}$$

Among them, A2 N represents the number of permutations of randomly selecting 2 samples from the sample set X.

The distance between the farthest boundary points between the two clusters is as follows.

$$\mathrm{Dist}(C_i, C_j) = \max_{x_t \in C_i, x_t \in C_i} (d(x_t, x_u)), \tag{9}$$

where x_t and x_u represent the 2 samples whose clusters C_i and C_j are farthest apart.

The similarity between clusters is defined as the ratio of the distance between clusters to the average distance of the sample set.

$$\alpha_{i,j} = \frac{\mathrm{Dist}(C_i, C_j)}{\mathrm{Dist}}. \tag{10}$$

If the intercluster similarity α is within a given threshold range w, the two clusters are merged; otherwise, they remain unchanged.

$$C_i = \begin{cases} C_i \cup C_j (\alpha_{i,j} \in w), \\ C_i (\alpha_{i,j} \notin w). \end{cases} \tag{11}$$

Among them, the threshold range w can be set by the user, and its default value is [1, 1.5].

When evaluating the clustering results of samples without prior knowledge, the closeness within clusters and the separation between clusters are usually regarded as important criteria for internal evaluation. If the distance between the center points of each cluster is used as the distance between clusters. The clustering evaluation results are invalid due to overlapping centers. This paper optimizes on the basis of the XB index and uses the minimum value of the sum of the distances of all pairs of similarity, weakens the influence of noise data, and avoids the failure of the indicator when the data is distributed in a ring or strip. The definition and formula of the new indicator improve-XB (hereinafter referred to as IXB) are as follows:

The compactness within a cluster is defined as the sum of the distances between all samples in a cluster and the center of the cluster to which they belong.

$$\mathrm{Com} = \sum_{i=1}^{K} \sum_{x \in C_i} d(x, v_i). \tag{12}$$

Among them, x represents the samples in the cluster C_i, v_i is the center of the cluster C_i, and K represents the number of clusters in the sample set.

Separation between clusters is defined as the minimum value of the sum of the distances of all pairs of samples between two clusters.

$$\mathrm{Sep} = \min \sum_{i=1,j=1}^{K} \sum_{x_t \in C_i, x_u \in C_i, i \neq j} d(x_t, x_u), \tag{13}$$

where x_t and x_u represent any 2 samples in cluster C_i and cluster C_j, respectively.

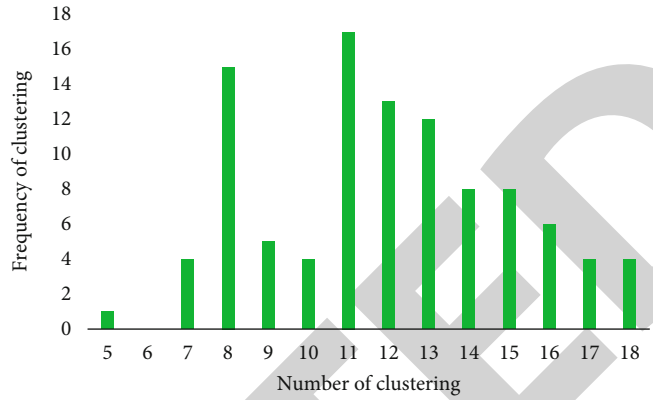

Figure 3: Frequency of clustering results.

The IXB indicator is defined as the sum of the ratio of within-cluster compactness to between-cluster separation and its reciprocal.

$$\mathrm{IXB}(K) = \frac{\mathrm{Sep}}{\mathrm{Com}} + \frac{\mathrm{Com}}{\mathrm{Sep}}. \tag{14}$$

The optimal number of clusters K_{opt} is defined as IXB (K). There is number of clusters when the maximum value is obtained.

$$K_{\mathrm{opt}} = \arg\max \{\mathrm{IXB}(K)\}, \tag{15}$$

where $K \in [2, K_{\max}]$, and $K_{\max}$ is given by the improved AP algorithm.

4. Result Analysis and Discussion

The significance test probability (SIN) P value of the indicators of the service quality evaluation index system of the elderly care institutions is less than 0.05. It shows that there are significant differences between the expected service and perceived service of the elderly in the 24 index levels. That is to say, the perceived service of the elderly is significantly lower than the expected service of the elderly at the level of 24 indicators. It can be seen that the service quality of the elderly care institutions does not meet the expectations and needs of the elderly. Therefore, according to the above analysis, the following policies are proposed, which have certain reference significance for improving the quality of long-term care services and the effective implementation of long-term care insurance. Figure 3 counts the ones (60, 12) of the current input parameters as the statistical input parameter (Eps value is 60, MinPts value is 12). The Eps and MinPts values obtained by experience are 85 and 10, respectively; the Eps and MinPts obtained by the modified DBSCAN are 65 and 12, respectively. There are 500 individual anchor points in the case dataset. Clustering results were evaluated using compactness, separation, and DBI. The compactness and DBI represent the cohesion of the classes, and the separation represents the distance between classes. The smaller the compactness and DBI, the higher the separation, and the better the clustering effect.

