Online-Journals.org

iTDAF IETI Transactions on Data Analysis and Forecasting

iTDAF | eISSN: 2959-0442 | Vol. 3 No. 3 (2025) | OPEN ACCESS

https://doi.org/10.3991/itdaf.v3i3.56609

PAPER

Exploration of the Employment Quality Evaluation Method for Local University Graduates Based on PROMETHEE

Wei Yurui[1](✉), Zhu Xinlei[2], Pan Yichen[3]

[1]SILC, Business School, Shanghai University, Shanghai, China

[2]Business School, Yangzhou University, Jiangsu, China

[3]School of Information Engineering, Yangzhou University, Jiangsu, China

weiyruk2026@163.com

ABSTRACT

Current evaluation methods for college graduate employment quality mainly employ techniques such as the analytic hierarchy process (AHP) and factor analysis (FA), which tend to be similar in analytical approach and have certain limitations. This paper utilizes the PROMETHEE method with priority function characteristics, introduces possibility comparison interval hesitant fuzzy numbers, and evaluates the employment quality of local college graduates from three dimensions: overall employment quality, social influence, and overall satisfaction. An improved PROMETHEE decision-making method considering attribute correlation is proposed, and its stability and superiority are demonstrated, providing support for the system of employment quality evaluation methods.

KEYWORDS

PROMETHEE, interval hesitant fuzzy numbers, employment quality assessment

1 INTRODUCTION

Local universities, as the main body of talent cultivation, are a crucial force in implementing moral education, promoting employment-oriented education, and achieving high-quality and full employment for graduates. College graduates actively adapt to new forms of employment through various channels such as self-employment, policy-guided employment, market-regulated employment, and active participation in entrepreneurship, continuously enhancing both the quality and quantity of employment. How to scientifically evaluate the quality of college graduate employment is not only an important approach to advancing educational evaluation reform but also a new productive force for promoting high-quality development in employment work. It serves as a barometer for resource allocation in university operations, educational quality assessment, and enrollment planning. Current employment evaluation indicators focus on individual satisfaction of

Yurui, W., Xinlei, Z., Yichen, P. (2025). Exploration of the Employment Quality Evaluation Method for Local University Graduates Based on PROMETHEE. *IETI Transactions on Data Analysis and Forecasting (iTDAF)*, 3(3), pp. 51–60. https://doi.org/10.3991/itdaf.v3i3.56609

Article submitted 2025-05-14. Revision uploaded 2025-07-08. Final acceptance 2025-07-08.

graduates and employers [1], failing to comprehensively reflect graduates' performance in the labor market and their career prospects from a macro perspective. The evaluation process lacks consistency standards across different levels and categories, and the interrelation between evaluation indicators has not been adequately considered. Evaluation tools often use models such as the DEMATEL model and the AHP hierarchical analysis method, which tend to homogenize. This paper employs the PROMETHEE method with priority function representation, introduces interval hesitant fuzzy numbers for possibility comparison, proposes an improved evaluation method based on attribute correlation, and constructs an evaluation index system for college graduate employment quality that includes three dimensions: overall employment quality, social impact, and general satisfaction, using Delphi techniques. The method's broad applicability and superiority are demonstrated.

