

Retraction

Retracted: Quality Evaluation of College Employment Based on Fuzzy Comprehensive Evaluation and Immersive Virtual Realization Technology

Mobile Information Systems

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

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] Y. Ji and Y. Luo, "Quality Evaluation of College Employment Based on Fuzzy Comprehensive Evaluation and Immersive Virtual Realization Technology," *Mobile Information Systems*, vol. 2022, Article ID 6285591, 13 pages, 2022.

Research Article

Quality Evaluation of College Employment Based on Fuzzy Comprehensive Evaluation and Immersive Virtual Realization Technology

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In order to further understand the employment forms, employment dynamics, and employment competitiveness of college students, this paper puts forward an employment quality evaluation model based on fuzzy comprehensive evaluation and immersive virtual realization technology in combination with the employment needs and environment of college students. Through horizontal and vertical comparison, field research, and employment quality evaluation model, this paper deeply understands the employment level of college students. From the perspective of the evaluation results of the employment-related work of the 2020 college students, the excellent employment rate has reached 86.25%. From the perspective of the employment quality trend of graduates, the graduate employment quality score is 77.08, and the undergraduate and junior college students' scores are 74.97 and 77.66, respectively. From the perspective of the excellent employment rate, the employment quality evaluation model proposed in this paper is helpful for the employment of college students.

1. Introduction

Immersive virtual reality is a simulation that generates an interactive and immersive real world on a computer by using graphic systems and various control interface devices; that is, a three-dimensional virtual world is generated by using computer simulation to provide users with a real-world simulation of visual, auditory, tactile, and other senses in the virtual environment, as shown in Figure 1 [1]. Traditionally, previous studies on employment usually focused on the amount of employment, such as the employment rate and unemployment rate. However, they seldom pay too much attention to the “quality” of employment, so in the long run, the employment rate has naturally become a crucial standard in the research of traditional employment [2]. The employment rate has even become an important indicator to reflect the employment situation of a country and region. However, previous studies on the employment rate only reflected the quantity of employment and the number of undertakings through the use of simple labor statistical

indicators and neglected the quality. This not only will seriously ignore the working environment of the labor process but also will not even consider factors such as working hours. Therefore, only focusing on the employment rate and unemployment rate cannot meet the needs of employment research [3]. Therefore, the aim of this paper is to focus on the quality of employment work on the basis of previous studies and to better improve the employment rate through the evaluation of the quality of employment work.

2. Literature Review

Some scholars have proposed that the quality of employment is a comprehensive category of good or bad conditions in which the means of production and workers are combined to obtain returns or income in the whole process of employment [4]. From the microscopic analysis, the quality of employment is actually centered on the workers and all the elements associated with it. From a macroperspective, the quality of employment is the different degrees of good and

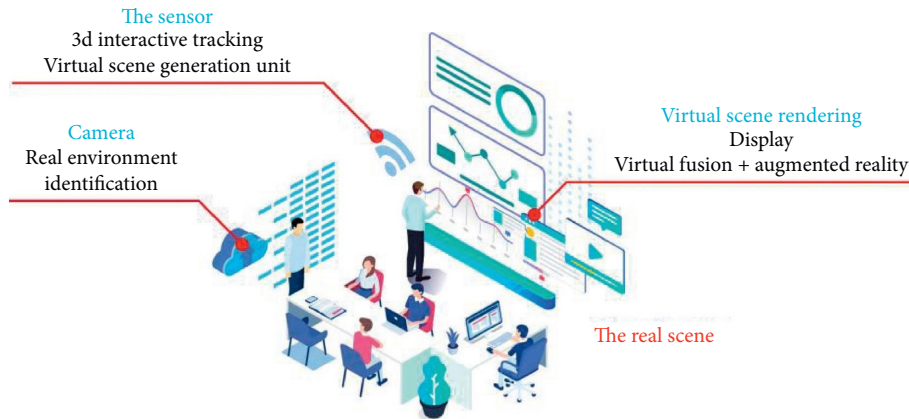


FIGURE 1: Immersive virtual reality.

bad that all workers in a region, industry, or country react to when they work [5]. In addition, it is believed that decent work covers two levels of employment quality and employment quantity in connotation, the so-called decent work is actually the good or bad level of employment quality, and the production work with high employment quality corresponds to decent work [6]. Some scholars argue that the quality of employment is actually a measure of the comprehensive employment status of workers in the process of completing their employment behavior [7]. The quality of employment includes nine aspects, namely, working conditions, health and welfare, equal opportunities, whether to enjoy social security, the nature of work, training and career prospects, labor relations, personal dignity, and safety. We think the employment quality not only refers to the state in the employment process but also includes the whole employment process itself. It argues that the evaluation of employment quality should come from two aspects: objective conditions and subjective satisfaction. The objective conditions refer to job stability, job opportunities, social reputation, development space of the industry, salary and welfare, and so on [8]. Subjective satisfaction refers to whether the job itself is satisfied, whether the workplace is satisfied, whether the conditions of the work unit are satisfied, and whether the salary is satisfied. Throughout many studies on employment quality by foreign scholars, almost all of them started from the research on the related concepts of employment quality, and many of them were inspired by the research on “decent work” [9]. There are many similarities between “decent work” and “quality of employment,” but there are also many differences. Scholars have always stressed that “quality of employment” and “decent work” should not be equated [10].