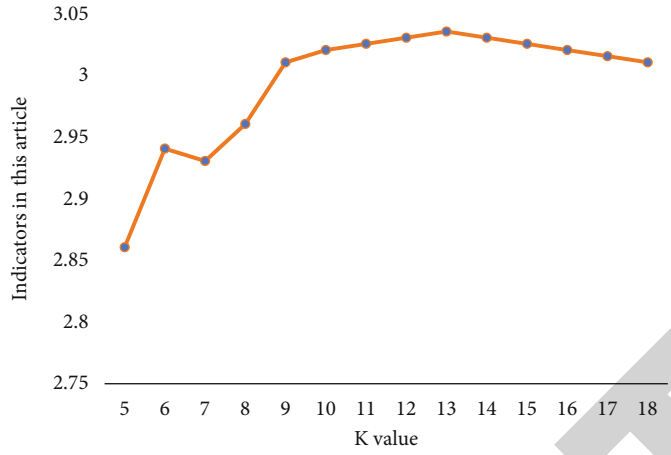

Figure 4: Graph of IXB-K of the training set.

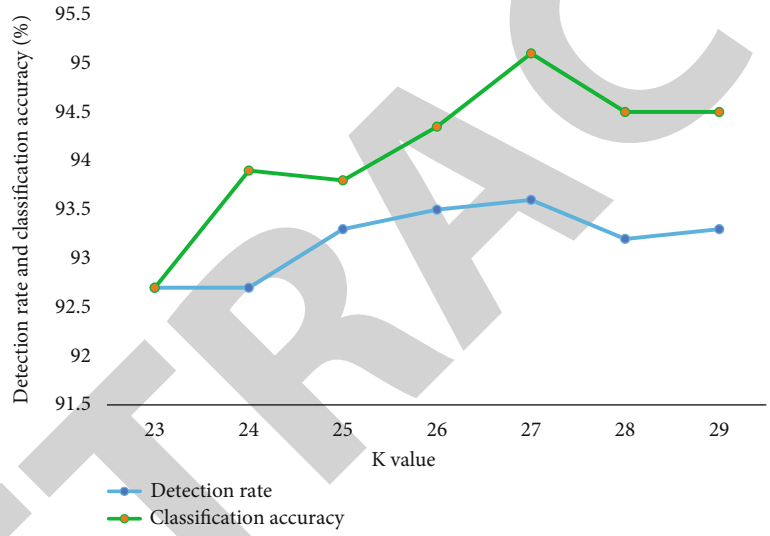

Figure 5: Average detection rate and classification accuracy for different K values.

Set the threshold range $w = [1, 1.5]$, the damping factor is 0.9, the maximum number of iterations is 1000 times, the maximum number of clusters in the training set is obtained after executing the improved AP algorithm $K_{max} = 32$, and the IXB index result obtained by using the CQE model is shown in Figure 4. It can be seen that with the continuous increase of the K value, IXB presents an upward trend, and when $23 \le K \le 25$, IXB gradually increases. It tends to be stable; when $K = 26$, IXB reaches a maximum value, and after that, with the increase of K value again, IXB decreases slowly; when $K = 29$, the decline increases significantly. It should be specially pointed out that when $K = 18$, it can be seen that Com18 < Com19 query the clustering results of the training set when $K = 18$ and $K = 19$. The classification accuracy of abnormal data is 78%, and the latter is 76%; so, the former has better intracluster compactness than the latter, and when $K = 19$, although the intercluster separation has increased (Sep18 = 1 524 019 748, Sep19 = 1 524 738 937), its increase is smaller; so, IXB(18) > IXB(19).

In order to verify whether the optimal K value obtained by the IXB index is effective, that is, whether the various intrusion detection indexes are effective when K takes the optimal value, this paper slowly increases the IXB in Figure 4 to the peak value and then slowly decreases from the peak value. The multiple consecutive K values corresponding to the stage are defined as the optimal clustering number range, namely, $K_{opt} \in [23, 29]$, and four groups of test sets are used to verify the intrusion detection indicators in this range. After taking the average, the line graphs are shown in Figures 5 and 6. It can be seen that when the number of clusters is 27, the intrusion detection rate and the correct classification rate reach the maximum value at the same time, which are 93.62% and 95.17%, respectively; when the number of clusters is 26 and 25, the false alarm rate reaches the minimum, which is 3.37%; when the number of clusters is 25, the false alarm rate reaches the minimum, which is 4.14%.