2 LITERATURE REVIEW

Current research on the employment quality of college graduates primarily relies on employment survey questionnaires. Studies evaluating graduate employment quality mainly focus on two dimensions: evaluators and evaluation indicators. (1) Evaluators: Zhong Yunhua et al. applied principal component analysis (PCA) and proposed that universities, society, and government agencies should jointly serve as evaluators of employment quality, with their assessments complementing and reflecting one another. Their study examined employment quality from four key perspectives—employment opportunities, job characteristics, compensation levels, and value recognition—and found that factors such as gender, academic major, place of origin, and family background significantly influence graduate employment quality [1]. Gu Xiya et al., from a theoretical perspective, suggested building an employment quality evaluation system with universities as the main body, in line with national, social, and individual expectations, with government and social participation for supervision [2]. Cai Lecai et al. believed that party committees should strengthen policy supply and improve the employment system, while employment departments should broaden job supply and enhance service levels. Graduates should develop core competencies to meet market challenges, thereby improving their employment quality [3]. Cao Dong et al., using the analytic hierarchy process (AHP), studied five dimensions—government, universities, employers, society, and students—and concluded that enhancing employment quality requires connecting the industrial chain, talent chain, and innovation chain [4]. (2) In terms of evaluation indicators: Wang Jiangguang et al. used the USEM model and found that personal external core competencies (learning and time management skills) and internal core competencies (self-management skills) are the main factors affecting high-quality employment for college students [5]. Peng Fang et al. used the Likert scale to evaluate the employment quality of industry-specific universities, arguing that enhancing core employability, reserving career development space, and addressing employment capability gaps are essential for improving employment quality [6]. Wang Xiangdong et al. analyzed ten years of employment data in Zhejiang province using scales, concluding that the level of graduate employment quality is influenced by both subjective and objective perceptions of graduates. Monitoring from perspectives such as employment ratios, job selection, salary benefits, and policy support reveals a complex situation in graduate employment, with diversified job choices and insufficient improvement in employment ratios, leading to a conclusion that the enhancement of graduate employment quality is slow [7]. Qiao Mu et al. believe that high employer satisfaction and graduate employment satisfaction indicate higher

recognition of school education and employment services, resulting in a reasonable structure and high quality of graduate employment [8]. Li Xishun et al., through comparative analysis of domestic and international employment quality reports, found that the short monitoring cycle based on initial employment rates and the lack of a sustained tracking mechanism lead to biases in employment quality evaluations [9].

From the study of relevant literature, it is known that the current evaluation subjects for employment quality each conduct their own assessments, with insufficient interoperability of evaluation results, which can only be obtained from annual reports on college employment quality; the support system for employment quality evaluation is still underdeveloped, with monitoring and evaluation limited to initial employment rates, lacking value-added evaluation processes; there is diversity in employment quality evaluation indicators, and the evaluation tools lead to weak applicability of comprehensive employment quality evaluations between universities, while the intrinsic relationship between indicators, such as employment expectations and employment stability, has not been adequately explained.

Based on this, this paper considers both the relationships between different subjects and the interpretation of various indicator relationships by evaluation tools. It revolves around the research findings of "A Study on the Employment Quality Evaluation System for Graduates of Local Undergraduate Universities" and the "Survey Indicator System for Graduate Employment in Jiangsu Province," using the 2024 graduate employment questionnaire survey as a basis. The study tests the correlation between employment quality and representative indicators (mainly social satisfaction, social influence, and overall objective employment quality) and applies multiple collinearity tests within three criterion levels to screen indicators quantitatively. The specific method is within each level, evaluate indicators with severe multicollinearity, i.e., those with a variance inflation factor greater than 10, ensuring that the selected indicators do not overlap. Ultimately, it identifies the association between indicator factors and employment quality, refining nine representative indicators. These include job adequacy, job fit, salary, job stability, job fairness, oriented employment, further education for graduates, employment evaluation, and feedback from graduates regarding their alma mater, as shown in Table 1.

Table 1. Evaluation system of employment quality of local undergraduate college graduates

Target Layer	Criteria Level	Indicator Layer	Indicator Definitions
Evaluation system of employment quality of graduates from local undergraduate universities	Overall quality of employment C1	Full employment C11	First employment rate, year-end employment rate
		Employment fit C12	Work relevance and career expectations
		Employment pay C13	Hourly pay, salary satisfaction
		Employment stability C14	Social security, unemployment rate
		Equality of employment C15	Ease of job hunting, rate of no employment discrimination
	Employment social impact C2	Guided employment C21	Employment contribution rate of universities located in (province/city), employment proportion of key regions, key industries, grassroots projects and other policy-based employment
		Graduate study C22	The rate of students going abroad for further study and the rate of students going to "double first-class" universities
	Employment social satisfaction C3	Employment evaluation C31	Graduates 'satisfaction with their work, employers' satisfaction with graduates' ideology and morality, work attitude, professional knowledge, professional ability and professional quality
		Graduates give feedback to their Alma mater C32	Overall satisfaction with the Alma mater, satisfaction with education and teaching, satisfaction with management services, and satisfaction with employment and education