3. Immersive Virtual Reality Technology Evaluation System

3.1. Determination of Evaluation Object. The immersive product virtual evaluation system is guided by the theory of perceptual engineering and evaluates products from the perceptual point of view of users. Therefore, it is more suitable for daily life products rather than functional

technical products. Such products widely exist in daily life and are often observed and exposed by the public [11]. The specific product range includes household appliances, digital products, furniture lighting, storage ornaments, kitchen and bathroom supplies, and personal care, as shown in Figure 2.

3.2. Establishment of Evaluation Index System

3.2.1. Collection of Evaluation Indicators. The collection of evaluation indicators is carried out with the help of the perceptual vocabulary classification method, which is to use the hierarchical inference method to establish a tree-like analysis chart and gradually refine the details [12]. The implementation procedure is shown in Figure 3.

First, 0 times of perceptual vocabulary of the product shall be determined according to the market positioning and research of the product, and then multilayer perceptual vocabulary shall be gradually deduced to complete the index collection. The specific process is shown in Figure 4 [13]. In the process of collecting indicators, we should make the vocabulary more representative and comprehensive and not miss the important perceptual vocabulary.

3.2.2. Screening and Classification of Evaluation Indicators. After the indicators are collected, it is necessary to simplify and screen the collected indicators, eliminate unnecessary indicators, classify and sort the indicators, and establish an evaluation indicator model [14]. The following points should be done when screening indicators: First, the number of perceptual words to be screened should be controlled within the critical value. Second, the problem design should focus on the expression of the evaluator’s perceptual will, rather than the understanding of the design elements. The problem should be simple and easy to understand without consuming the evaluator’s energy. Third, the selection of evaluators should focus on the people who have demand for products and have close contact with products, subdivide them, and do a good job in user positioning [15]. The importance of the collected perceptual indicators is scored by 40 evaluators using the Likert scale method. There are five grades of 1–5, corresponding to “completely unimportant,” “unimportant,”



FIGURE 4: Flowchart of indicator collection.

TABLE 1: Index screening questionnaire.

Perceptual index	Completely unimportant (1 point)	Unimportant (2 points)	General (3 points)	Important (4 points)	Very important (5 points)
Simple and generous					
Fashion trends		...			

TABLE 2: Evaluation index correlation questionnaire.

Angle	Correlation degree				
	Completely unrelated (1 point)	Less relevant (2 points)	Average (3 points)	Relatively relevant (4 points)	Very relevant (5 points)
Indicator 1					
...					
Indicator n					

TABLE 3: Average data of correlation degree of evaluation indicators.

Evaluation index	Appearance modeling angle	Color material angle	Usability perspective	Human factors engineering
Indicator 1	Average value	Average value
Indicator n	Average value	Average value

tree view. In the tree view, different evaluation indicators will be classified into a certain evaluation angle category [17]. Sort out the evaluation indicators according to categories to get the evaluation indicator model, as shown in Figure 5.

3.2.3. Calculate Evaluation Index Weight. The weight of indicators is calculated by quantitative statistical method. The importance of the selected evaluation indicators is investigated and divided into five levels: unimportant, less important, important, more important, and very important.

67% of the three levels of “important,” “very important,” and “very important” are selected as the proportion of the limit [18]. The following formula is used:

$$\delta_i = \frac{a_i}{\sum_{i=1}^n a_i}, \quad (1)$$

$$a_i = \sum_{j=1}^3 L_j C_{ij},$$

where j stands for “important, relatively important, and very important,” $j = 3$;

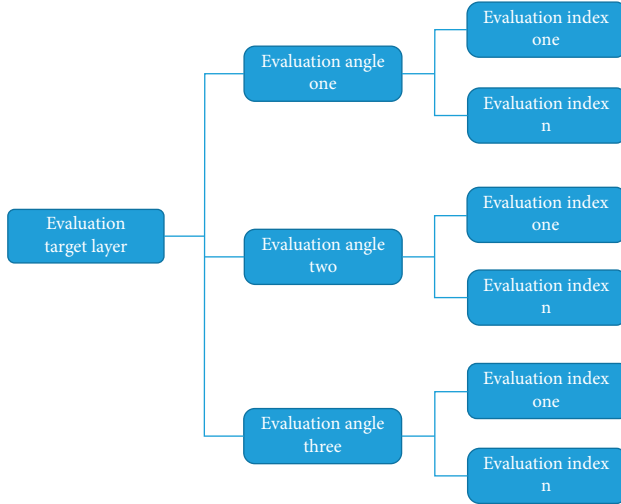


FIGURE 5: Evaluation index model.

$$L_1 = \frac{3}{3 + 4 + 5} = 0.25, \quad (2)$$

$$L_2 = \frac{4}{3 + 4 + 5} = 0.33, \quad (3)$$

$$L_3 = \frac{5}{3 + 4 + 5} = 0.42. \quad (4)$$

Equation (2) represents the proportion of general important categories; equation (3) represents the proportion of more important categories; equation (4) represents the proportion of very important categories; a_i , the weight value δ_i of index i , is obtained by normalization, where

$$\sum_{i=1}^n \delta_i = 1, 0 \leq \delta_i \leq 1 (i = 1, 2, \dots, n). \quad (5)$$

Calculate the weight of each evaluation index of the product, and adjust it appropriately according to the design focus of the product to obtain the final weight of each evaluation index [19]. The weight of each evaluation angle is the sum of the weights of each evaluation index under it, and the weight value of each evaluation angle is added to 1.

