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Research on Quality Evaluation and Guarantee Mechanism of Graduate Students Enrollment in Local Universities

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***Abstract*—In order to improve the number of postgraduate enrollment, this paper proposes a study on the quality evaluation and guarantee mechanism of postgraduate enrollment in local colleges. This paper constructs the evaluation system of postgraduate enrollment quality of local colleges from three aspects: evaluation content selection, evaluation index selection and evaluation method application, and grasps the overall status of the enrollment quality of local college graduates. From the goal of constructing the quality evaluation system for postgraduate enrollment, this paper proposes a three-in-one guarantee mechanism for constructing the source quality target mechanism, the admission process control mechanism, and the enrollment quality monitoring and feedback mechanism.**

Keywords—Local colleges; Master's degree; Quality evaluation; Guarantee mechanism

I. INTRODUCTION

According to the "2019 Graduate Student Enrollment Survey Report" published by China Education Online, the number of graduate students in the national master's degree in 2019 was 2.9 million, a year-on-year increase of 21.8%, which is the biggest increase in the past ten years. Among them, Guangdong, Henan and Jiangxi increased by 29.6%, 25.6% and 24.8% respectively. Graduate education has entered the era of large enrollment, and graduate students are once again facing the risk of depreciation. How to ensure the quality of enrollment from the source in the context of expanding the enrollment scale of graduate students has become the focus of current academic circles.

At present, scholars' research on the quality of postgraduate enrollment is mainly concentrated in the following three aspects: First, the key factors affecting the quality of postgraduate enrollment. For example, Zhang Guobing (2006) believes that the lack of internal motivation in learning and research is an important reason for the lack of innovation in graduate group in China [1]. Zhao Yanling and Zhang Leyong (2007) believe that the main factors affecting the quality of postgraduate enrollment are the insufficient publicity of admissions, the lack of enthusiasm of the faculty and the unreasonable setting of professional examination subjects [2]; Shang Di, Xue Baoying, Handan Iron and Steel (2017) Using the cross-sectional data of Hebei Agricultural University from 2013 to 2016, the influence of the subject level on the enrollment quality was analyzed [3].The second is to build a quality assessment system for graduate enrollment. Hou Jun and Chen Anmin (2007) took the Northwestern Polytechnical University as an example to establish a graduate evaluation index system including the number of national re-examination scores and the number of enrolled students, the number of enrollees and the proportion of enrolled students [4]. Zhao Dan and Yi Yingxin (2014) used the grey clustering method to establish a gray cluster evaluation model for the quality of graduate students in Heilongjiang Province [5]. Wang Pei (2015) based on the in-depth analysis of the enrollment quality connotation and the characteristics of postgraduate enrollment quality evaluation, pointed out that the quality of postgraduate enrollment mainly refers to the quality of students [6]. The third is the safeguard measures to improve the quality of graduate enrollment. Fang Li (2002) believes that to ensure the quality of postgraduate enrollment, the key is to establish the target mechanism and regulation feedback mechanism of graduate students, and to develop practical rules and regulations and an effective management system [7]. Huang Jing and Tu Zhonghua (2015) deconstructed the quality of graduate enrollment into three important connotations of structural quality, student quality and selection quality, and proposed safeguard measures from three aspects [8]. Xiong Na (2014) has made some thoughts on improving the quality of graduate students from four aspects: organizational guarantee, policy support, path innovation and mechanism guarantee [9]. Rao Hongliang (2017) uses the theory of interpretation level to propose new strategies and methods for the enrollment of college graduate students [10].

The existing research in the construction of the postgraduate enrollment quality evaluation system usually emphasizes the evaluation of the quality of students, and neglects the quality of selection is the key to the quality evaluation of postgraduate enrollment. This paper, from the two aspects of student source quality and selection quality, respectively corresponds to the work results of the two stages of the postgraduate enrollment initial and re-examination, and strives to build a scientific evaluation system. In the evaluation method of postgraduate enrollment quality, the existing general research methods mainly include analytic hierarchy process, Delphi method, gray clustering method, etc. The analytic hierarchy process mainly relies on expert scoring, subjectiveness is too strong, and gray clustering method is The technical and operational procedures are relatively high and are not easy to be universally applied and popularized. This paper

Sources of the project: 1. Liaoning Province Graduate Student Enrollment Quality Project: Research on Graduate Student Enrollment Quality Evaluation and Guarantee Mechanism (YZ2018YB035) 2. Liaoning Social Science Planning Fund Project: University Counselor Performance Evaluation System and Incentive Mechanism Research (L18BSZ013).

adopts the entropy method to avoid subjective experts scoring to determine the weight and improve the accuracy and rationality of the index weight calculation. At the same time, in the guarantee mechanism of the quality of postgraduate enrollment, the current research on the guarantee mechanism is more one-sided, unitary, and lacks systematic analysis. Based on the goal of constructing the quality evaluation system for postgraduate enrollment, this paper proposes to construct the source quality target mechanism and enrollment work. The three-in-one guarantee mechanism of process control mechanism, enrollment quality monitoring and feedback mechanism.