By reviewing literature on quality evaluation indicators, various methods such as factor analysis (FA) [1], AHP [4], and the Saaty scale method [10] have been used to explore influencing factors. FA primarily selects the most significant and important factors through dimensionality reduction, typically using SPSS software for calculations. However, FA may lack sufficient explanation for individual indicators, overemphasizing importance while neglecting secondary influencing factors, and sometimes the variance calculation results do not fully determine the reliability and validity of the indicators. The AHP and the Saaty scale method involve comparing each pair of elements in a matrix, rotating and ranking them to identify the key influencing factors, and then conducting a consistency test to derive the final results. To some extent, these methods can effectively promote the evaluation process, but they heavily rely on subjective weight allocation, which can lead to discrepancies between calculated results and actual conditions. Moreover, when there are too many indicators, the results can easily become inconsistent [11].

The evaluation of employment for college graduates is complex, influenced not only by macro and micro factors but also by subjective and objective factors, leading to differences in outcomes and making accurate assessments challenging. The PROMETHEE method excels in many evaluation fields, such as business, agriculture, environment, and chemistry. It is an essential tool for fuzzy multi-attribute decision-making, capable of meeting the requirements of indicator attributes and elucidating the relationships between indicators. By comparing each pair, it generates differences or preferences, ultimately producing a net flow to clarify the measurement and ranking of indicators. Its level index value ranges from [–1, 1], with higher values indicating a higher position [12]. In response to these issues, this paper introduces the PROMETHEE method for research. This method is a ranking approach that constructs relationships at a higher level than relations, utilizing preference functions, attribute values, and attribute weights provided by decision-makers to determine the ranking of schemes through ordinal relationships. On one hand, this method takes into account the compensatory nature between multiple attributes, eliminating the impact of data normalization on evaluation results; on the other hand, it does not require preprocessing of raw data, avoiding information distortion during actual operations, thus enhancing the scientific rigor and practicality of the evaluation results. Compared with other evaluation methods, the PROMETHEE method can avoid both the excessive subjectivity of AHP leading to biased results and the neglect of secondary factors in PCA. It also clearly defines the characteristics of indicators while maintaining the intrinsic logic among multiple different attribute indicators. Currently, there are relatively few applications of this method in explaining employment quality evaluations. In conclusion, the multi-attribute decision evaluation method based on the PROMETHEE method can enhance the scientific and comprehensiveness of the employment quality evaluation of local universities.

3 DESIGN OF IMPROVED PROMETHEE BASED ON CORRELATION ATTRIBUTES

Based on the analysis of the impact of correlation indicators on the employment quality priority of graduates from local undergraduate universities, a PROMETHEE priority function based on the sigmoid function was designed by analyzing traditional priority functions. A weight adjustment algorithm integrating correlation indicators was also developed. The improved PROMETHEE method adjusts attribute

weights through the correlation coefficients between attributes, effectively avoiding errors caused by the inherent data of universities and the incompleteness in constructing a diversified attribute system. This method can objectively and powerfully evaluate the employment quality of graduates from various undergraduate universities.

The specific steps are as follows:

According to the evaluation index system provided in Table 1, experts in the field of employment quality research of college graduates give the evaluation value of qualitative indicators, such as secondary indicators of employment equity; quantitative indicators are derived from survey results, such as secondary indicators of employment salary, forming a decision matrix of interval hesitant fuzzy set $X^{(0)} = (x_{ij}^{(0)})_{m\times n}$.