4. Fuzzy Comprehensive Evaluation of the Quality of College Students' Employment

4.1. Construction of Quality Evaluation Index System for College Students' Employment. According to the ABC method, after referring to relevant literature, the indicators are divided into three groups to form an indicator system for the quality of college students' employment. The weights of each indicator are assigned by using the expert scoring method, as shown in Table 4.

4.2. Introduction to Fuzzy Comprehensive Evaluation Model. Fuzzy comprehensive evaluation can be divided into single level and multiple fuzzy comprehensive evaluation according to the division of factor set. In order to illustrate the problem considering the complexity and operability of

operation, this paper uses two-level partition and fuzzy comprehensive evaluation. According to the fuzzy comprehensive evaluation and the above-established evaluation index system for the employment quality of college graduates, an evaluation model is established [20].

- (1) Determine the evaluation index set. According to the above evaluation index system for the employment quality of college graduates, we can see the following: Primary indicators include

$$X = (x_1, x_2, x_3). \quad (6)$$

Secondary indicators include

$$x_1 = (x_{11}, x_{12}, x_{13}, x_{14}, x_{15}, x_{16}, x_{17}, x_{18}, x_{19}). \quad (7)$$

Similarly, we can get

$$x_2 = (x_{21}, x_{22}, x_{23}, x_{24}, x_{25}, x_{26}, x_{27}, x_{28}, x_{29}), \quad (8)$$

$$x_3 = (x_{31}, x_{32}, x_{33}, x_{34}, x_{35}, x_{36}, x_{37}, x_{38}).$$

- (2) Determine the weight of each indicator layer. It can be seen from the above that the weight of each indicator is

$$a = (a_1, a_2, a_3) = (0.2, 0.5, 0.3),$$

$$\begin{aligned} a_1 &= (a_{11}, a_{12}, a_{13}, a_{14}, a_{15}, a_{16}, a_{17}, a_{18}, a_{19}) \\ &= (0.1, 0.1, 0.05, 0.1, 0.2, 0.05, 0.2, 0.05, 0.15), \end{aligned} \quad (9)$$

$$\begin{aligned} a_2 &= (a_{21}, a_{22}, a_{23}, a_{24}, a_{25}, a_{26}, a_{27}, a_{28}, a_{29}) \\ &= (0.2, 0.1, 0.1, 0.05, 0.05, 0.1, 0.15, 0.05, 0.2), \end{aligned}$$

$$\begin{aligned} a_3 &= (a_{31}, a_{32}, a_{33}, a_{34}, a_{35}, a_{36}, a_{37}, a_{38}) \\ &= (0.2, 0.1, 0.1, 0.2, 0.05, 0.1, 0.05, 0.2). \end{aligned}$$

- (3) Determine the decision set. The decision set of the previous indicators is expressed as

$$\begin{aligned} V &= (V_1, V_2, V_3, V_4, V_5) \\ &= (\text{very good}, \text{good}, \text{generally}, \text{poor}). \end{aligned} \quad (10)$$

Four-level rating system, through questionnaire survey, is carried out to clarify the distribution of index values and then determine $R_i, i = 1, 2, 3$.

$$R_1 = \begin{bmatrix} r_{11} & r_{12} & r_{13} & r_{14} \\ r_{21} & r_{22} & r_{23} & r_{24} \\ \dots & \dots & \dots & \dots \\ r_{91} & r_{92} & r_{93} & r_{94} \end{bmatrix}. \quad (11)$$

The above formula is the evaluation membership matrix of the employer on the school evaluation.

$$R_2 = \begin{bmatrix} r_{11} & r_{12} & r_{13} & r_{13} \\ r_{21} & r_{22} & r_{23} & r_{24} \\ \dots & \dots & \dots & \dots \\ r_{91} & r_{92} & r_{93} & r_{94} \end{bmatrix}. \quad (12)$$

TABLE 4: Evaluation index system of college students' employment quality.