II. CONSTRUCTING GRADUATE STUDENT ENROLLMENT QUALITY EVALUATION SYSTEM

A. Evaluation content

The quality of graduate enrollment is narrow and broad. The narrow admission quality of graduate students refers to the quality of students. The quality of students mainly depends on the students' initial test scores and the level of graduate schools. The quality of the enrollment in a broad sense should also include the quality of selection. That is, in the postgraduate re-examination stage, through the written test and interview, the students who have passed the initial test will be comprehensively evaluated and selected. A relatively good candidate. This paper comprehensively evaluates the quality of postgraduate enrollment by establishing a complete graduate enrollment quality evaluation system, and then proposes a practical quality guarantee mechanism for graduate enrollment.

B. Evaluation principle

(1) The principle of combining qualitative evaluation with quantitative evaluation. The existing evaluation methods pay more attention to the quality evaluation of the source, and can carry out quantitative statistics. There is little attention to the quality of selection, and the quality of selection often requires qualitative description to obtain more accurate information. For example, candidates' ability to test and study, motivation to learn, and development potential are directly ignored because they cannot be quantitatively described. In the process of constructing the index evaluation system, it is necessary to adhere to the combination of qualitative evaluation and quantitative evaluation, and through technical treatment in the qualitative evaluation, and finally into quantitative indicators.

(2) Diversification of evaluation methods. A variety of evaluation methods are prerequisites for obtaining scientific evaluation results. When evaluating the index evaluation system, different evaluation forms should be adopted according to the characteristics of the evaluation indicators. The quantitative evaluation can be carried out according to the indicator system, and information can also be collected in the form of expert evaluation, discussion, questionnaire, etc. The technology is real-time, accurate and open, and uses modern information technology to improve the efficiency of evaluation.

C. Evaluation system construction

Constructing scientific and reasonable evaluation indicators is the core content of the system. Whether the evaluation index design is reasonable is directly related to whether the evaluation results are authoritative and have a scientific feedback effect on the quality of graduate enrollment. Based on the construction goals, this paper determines the content of the graduate quality evaluation system based on the two aspects of student source quality and selection quality. See the table for details:

TABLE I GRADUATE STUDENT ENROLLMENT QUALITY EVALUATION INDEX SYSTEM

Criteria layer	Indicator layer	Indicator interpretation	nature	aims
Master student Source quality	Recruitment ratio	The ratio of the number of applicants to the number of applicants	Positive	1
	Voluntary admission rate	The ratio of the number of volunteers who go online and the number of people admitted	Positive	1
	Graduation level	The proportion of first-class disciplines or first-class university candidates	Positive	1
	Education level	The proportion of undergraduate graduates	Positive	1
	Professional admission average	Candidates' average score and total score ratio	Positive	1
	Professional admission coefficient	The ratio of the average score of professional candidates to the average of the total scores	Reverse	0
Master student Selection quality	Ideological and political quality	Comprehensive considerations through interviews, preliminary test political scores and retesting political achievements	Positive	1
	research ability	The ratio of the average value of the examiner's score to the perfect score	Positive	1
	Professional counterpart	School standards	Positive	1
	Creativity	Obtained by the examiner interview	Positive	1

D. Evaluation method selection

It mainly includes two parts: the method for determining the weight of the evaluation index and the method for evaluating the process. In terms of determining the weight of indicators, in order to avoid the doping of human factors in the process of weight determination and affect the scientific nature of the evaluation system, this paper uses the entropy method in the objective weighting method when determining the weight of indicators. The physical meaning of the entropy method is to determine the index weight in the comprehensive evaluation by describing the rate of change of the sample data by information entropy, and determine the relative magnitude of the change in the index value by the size of the index weight. Compared with the ideal value of the index, the greater the degree of variability of the index, the smaller the information entropy, the larger the weight value of the index, and the smaller the opposite.