Step 1 The interval hesitant fuzzy set decision matrix is obtained $X^{(0)} = (x_{ij}^{(0)})_{m\times n}$

Standardization is a matrix $X = (x_{ij})_{m\times n}$, among which,

$$X(0) = \begin{bmatrix} x_{11}^{(0)} & x_{12}^{(0)} & \cdots & x_{1n}^{(0)} \\ x_{21}^{(0)} & x_{22}^{(0)} & \cdots & x_{2n}^{(0)} \\ \vdots & \vdots & \ddots & \vdots \\ x_{m1}^{(0)} & x_{m2}^{(0)} & \cdots & x_{mn}^{(0)} \end{bmatrix} \tag{1}$$

$$x = \begin{cases} x_{ij}^{(0)}, & \text{Factor i is the efficiency factor} \\ (x_{ij}^{(0)})^c, & \text{Factor i is a cost factor} \end{cases} \tag{2}$$

Step 2 Construct interval hesitant fuzzy score matrix $S = (s_{ij})_{m\times n}$, $s_{ij} = \frac{1}{l^{(ij)}}\sum_{\gamma\in x_{ij}}\gamma$, γ is an interval hesitant fuzzy number, and $l^{(ij)}$ is the number of interval fuzzy numbers in the interval hesitant fuzzy set x_{ij}.

Step 3 Based on the possible degree function of $P_j(a_i \geq a_k) = \min$, the possible degree function between the evaluation system of local undergraduate graduates' quality level under each index is calculated

$$p_j(a_i \geq a_k)\left\{\max\left(\frac{a_i^U - a_k^L}{(a_i^U - a_i^L) + (a_k^U - a_k^L)}, 0\right), 1\right\} \tag{3}$$

$p_j(a_i \geq a_k)$ indicates the possibility that the employment quality level of local college graduates under indicator Q_j is better than that of a_i and a_k,

$p_j(a_i \geq a_k) = p_j(s_{ij} \geq s_{kj})$, and $a_i = [a_i^L, a_i^U]$, $a_k = [a_k^L, a_k^U]$

Step 4 Use the priority function to calculate the priority between the employment quality levels of college graduates under each index $P_j(a_i \geq a_k)$:

$$P_j(a_i \geq a_k) = \frac{1}{1 + e^{a - 2ap_j(a_i \geq a_k)}}, p_j(a_i \geq a_k) \in [0,1] \tag{4}$$

In the formula, a is the undetermined coefficient and the initial value is set to 3.

Step 5 designs an indicator weight adjustment mechanism based on the correlation of indicators, calculating the relationship matrix $R = (r_{ij})_{n\times n}$, then computing the Mobius transformation coefficient m, and using $I_j = \sum_{k=0}^{n-1}\frac{1}{k+1} * \sum_{K\subset X\setminus j, |K|=k} m_{jK}, \forall j \in X$ to calculate the Shaplely values of each indicator. Finally, it obtains the adjusted final

indicator weights $I_j = \sum_{k=0}^{n-1} \frac{1}{k+1} * \sum_{K \subset X \setminus j, |K|=k} m_{jK}, \forall j \in X$, where $I_j = \sum_{k=0}^{n-1} \frac{1}{k+1} * \sum_{K \subset X \setminus j, |K|=k} m_{jK}$ represents the Shaplely value of indicator Q_j.

Step 6 Calculate the employment quality level of graduates from two two-year colleges $H(a_i, a_k)$, The priority index of a_i and a_k:

$$H(a_i, a_k) = \sum_{j=1}^{n} P_j(a_i, a_k) W_j \tag{5}$$

Step 7 Let $\phi^+(a_i)$, $\phi^-(a_i)$ be the outflow and inflow of local undergraduate graduates' employment quality level a_i respectively. The difference is a_i and the net flow is $\phi(a_i)$.

$$\begin{cases} \phi^+(a_i) = \frac{1}{m-1} \sum_{\substack{k=1 \\ k \neq i}}^{m} H(a_i, a_k) \\ \phi^-(a_i) = \frac{1}{m-1} \sum_{\substack{k=1 \\ k \neq i}}^{m} H(a_k, a_i) \end{cases} \tag{6}$$

Among them, m is the number of evaluation areas.