Evaluation index system of college students' employment quality	Evaluation of the employer on the school (x_1) (0.2)	Staff service attitude (x_{11}) (0.1)
		Style of study and school spirit (x_{12}) (0.1)
		School hardware (x_{13}) (0.05)
Evaluation index system of college students' employment quality	Evaluation of employers on graduates (x_2) (0.5)	Communication and cooperation with units (x_{14}) (0.1)
		Teaching practice link (x_{15}) (0.2)
		School popularity (x_{16}) (0.05)
		Teaching and management level (x_{17}) (0.2)
		Satisfaction with employment services (x_{18}) (0.05)
		Satisfaction with specialty setting and curriculum system (x_{19}) (0.15)
		Executive force (x_{21}) (0.2)
		Professional foundation (x_{22}) (0.1)
		Development potential (x_{23}) (0.1)
		Adaptability (x_{24}) (0.05)
Evaluation index system of college students' employment quality	Graduates' evaluation on school employment (x_3) (0.3)	Comprehensive quality (x_{25}) (0.05)
		Work style and professionalism (x_{26}) (0.1)
		Practical ability (x_{27}) (0.15)
		Innovation ability (x_{28}) (0.05)
		Organization, communication, and coordination (x_{29}) (0.2)
		Help of employment information to employment (x_{31}) (0.2)
		Hardware facilities and logistics services (x_{32}) (0.1)
		Study style construction (x_{33}) (0.1)
		Teaching management level (x_{34}) (0.2)
		Vocational guidance (x_{35}) (0.05)
Evaluation index system of college students' employment quality	Graduates' evaluation on school employment (x_3) (0.3)	Curriculum (x_{36}) (0.1)
		Daily management and service (x_{37}) (0.05)
		Employment assistance satisfaction (x_{38}) (0.2)

The above formula is the evaluation membership matrix of the employer on the school graduates.

$$R_3 = \begin{bmatrix} r_{11} & r_{12} & r_{13} & r_{14} \\ r_{21} & r_{22} & r_{23} & r_{24} \\ \dots & \dots & \dots & \dots \\ r_{81} & r_{82} & r_{83} & r_{84} \end{bmatrix}. \quad (13)$$

The above formula is the membership matrix of graduates' comments on the employment work of the school.

(4) Conduct fuzzy comprehensive evaluation.

The fuzzy comprehensive evaluation of secondary indicators shall be carried out first, and the evaluation method is

$$B_i = a_i * R_i, \quad (14)$$

where B_{ii} is the primary indicator and $i = 1, 2, 3$. There are three primary indicators. The composition matrix B is as follows:

$$B = \begin{bmatrix} b_{11} & b_{12} & b_{13} & b_{14} & b_{15} \\ b_{21} & b_{22} & b_{23} & b_{24} & b_{25} \\ b_{31} & b_{32} & b_{33} & b_{34} & b_{35} \end{bmatrix}. \quad (15)$$

The first level evaluation of the index is carried out, and the matrix E is obtained. The method is

$$E = a * B. \quad (16)$$

(5) Conduct comprehensive evaluation.

According to the results of B , take the excellent value, that is, the sum of the first and second items. According to the principle of maximum membership, the greater the value, the better the quality of employment in colleges and universities and the higher the degree of recognition from all aspects [21].

4.3. Example Analysis of College Students' Employment Quality Evaluation

4.3.1. Sample Selection. The research example in this section is a certain electric power university. The questionnaire was sent through e-mail, WeChat, and so on using the existing electronic equipment and network channels. A total of 400 questionnaires were distributed, of which 394 were valid. The basic data of the respondents involved in this questionnaire, such as gender, graduation type, and registered residence before enrollment, are shown in Tables 5 and 6, respectively.

TABLE 5: Gender composition in the sample.

Gender	Number (person)	Percentage (%)
Male	205	52.0
Female	189	47.9
Total	394	100

TABLE 6: Statistics of sample graduation types.

Educational background	Number (person)	Percentage (%)
Graduate student	123	31.2
Undergraduate	156	39.5
Junior college students	115	29.1
Total	394	100

By analyzing the data collected in the above sample tables, we can see the following:

- (1) There is little difference between the number of men and women in the sample, and the data obtained will not have gender tendency, which is more objective and reliable.
- (2) The graduate groups involved in this survey mainly include graduate students, undergraduates, and junior college students, which are relatively uniform in terms of sample distribution.

There are 30 questions in this questionnaire, all of which are in the form of multiple-choice questions. The specific content is set according to all the indicators in the graduate employment quality evaluation system designed above [22]. At the same time, the following questionnaire result calculation tables are designed. When making questionnaire statistics, the questionnaire data are quantified according to the tables. As for the score setting of options, if the question has 4 options, the score distribution is 100%, 75%, 50%, and 25%, respectively. If the question has only 3 options, the score distribution is 100%, 66.667%, and 33.333%, respectively. As for the question on the way and way of employment in question 22, considering the small difference between "others' recommendation" and "others," the score of this question is allocated as 100%, 33.333%, and 33.333%.

4.3.2. Research Process. The questionnaire results of all primary indicators are summarized, and the secondary indicators and employment quality scores of graduate students, undergraduate students, and junior college students are analyzed by SPSS software. The results are shown in Table 7.

The questionnaire results of all primary indicators are summarized, and SPSS software is used to analyze the correlation between secondary indicators and employment quality scores of graduate students, undergraduate students, and junior college students. The results are shown in Table 8.