(1) Standardization of evaluation indicators:

In this paper, the standard deviation method is used to carry out dimensionless processing on each actual index to achieve standardization of indicators.

Positive indicator: $x_{ij}'' = (x_{ij} - x_{i,\min})/(x_{i,\max} - x_{i,\min})$

Negative indicators: $x_{ij}'' = (x_{i,\max} - x_{ij})/(x_{i,\max} - x_{i,\min})$

Where x_{ij}'' is the standardized indicator value; x_{ij} is the index value before processing; $x_{i,\max}$ is the maximum value of the j indicator before processing; $x_{i,\min}$ is the minimum value of the j indicator before processing; i is the number of samples; j is the number of indicators

(2) Calculate the proportion of i sample values under the indicator of item j:

$$p_{ij} = x_{ij}'' / \sum_{i=1}^{m} x_{ij}''$$

(3) Calculate the entropy of the indicator of item j:

$$e_j = -k\sum_{i=1}^{m} p_{ij} \ln(p_{ij}), i = 1,2,\ldots m, j = 1,2\ldots n$$

Usually the adjustment factor $k = 1/\ln m$ is then converted to the entropy formula:

$$e_j = -(1/\ln m)\sum_{i=1}^{m} p_{ij} \ln(p_{ij}), \text{且} 0 \le \mathrm{e_j} \le 1$$

(4) Calculate the difference coefficient of the j th indicator. The smaller the entropy value, the greater the difference between the indicators, the more important the indicator is:

$$g_j = 1 - e_j$$

(5) Calculate the weight of the j th indicator:

$$a_j = g_j / \sum_{i=1}^{m} g_j, j = 1,2,\ldots \mathrm{n}$$

Use the comprehensive evaluation method to evaluate:

$$F_{ij} = a_j x_{ij}''$$

Where F_{ij} is the evaluation value of the j th item of the i th sample.

$$F_i = \sum_{j=1}^{n} F_{ij}$$

Where F_i is the evaluation value of the i th sample.

III. ESTABLISHING THE QUALITY GUARANTEE MECHANISM FOR POSTGRADUATE ENROLLMENT IN LOCAL UNIVERSITIES

The goal of constructing the quality evaluation system for postgraduate enrollment is to select outstanding students with strong innovation ability, high comprehensive quality and scientific research potential. Based on this goal, the construction of the quality guarantee mechanism for postgraduate enrollment of local colleges can be started from the following aspects:

(1)Establish a sound target mechanism for student quality. Establishing the source quality target mechanism is the premise and basis for improving the quality of graduate enrollment.First of all, the establishment of the source quality target mechanism country should clearly define the source quality objectives, grasp the master's talents needed for the future from a global perspective, and plan the total number of graduate students enrolled in the year and the type of talent demand according to the overall goal. Secondly, local colleges and universities should set enrollment standards according to the quality objectives of national enrollment students, and combine their own characteristics to select the best students.

(2)Build a sound admission process control mechanism. Establishing a sound enrollment work process control mechanism is an important guarantee for improving the quality of postgraduate enrollment. Whether the control mechanism is reasonable or not is directly related to whether the national quality improvement target can be implemented in the evaluation process. In the process of establishing the control mechanism, the construction of the admission control process control mechanism should be strengthened from the aspects of normative system and innovative technology. Standardize the specific system from the propaganda of the admissions policy, the preparation of the enrollment plan, and the setting of the examination subjects to make it operational; to carry out technological innovations from the establishment of a set of technical development and management standards and systems, to improve efficiency and avoid duplication of work. .

(3)Establish a complete monitoring and feedback mechanism for enrollment quality. The quality monitoring mechanism runs through the whole process of the admission process and the end of the admission process, and is linked to the quality control of graduate students. The admissions unit shall establish a feedback mechanism to transmit the monitoring information to the responded object in time.

IV. CONCLUSION

The quality of students and the quality of selection are important tasks in the two stages of the initial and re-examination of postgraduate enrollment. Only by taking the quality of students and the quality of selection as the main indicators of investigation can a scientific evaluation system be established. This paper uses entropy method to evaluate the quality of postgraduate enrollment, avoiding the subjective factors of expert scoring to determine the weight, and improving the accuracy and rationality of index weight calculation. At the same time, this paper starts from the goal of constructing the quality evaluation system for postgraduate enrollment, and proposes a three-in-one guarantee mechanism for constructing the quality target mechanism, enrollment work process control mechanism, enrollment quality monitoring and feedback mechanism, and overcomes the one-sidedness presented in the process of constructing the guarantee mechanism.

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