Step 8 The computational function determines variable a, enhancing the discernibility of the employment quality level of undergraduate graduates. The discernibility of the employment quality level of undergraduate graduates is generally reflected through the variance of scores for each pair of undergraduate graduates 'employment quality levels. In the priority function based on sigmoid, when a is too large, the priority degree represented by differences in possibility cannot reflect the true situation, and the variance of scores for the employment quality level of undergraduate graduates is also relatively high. Therefore, the range of a is set to [1, 10]. During the evaluation process, evaluators pay more attention to areas with higher score rankings, so weighted vectors are introduced in the calculation of variance for each region's scores. First, the employment quality levels of undergraduate graduates from various regions are ranked according to their net inflow values. Assuming that the employment quality levels (b, c, d, e) of undergraduate graduates from four regions are ranked from highest to lowest net inflow value, the order of employment quality levels is [c, b, e, d]. Based on the premise that the variance of scores for the employment quality level of undergraduate graduates from each region is the largest, a weighted variance calculation formula is proposed:

$$d = (\phi(c) - \phi(b))^2 + 0.9(\phi(b) - \phi(d))^2 + 0.8(\phi(d) - \phi(e)^2) \tag{7}$$

Considering computational complexity and the fact that a is an integer within the interval [1,10], the Excel simulation function is used to determine the parameter a by maximizing d. When d reaches its maximum value, the employment quality of graduates from local undergraduate institutions can be identified most clearly. Ultimately, the net flow value is used to rank and evaluate the employment quality of graduates from undergraduate institutions across different regions.

4 AN EMPIRICAL ANALYSIS OF THE EMPLOYMENT QUALITY EVALUATION OF LOCAL UNIVERSITIES BASED ON PROMETHEEF METHOD

Currently, some universities introduce multiple stakeholders in the evaluation process, combining quantitative and qualitative assessments. They adhere to a model where schools lead, colleges take the main role, faculty and students participate, and supervision provides feedback. They widely solicit opinions from employers and all sectors of society, collecting comprehensive and full-process evaluation data to form scientifically effective results. This promotes the synergy between university admissions, talent cultivation, and employment, further enhancing the quality of talent cultivation at universities. The data in this paper captures graduates from four local universities (, , ,) primarily located in Yangzhou University in Jiangsu Province. Based on the following nine indicators, the employment quality of graduates from local undergraduate institutions is assessed: A1 job adequacy, A2 job fit, A3 salary, A4 job stability, A5 job fairness, A6 oriented employment, A7 further education, A8 employment evaluation, A9 alumni feedback. Through expert qualitative analysis, the decision weights for these nine indicators are assigned as follows:

The variable a is determined by the operation function of Excel to improve the identifiability of the employment quality level of college graduates. Considering the complexity of calculation and the integer adjustment parameters within the interval [1, 10] for the value range of □, the result of a is shown in Table 2.

Table 2. Excel running results

a	$\phi(a_1)$	$\phi(a_2)$	$\phi(a_3)$	$\phi(a_4)$	d
1	0.334	–0.087	–0.382	0.136	0.3387
2	0.558	–0.148	–0.628	0.218	0.9326
3	0.676	–0.181	–0.744	0.250	1.3389
4	0.733	–0.197	–0.791	–.256	1.5405
5	0.761	–0.205	–0.809	–.253	1.6301
6	0.775	–0.208	–0.815	0.248	1.6685
7	0.783	–0.209	–0.818	0.244	1.6846
8	0.788	–0.209	–0.819	0.240	1.6909
9	0.791	–0.208	–0.820	0.237	1.6930
10	0.793	–0.208	–0.820	0.235	1.6932

The FVIKOR method [13] was introduced, and the results were compared with the difference is to 0, the better the quality evaluation; conversely, the closer it is to 1, the lower the quality. The ranking results based on data comparison are shown in Table 3. The scheme ranking is , which is consistent with the ranking result of PROMETHEE. Therefore, improving the PROMETHEE method is feasible and relatively stable.