By analyzing the data at graduate level, the correlation between vocational skill training indicators and employment path indicators and employment quality is less than 0.3, and the significance is greater than 0.05, indicating that vocational skill training indicators and employment path indicators are not related to the employment quality of graduate

level graduates; that is, the employment quality of graduate level graduates has nothing to do with vocational skill training and employment path [23]. The correlation values of occupational health indicators, working hours indicators, interpersonal relationship indicators, gender equity indicators, and work nature indicators are greater than 0.3 and less than 0.5, indicating that the above five indicators are weakly correlated with the employment quality of graduates at the graduate level; that is, the above five indicators have an impact on the employment quality of graduates at the graduate level, but the impact is weak. The correlation values of employment service quality index, promotion opportunity index, job stability index, and career belonging index are greater than 0.5 and less than 0.8, indicating that the employment quality of graduates at graduate level is positively correlated with the above indicators; that is, the employment quality of graduates at graduate level is affected by employment service quality, job promotion opportunity, job stability, and career belonging. Among all the secondary indicators of graduate level graduates, only the correlation value of employment location indicator, enterprise credit tolerance indicator, and salary reward indicator is greater than 0.8, indicating that the employment quality of graduate level graduates is highly related to the three indicators; that is, the employment quality of graduate level graduates is mainly affected by the employment location, the social reputation of the enterprise, and the salary [24].

By analyzing the data at the undergraduate level, the correlation value of employment path indicators is 0.067, less than 0.3, with a significance of 0.671, greater than 0.05, indicating that the employment path indicators are not related to the employment quality of graduates at the undergraduate level; that is, the employment quality of graduates at the undergraduate level has nothing to do with the way they obtain employment opportunities. The correlation values of employment service quality indicators and occupational health indicators are greater than 0.3 and less than 0.5, indicating that the above two indicators are weakly correlated with the employment quality of graduates at the undergraduate level. The above employment service quality and occupational health have an impact on the employment quality of graduates at the undergraduate level, but the impact is small. The correlation values of working time index, vocational skill training index, promotion opportunity index, employment location index, enterprise credit tolerance index, interpersonal relationship index, gender equity index, occupational belonging index, and work nature index are greater than 0.5 and less than 0.8. It shows that the above nine indicators are positively correlated with the employment quality of undergraduates. The above nine factors have a certain impact on the employment quality of graduates at the undergraduate level. By analyzing the data of junior college students, the correlation values of employment service quality indicators and employment path indicators are less than 0.3, and the significance values are greater than 0.05, indicating that the employment service quality indicators and employment path indicators have nothing to do with the employment quality of junior college students. The employment quality of college graduates has

TABLE 7: Descriptive analysis of secondary indicators and employment quality.

Arrangement	Primary index	Secondary index	Mean value	Standard deviation	N
Graduate level	Employment opportunities	Comprehensive employment rate	—	—	123
		Employment service quality	5.1641	0.67085	123
		Occupational health	2.5742	0.37279	123
	Working conditions	Working hours	2.1094	0.38593	123
		Vocational skills training	2.4531	0.29401	123
		Promotion opportunities	7.1352	1.70563	123
	Labor relations	Place of employment	2.2448	0.61585	123
		Enterprise trust	4.0820	0.74434	123
		Interpersonal relationship	5.9424	0.99904	123
	Employment equity	Working stability	4.4219	0.81922	123
		Employment path	1.7500	0.98374	123
		Gender equity	2.2656	0.55335	123
	Work value	Salary and remuneration	5.2734	1.54680	123
		Sense of professional belonging	4.8750	1.84308	123
		Nature of work	7.4609	1.38125	123
Undergraduate level	Employment opportunities	Comprehensive employment rate	—	—	127
		Employment service quality	1.8191	0.42334	127
		Occupational health	2.1037	0.45841	127
	Working conditions	Working hours	4.2819	0.67489	127
		Vocational skills training	3.5287	0.63166	127
		Promotion opportunities	5.5103	0.90060	127
	Labor relations	Place of employment	3.5079	0.46215	127
		Enterprise trust	3.5287	0.77052	127
		Interpersonal relationship	5.0634	0.74099	127
	Employment equity	Working stability	3.7945	0.59235	127
		Employment path	2.2910	0.67233	127
		Gender equity	2.0106	0.41032	127
	Work value	Salary and remuneration	4.2340	1.33860	127
		Sense of professional belonging	5.2483	1.67768	127
		Nature of work	4.3006	0.94089	127
Junior college level	Employment opportunities	Comprehensive employment rate	—	—	114
		Employment service quality	2.4107	0.46120	114
		Occupational health	5.7918	1.37279	114
	Working conditions	Working hours	2.9894	0.59409	114
		Vocational skills training	9.4531	1.29401	114
		Promotion opportunities	1.1352	0.36204	114
	Labor relations	Place of employment	2.2448	0.61585	114
		Enterprise trust	3.0820	0.54434	114
		Interpersonal relationship	1.9424	0.29904	114
	Employment equity	Working stability	2.4219	0.41922	114
		Employment path	3.7500	1.98374	114
		Gender equity	4.2656	0.85335	114
	Work value	Salary and remuneration	5.2734	1.54680	114
		Sense of professional belonging	3.8750	0.84308	114
		Nature of work	2.2609	0.38125	114

nothing to do with the quality of employment service and the way to obtain employment opportunities.