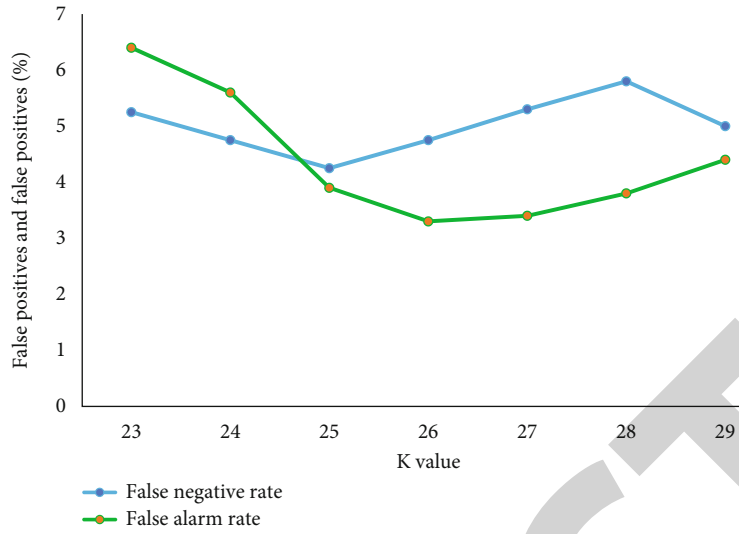

Figure 6: Average false negative rate and false positive rate for different K values.

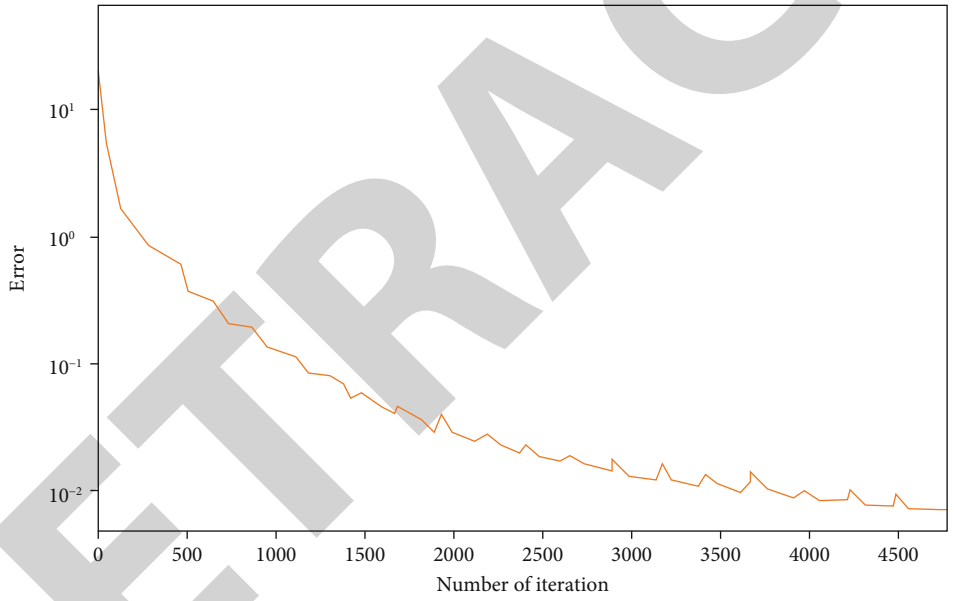

Figure 7: Usage error curve.

Figure 7 shows the average credit error of the individual with the largest fitness weight for each classification. It can be seen that the algorithm is convergent. After 5000 iterations, the error is within the required accuracy range. The credit error curve is shown in Figure 7.

5. Conclusion

Such background of community elderly care, the quality evaluation mode, and work flow of community completes the design and research and development of the community elderly care service quality evaluation system based on the project requirements and builds a system for comprehensively obtaining evaluation information and objectively evaluating, and the main work accomplished in this paper is as follows:(1) in view of the current status of evaluation, the system business roles and functions are defined, the business workflow is clarified, and then a community elderly care service quality evaluation model based on the AIS-OR model is designed. Comprehensively consider all aspects, make full use of the information and data related to quality evaluation and provide a reliable and objective evaluation for service providers; (2) constructed the evaluation model of community quality and the secondary index system of community elderly care service quality evaluation through investigation, calculated the weight of the indicators based on the analytic hierarchy process, determined the quality evaluation index system, and constructed the index evaluation. The mathematical model realizes the index evaluation of the quality of community elderly care services. (3) An evaluation model of community elderly care service quality based on online reviews is proposed. Use text data mining technology and

sentiment analysis methods to summarize the relationship between emotion and community elderly care service quality, establish an emotional feature model of elderly care service quality, and use the naive Bayesian algorithm to realize the classification of online comments on the quality of community elderly care service quality which carried out experimental verification.

Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The author declared no conflicts of interest regarding this work.

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