Table 3. FVIKOR simulation results

	S_i	R_i	Q_i
1	0.042742166	0.040824829	0
2	0.509926322	0.15	0.777340345
3	0.885	0.15	1
4	0.229556114	0.050662281	0.155954209

The text uses the improved PROMETHEE method to evaluate the employment quality of local college graduates through eight steps, including constructing an interval hesitant fuzzy decision matrix, sub-matrix, possibility function, indicator priority, indicator correlation, and simulation operation. The evaluation results of employment quality among different subjects are obtained, and the main conclusions are as follows:

The evaluation results provide a new method for assessing employment quality. By improving the PROMETHEE method to address multi-objective decision-making, it is evident that the employment quality of various universities has shown an upward trend, although the quality levels vary. The quality ratio between a1 and a2 is 0.854, which is greater than 0.146; the quality ratio between a2 and a3 is 0.779, which is greater than 0.221; and the quality ratio between a3 and a4 is 0.081, which is less than 0.919. Ultimately, this leads to the conclusion that the employment quality of different universities (). This method not only considers individual indicators, such as the impact of the C1-3 indicator matrix on employment quality, but also takes into account the interrelationships between indicators. It comprehensively evaluates the overall employment quality from both horizontal and vertical perspectives of level and net flow.

From the perspective of evaluation tools, the improved method demonstrates better stability. The current evaluation methods address issues such as the strong subjectivity of the AHP and the inaccuracy of FA results. As an important tool in fuzzy multi-attribute decision-making, it is a ranking method that constructs relationships at a higher level than relations. By combining subjective evaluation weights with objective survey results, it significantly enhances accuracy. This has been verified through the introduction of the FVIKOR method. The simulation results of FVIKOR compared Qi (0, 0.15, 0.78, 1) with the actual employment quality rankings of four universities—show consistency. However, the FVIKOR method cannot directly handle non-quantitative data, and its sensitivity to weights may lead to unstable decision outcomes. Therefore, the improved PROMETHEE method further enhances stability to some extent.

From the perspective of the evaluation process, the degree of employment quality identification should be within an appropriate range. By using the simulation function Sigmoid to determine that $a \leq 3$, the comparison of college employment quality shows regularity. At this point, the weighted variance d value can be maximized, indicating the highest comparability of employment quality. Therefore, only the PROMETHEE method can achieve this function. By utilizing the preference function, attribute values, and attribute weights provided by decision-makers, the ranking of schemes is determined through ordinal relationships, demonstrating the stability and reliability of the PROMETHEE measurement method in quality evaluation systems.

5 EVALUATION METHODS AND RELATED SUGGESTIONS FOR THE EMPLOYMENT QUALITY OF LOCAL COLLEGE GRADUATES

This paper builds on the research findings of the project and incorporates a relatively mature evaluation system widely adopted by employment authorities. Utilizing an enhanced PROMETHEE method, the study confirms that a composite set of indicators—namely, overall employment quality (C1), the social impact of employment (C2), and social satisfaction with employment (C3)—can effectively assess the employment quality of local universities. The evaluation results closely align with actual employment conditions and are consistent with both institutional self-assessments and third-party evaluations.

Compared to traditional evaluation tools, the improved PROMETHEE method not only addresses the limitations of FA, PCA, and the AHP in multi-criteria decision-making (MCDM) but also reveals the interrelationships among indicators. This enhances both the stability and scientific validity of the evaluation process.

Importantly, employment quality evaluation is not an end in itself but a reflection of both subjective perceptions and objective outcomes. Its ultimate purpose is to foster deeper integration of education, science and technology, and talent development, thereby achieving higher-quality and more inclusive employment. As such, conducting rigorous employment quality evaluations holds significant practical value.