4.3.3. Evaluation and Analysis of Sample Employment Quality. According to the results of the questionnaire and the employment quality evaluation system established above, the employment quality scores of the graduates in the sample in 2020 can be obtained. The statistics are shown in Table 9 and Figure 6.

As can be seen from Figure 6, the employment quality of graduates at the graduate level in 2015 was the highest, 77.08 points. There is a small difference in the employment quality between graduates of undergraduate level and graduates of

junior college level, which are 74.97 and 74.66 points, respectively, and there is a certain gap with graduates of graduate level.

4.3.4. Evaluation of the Employer on the Electric Power University. 150 units were contacted through questionnaires and other means in this survey. A total of 87 employers finally participated in this survey, mainly those who have come to the school for recruitment. They are generally familiar with the school, with a wide range of distribution, wide industry coverage, and strong representativeness. Investigate the employer according to the requirements of the index system. The survey data are shown in Table 10.

TABLE 8: Correlation analysis between secondary indicators and employment quality.

Arrangement	Primary index	Secondary index	Relevance	Significance	N
Graduate level	Employment opportunities	Comprehensive employment rate	—	—	123
		Employment service quality	0.512*	0.013	123
		Occupational health	0.402*	0.038	123
	Working conditions	Working hours	0.424*	0.023	123
		Vocational skills training	0.178	0.329	123
		Promotion opportunities	0.771**	0.002	123
	Labor relations	Place of employment	0.949*	0.012	123
		Enterprise trust	0.857*	0.033	123
		Interpersonal relationship	0.475**	0.006	123
	Employment equity	Working stability	0.662**	0.000	123
		Employment path	0.185	0.311	123
		Gender equity	0.358*	0.044	123
	Work value	Salary and remuneration	0.918*	0.016	123
		Sense of professional belonging	0.572**	0.000	123
		Nature of work	0.460**	0.001	123
Undergraduate level	Employment opportunities	Comprehensive employment rate	—	—	127
		Employment service quality	0.302*	0.034	127
		Occupational health	0.465*	0.019	127
	Working conditions	Working hours	0.526*	0.025	127
		Vocational skills training	0.508*	0.026	127
		Promotion opportunities	0.625*	0.026	127
	Labor relations	Place of employment	0.507*	0.020	127
		Enterprise trust	0.724**	0.002	127
		Interpersonal relationship	0.519**	0.000	127
	Employment equity	Working stability	0.874**	0.010	127
		Employment path	0.067	0.671	127
		Gender equity	0.612*	0.011	127
	Work value	Salary and remuneration	0.845**	0.002	127
		Sense of professional belonging	0.508**	0.000	127
		Nature of work	0.611**	0.000	127
Junior college level	Employment opportunities	Comprehensive employment rate	—	—	114
		Employment service quality	0.139	0.386	114
		Occupational health	0.842**	0.001	114
	Working conditions	Working hours	0.636*	0.016	114
		Vocational skills training	0.815**	0.001	114
		Promotion opportunities	0.487*	0.027	114
	Labor relations	Place of employment	0.521**	0.002	114
		Enterprise trust	0.702*	0.011	114
		Interpersonal relationship	0.481**	0.020	114
	Employment equity	Working stability	0.438**	0.000	114
		Employment path	0.276	0.078	114
		Gender equity	0.587**	0.007	114
	Work value	Salary and remuneration	0.718**	0.006	114
		Sense of professional belonging	0.600**	0.000	114
		Nature of work	0.422**	0.010	114

N represents the number of samples.

TABLE 9: Comprehensive evaluation of employment quality.

Educational background	Employment quality (points)
Graduate student	77.08
Undergraduate	74.97
Junior college students	74.66

4.3.5. *Evaluation of the Employer on the Graduates of the Electric Power University.* In this survey, 150 units were contacted by issuing questionnaires and other means. A total of 87 employers finally participated in this survey, all of which are units from all walks of life that receive a large

number of graduates from our university. They have a good understanding of the overall situation of our graduates. Investigate the employer according to the requirements of the index system. The survey data are shown in Table 11.

4.3.6. *Evaluation of Graduates of the Electric Power University on Employment.* The survey contacted 500 graduates of the year 2020 through questionnaires and other means. Finally, 442 graduates of the year 2020 participated in the survey, including 321 boys and 121 girls, including graduate and undergraduate students, covering all majors. The survey data are shown in Table 12.

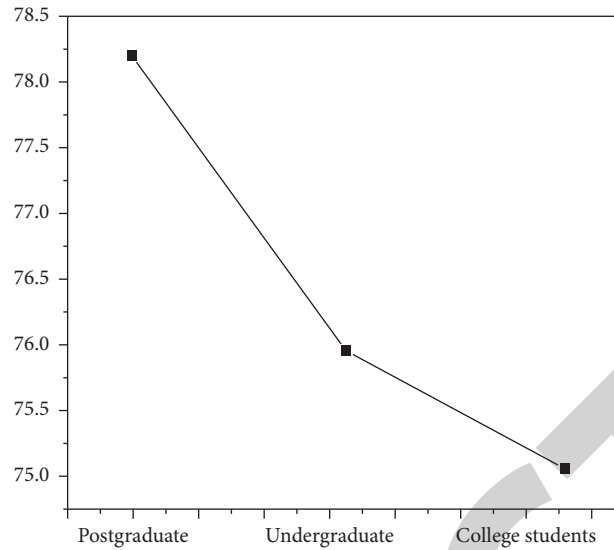


FIGURE 6: Employment quality trend of graduates.

TABLE 10: Evaluation of the employer on the electric power university

Evaluating indicator	Very good (%)	Good (%)	General (%)	Difference (%)	Total (%)
Staff service attitude	47.50	48.00	4.50	0.00	100.00
Style of study and school spirit	35.00	52.50	12.50	0.00	100.00
School hardware facilities	25.00	67.50	7.50	0.00	100.00
Communication and cooperation with units	17.50	65.00	17.50	0.00	100.00
Teaching practice	35.00	50.00	15.00	0.00	100.00
School popularity	42.50	55.00	2.50	0.00	100.00
Teaching and management level	27.50	65.00	7.50	0.00	100.00
Satisfaction with employment services	15.00	85.00	0.00	0.00	100.00
Satisfaction with specialty setting and curriculum system	57.50	42.50	0.00	0.00	100.00
Satisfaction with recruitment site, facilities, and equipment	37.50	60.00	2.50	0.00	100.00

TABLE 11: Evaluation of the employer on the graduates of the electric power university.

Evaluating indicator	Very good (%)	Good (%)	General (%)	Difference (%)	Total (%)
Executive power	21.43	78.57	0.00	0.00	100.00
Professional foundation	33.33	67.50	2.80	0.00	100.00
Development potential	26.19	71.43	2.50	0.00	100.00
Adaptability	21.43	73.81	4.76	0.00	100.00
Comprehensive quality	33.33	61.90	4.76	0.00	100.00
Work style and professionalism	27.50	69.05	7.50	0.00	100.00
Practical ability	15.00	71.00	10.22	1.68	100.00
Innovation ability	9.25	70.00	16.43	2.60	100.00
Organization, communication, and coordination skills	9.25	70.00	20.05	0.00	100.00

4.4. Analysis of Evaluation Results

- (1) *Overall Evaluation.* From the above evaluation results, it can be seen that the excellent rate of graduates' employment in this electric power university is $0.2925 + 0.6084 = 0.9009$. It shows that the quality of the graduates' employment work of the electric power university is very high and has been basically satisfied in all aspects.
- (2) *Specific Evaluation of All Aspects of Work.*
 - ① According to the evaluation of the employer on the electric power university, employers have a high

degree of recognition for the work related to school employment, and the excellent rate has reached 91.62% ($0.3229 + 0.5933$). According to the detailed data of each evaluation, there are 3 items whose evaluation indicators are satisfactory, good, high, and above, and the proportion is 100%, there are 4 items whose proportion exceeds 90%, and the proportion of the lowest 3 items exceeds 80%. It can be seen from the statistical chart that the employers are most satisfied with our school in three aspects, 100% of them think that the service attitude of the staff is good or above, the popularity of the school is high or

TABLE 12: Graduates' evaluation on employment.

Evaluating indicator	Very good (%)	Good (%)	General (%)	Difference (%)	Total (%)
Help of employment information to employment	45.43	48.62	5.78	0.36	100.00
Hardware facilities and logistics services	35.33	55.63	4.85	3.54	100.00
Study style construction	46.19	44.83	8.41	0.52	100.00
Teaching management level	42.43	47.39	6.95	2.82	100.00
Vocational guidance	58.33	31.68	6.84	3.15	100.00
Curriculum	40.50	49.43	9.88	0.48	100.00
Daily management and service	55.20	34.24	6.92	3.89	100.00
Employment assistance satisfaction	31.91	34.24	16.43	15.69	100.00

above, and the style of study and school spirit are good or above. Secondly, more than 90% of the students are satisfied with the employment service or above, the specialty setting and curriculum system are reasonable or above, the hardware facilities of the school are good or above, and the teaching and management level is high or above. The relatively low proportion is 87.5%, 85%, and 82.5%, respectively, which are satisfied with or above the recruitment site, facilities, and equipment, good at or above the communication and cooperation with the unit, and good at or above the teaching practice. In addition, the main factors considered by employers for recruitment to schools are the quality of students (77.5%), school running history (40%), and traffic factors (25%).

From the perspective of unit evaluation, first, the one-stop high-quality service of "site service, information release, image publicity, interview and negotiation, and contract signing guidance" that the school's employment guidance center has always adhered to has been widely recognized by the unit, effectively deepened the friendship with the majority of employers, and consolidated the employment market, and we need to continue to maintain and work hard. Second, in recent years, the popularity of our school has been significantly improved and has been recognized by many units, especially nonpower system units [25]. Thirdly, the excellent school spirit and learning style formed by the long-term school running history of the university are the highlights of our school running, and also one of the important factors that employers value and consider as recruitment factors.