First, it is essential to establish a robust employment quality evaluation and monitoring mechanism. This includes developing a process-oriented evaluation system and a corresponding quality assurance framework, conducting regular data analysis, and implementing responsive adjustments. Emphasis should be placed on verifying the authenticity of graduates' employment destinations and standardizing employment documentation. Moreover, a feedback system on graduate employment outcomes should be established. Evaluating satisfaction levels among both graduates and employers is also crucial, along with the creation of an effective early warning mechanism to support dynamic adjustment of the evaluation system.

Second, appropriate tools must be selected to evaluate employment quality based on the analytical context and the characteristics of the indicators involved. FA is suitable for single-FA, PCA for scenarios involving multiple key variables, AHP for structured decision-making based on hierarchical preferences, and the PROMETHEE method for examining indicator interrelationships and system stability. As the economy evolves and the job market undergoes transformation, the employment quality evaluation system and its methodologies must also be continuously reviewed and updated to maintain relevance, accuracy, and applicability.

6 REFERENCES

[1] Y. H. Zhong, "Construction of a measurement index system for employment quality of university graduates," *Educational Science Research*, vol. 9, pp. 45–52, 2020.

[2] X. Y. Gu *et al.*, "Analysis on constructing an employment quality evaluation system for college graduates," *Ideological & Theoretical Education*, vol. 7, pp. 88–95, 2021.

[3] L. C. Cai, "The logical basis and innovative approach for high-quality employment of local university graduates in the new era," *Jiangsu Higher Education,* vol. 8, pp. 112–120, 2023.

[4] D. Cao *et al.*, "Construction of an employment quality evaluation index system for college graduates in the new era," *China Human Resources Science*, vol. 1, pp. 34–42, 2024.

[5] J. G. Wang and H. B. Chu, "Evaluation of high-quality employment capabilities of college students," *Heilongjiang Researches on Higher Education*, vol. 12, pp. 56–64, 2021.

[6] F. Peng *et al.*, "Evaluation of employment capabilities of students in industry-specific universities: A case study of maritime graduates," *Journal of Northeastern University (Social Science Edition),* vol. 7, pp. 78–86, 2022.
[7] X. D. Wang, "Research on employment quality monitoring and improvement strategies for college graduates," *Modern University Education*, vol. 10, pp. 92–101, 2022.
[8] M. Qiao *et al.*, "Characteristics and quality evaluation of employment structure among college graduates," *Journal of Southwest Minzu University (Humanities and Social Science Edition)*, vol. 3, pp. 67–75, 2024.
[9] X. S. Li, "Employment quality evaluation system for college graduates: Realistic dilemmas, international comparisons, and optimization paths," *China University Students Career Guide*, vol. 10, pp. 23–30, 2024.
[10] Y. J. Liang *et al.*, "Research on the employment quality evaluation system for students in industry-specific universities under the new era background," vol. 9, pp. 45–53, 2023.
[11] P. D. Liu, B. Y. Zhu, and P. Wang, "A weighting model based on best-worst method and its application for environmental performance evaluation," *Applied Soft Computing*, vol. 103, p. 107168, 2021. https://doi.org/10.1016/j.asoc.2021.107168
[12] P. D. Liu *et al.*, "Evaluation of regional development levels of rural practical talents based on the PROMETHEE method," *Economic Management Review,* vol. 5, pp. 112–120, 2022.
[13] I. Mladenović-Ranisavljević *et al.*, "Multicriteria decision analysis of sites with increased nutrient contents in water," *Water,* vol. 14, no. 23, pp. 3810–3828, 2022. https://doi.org/10.3390/w14233810

7 AUTHORS

Wei Yurui is with the SILC, Business School, Shanghai University, Shanghai, China (E-mail: weiyruk2026@163.com).

Zhu Xinlei is with the Business School, Yangzhou University, Jiangsu, China.

Pan Yichen is with the School of Information Engineering, Yangzhou University, Jiangsu, China.