② According to the overall evaluation [26–33] of the graduates of the electric power university by the employer, the excellent rate reached 93.63% (0.2048 + 0.7315). This strongly proves that the educational idea formed by the school over the years is correct. The vast majority of the trained talents can meet the needs of the society and are widely recognized by the unit. This will undoubtedly provide a useful reference for the school's educational idea and development direction in the future. According to the statistical data of various evaluation indicators, most of the graduates have outstanding qualities,

which are welcomed and affirmed by the units, such as executive ability, professionalism, work style, and professional knowledge. This is also a vivid reflection of our rigorous school running as a science and engineering college, which is worthy of our continued maintenance and further development.

The indicators highly recognized by the employer are executive ability, professional foundation, development potential, adaptability, comprehensive quality, work style, and professionalism. The proportion of "good + very good" is more than 95%, of which executive ability is 100%. The three indicators of hands-on practice ability, innovation ability, organization, communication, and coordination ability are relatively low, but the proportion is also more than 80%. With regard to "the aspects that graduates need to be improved and improved," the employers believe that the most important things that our graduates need to improve are organization, communication and coordination ability (69.05%), innovation ability (45.24%), and hands-on practice ability (35.71%). This also just confirms the three indicators with a low proportion of "good + very good." As for the "main reasons for accepting graduates," the most important factors considered by employers are professional counterparts (90.48%), solid professional foundation (64.29%), and high comprehensive quality (59.52%).

③ According to the evaluation of the graduates of 2020 on employment-related work, our employment work has made some achievements, and the excellent rate has reached 86.25% (0.4191 + 0.4434). At the same time, we need to continue to improve and improve. The 2020 graduates have a relatively positive evaluation on employment and related work, in which they think that the employment information is of great help to employment, they are satisfied with or above the hardware facilities and logistics services, they have a good style of study, they have a high level of teaching management, and they are satisfied with or above the vocational guidance, all of which are more than 90%. The satisfaction with employment assistance was the lowest, only 66.15%.

At present, there are three main problems in the employment work: first, the overall expectation of fresh graduates is high, but the employment gap

between graduates of various majors is large, and some fresh graduates of some majors think that the employment work of the university has not been fully taken into account; second, most students do not understand the employment responsibilities and relevant employment policies of the employment guidance center, colleges, and departments, which is not conducive to the development of employment management and service work; third, the school's assistance measures for the special employment groups and vulnerable groups need to be understood and felt by more students. Therefore, we need to attach great importance to the problems reflected in the evaluation of fresh graduates, strengthen publicity, narrow the employment gap between majors, improve the assistance system, and provide better services for graduates.

5. Conclusions and Suggestions

This research aims at the problem that the evaluation subject of the employment quality evaluation system of college graduates in China is single; that is, an evaluation system is only applicable to a certain part of graduates. This study proposes to divide the college graduates into three levels, namely, graduate students, undergraduate students, and junior college students, and independently design the employment quality evaluation system for college graduates at all levels. This study evaluates the employment quality of college graduates from five aspects: employment opportunities, working conditions, labor relations, employment equity, and work value. In addition, 15 secondary indicators have been set, including comprehensive employment rate, employment service quality, occupational health, working hours, vocational skills training, promotion opportunities, employment location, enterprise trust, interpersonal relationship, job stability, employment path, gender equity, salary, sense of occupational belonging and nature of work. This paper analyzes the objective facts and subjective feelings and constructs a three-level and five dimension evaluation system for the employment quality of college graduates. From the perspective of the evaluation results of the employment-related work of the 2020 college students, the excellent employment rate has reached 86.25%. From the perspective of the employment quality trend of graduates, the graduate employment quality score is 77.08, and the undergraduate and junior college students' scores are 74.97 and 77.66, respectively. From the perspective of the excellent employment rate, the employment quality evaluation model proposed in this paper is helpful for the employment of college students. From the evaluation results, the evaluation of employment quality in colleges and universities should pay attention to the combination of various evaluation methods. Nowadays, the commonly used evaluation method for the employment quality of college graduates is through questionnaires; that is, the graduates fill in the questionnaires themselves, hand them over to the school, and then hand them over to the relevant education authorities after the school makes preliminary statistics. Although this

method has high operability, because there is only one evaluator, and it is the evaluator himself, the subjectivity of the results is serious, and it cannot fully reflect the employment quality of college graduates. When evaluating the employment quality of college graduates, we can adopt a combination of various evaluation methods. First of all, collecting data not only is limited to the questionnaire but also can adopt anonymous telephone communication to eliminate unnecessary concerns of graduates and understand the real situation of graduates' employment quality from the perspective of graduates themselves, independently design the employment scheme, so as to obtain the attention of graduates to various employment contents, and set a more scientific and reasonable evaluation weight for the employment quality of college graduates and Internet data collection, through a wider range of relevant data collection on the Internet, to strengthen the authority of the evaluation of the employment quality of college graduates, and other ways, to ensure that the data obtained are persuasive. As the terminal of employment behavior, the employment unit should also evaluate the employment quality of college graduates. The employment quality is the reflection of behavior in a period of time, not the immediate reflection of behavior. After the employment of graduates, the employment unit, through a period of contact and understanding, evaluates the results of its own employment of the graduates and timely provides the relevant information of the graduates after employment so that the relevant departments can obtain the required data more accurately and quickly when evaluating the employment quality of college graduates.

Data Availability

The dataset can be accessed upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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