

The Construction of College Major Evaluation and Supply-Demand Docking Model

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ABSTRACT

The degree of compatibility between the supply of higher education talents and the demand for talents in economic development is a key factor in whether the regional economy can sustainably develop and whether education itself can grow healthily. Constructing a professional evaluation and supply-demand docking model for college students based on the relationship between supply and demand can scientifically conduct early warning monitoring, timely adjust professional settings, and the specifications and directions of talent training. It is also conducive to building an early warning system framework and using mathematical models to deeply analyze the entire early warning process. Achieve a comprehensive evaluation of talents and a rough prediction of their future career development.

KEYWORDS

Artificial intelligence; Professional evaluation; Supply and demand docking

1. INTRODUCTION

Nowadays, the phenomenon of homogeneity and isomorphism of undergraduate majors in colleges and universities in my country is relatively serious, and the structural employment contradiction of mismatch between supply and demand is becoming increasingly prominent. Against this background, in order to adapt to the new needs of economic and social development and industrial transformation and upgrading, further optimize the professional structure of colleges and universities, and avoid misalignment between professional setting and market demand, it is urgent to establish a scientific and reasonable early warning mechanism for undergraduate majors in colleges and universities.

2. LITERATURE REVIEW

Many scholars' research on the dynamic adjustment of professional structure and professional demand in colleges and universities mainly focuses on three aspects: industrial transformation and upgrading and dynamic adjustment of professional structure, the necessity of professional setting demand mechanism, and the construction of professional demand indicator system. First, research on industrial transformation and upgrading and dynamic adjustment of professional structure. Li Shugang and Wang Guirong (2015) took the connection between the main coal major setting and the development of the coal industry as an example, and pointed out that the optimization of professional structure should adhere to the demand-oriented approach, continuously optimize the professional structure, and highlight professional characteristics. Liu Yan (2016) pointed out that in order to meet the new demand for technical and skilled talents in industrial transformation and upgrading, vocational colleges must rationally allocate professional resources, strengthen professional connotation and quality construction, highlight professional value, and build professional dynamic

adjustments that adapt to industrial transformation and upgrading. mechanism. Second, study the necessity of professional setting demand mechanism. Zhou Hongli (2015) believes that the professional demand mechanism is a close connection between professional setting and economic development, which is conducive to promoting the adjustment and optimization of regional higher education professional layout structure, improving the modern vocational education system, and improving the quality of talent training. Nie Yongcheng (2017) pointed out that the construction of a professional setting demand mechanism must adhere to the four principles of combining respect for laws and promoting development, combining overall planning and optimization with coordination and cooperation, combining information first and moderate advance, and combining the right path to suit needs and focusing on benefits. . Shen Lujuan (2016), based on the current status of the evolution of industrial structure and employment structure in Zhejiang Province, conducted an investigation into the professional setting of colleges and universities in Zhejiang Province, revealed the problems existing in the professional setting, and pointed out that colleges and universities should further improve the professional planning mechanism and government guidance. mechanism, professional demand mechanism, professional evaluation mechanism, industry-university interaction mechanism and professional multiple choice mechanism. Third, research on the construction of professional demand index system. Guan Changhai (2012) used the expert survey method and the minimum variance method to establish professional demand indicators including 4 first-level indicators, professional needs, professional training, professional employment and professional development, 14 second-level indicators, and 32 third-level indicators. system. Dai Shugen and Gong Richao (2017) started from the analysis of the challenges brought by the reform of the college entrance examination enrollment system to the disciplines and majors of colleges and universities, used the G1 method to determine the index weight, and constructed an internal discipline and major demand evaluation index system in colleges and universities and a demand evaluation model for multiple decision-making subjects. To sum up, scholars have conducted multi-angle and multi-faceted research on the dynamic adjustment of professional structure and professional demand in colleges and universities, but most of them are theoretical analysis, lack empirical testing and are relatively macroscopic, and few have established a comprehensive evaluation model of professional demand from the micro level. , and identify and analyze the key factors affecting professional needs.

3. CONSTRUCTION AND MODEL DESIGN OF EVALUATION SYSTEM FOR UNDERGRADUATE MAJORS IN COLLEGES AND UNIVERSITIES

3.1. Index System Construction

The indicator system construction professional evaluation mechanism refers to the monitoring and evaluation of the school running situation of each major in colleges and universities, and the continuous monitoring and evaluation of its student status, employment quality, social needs and social evaluation, talent training plans, teaching resources, teaching staff, teaching quality, etc. Assessment is a system and method for evaluating majors that have problems with their sustained and stable operation, and the construction of a professional early warning indicator system is the foundation and premise. This article refers to the relevant research results of domestic scholars and the content of the "2017 College Student Employment Annual Indicators" released by the Max Research Institute, follows the scientific, hierarchical, timely, predictive and operable principles of early warning indicators, and combines 15 Based on the opinions of experts in the field of higher education, through screening and modifying indicator items, an early warning evaluation indicator system for undergraduate majors in colleges and universities was finally determined, which includes 5 first-level indicators, 10 second-level indicators, and 12 third-level indicators, as shown in Table 1.

3.2. Evaluation Methods and Model Design

Evaluation method and model design This article uses the analytic hierarchy process to determine the weight of early warning evaluation indicators for undergraduate majors in colleges and universities. The analytic hierarchy process (AHP) is a simple and practical method that combines subjectivity and objectivity and was proposed by the American operations researcher Saaty in the early 1970s. Multi-objective decision analysis method. Its main principle is: by decomposing complex decision-making problems, a hierarchical structure model is constructed, and then the relative importance of elements of the same level is compared pairwise, and a pairwise comparison judgment matrix is established according to the 1-9 scaling method; the solution is The maximum eigenvalue of the judgment matrix and its corresponding eigenvector are normalized to obtain hierarchical single ranking and total ranking, thereby determining the index weight of each element relative to the target criterion, as shown in Table 1.

Table 1. Evaluation system for undergraduate majors

	First level indicator	Weights	Secondary indicators	Weights	Third level indicators	Weights	Total Weights
A: Evaluation index system for early warning of undergraduate majors in colleges and universities	B1: Professional students source status	0.251	C1: number of students	0.333	D1: The number of undergraduate students admitted to this major	1.000	0.0836
			C ₂ : Student quality	0.667	D2: The minimum admission score for new students in this major	1.000	0.1674
	B ₂ : Professional Society Need	0.257	C ₃ : Graduate employment rate	1.000	D3: The proportion of employment in this major to the total number of graduates	1.00	0.257
	B ₃ : Professional Teaching Quality	0.109	C ₄ : Teaching Resources	0.122	D4: Number of Experimental Teaching Demonstration Centers	1.000	0.0133
			C ₅ : Teaching staff	0.320	D5: The proportion of full-time teachers and students	0.333	0.0116
					D6: The proportion of teachers with senior professional titles	0.667	0.0233
			C ₆ : Teaching effect	0.558	D7: Importance of professional core courses	0.333	0.0202
	B ₄ : Professional club Will evaluate	0.231	C ₇ : social reputation	0.333	D9: Graduation Alumni Recommendation	1.000	0.0769
			C ₇ : social reputation	0.667	D10: The degree to which professional training meets job requirements	1.000	0.1541
	B ₅ : Professional employment quality	0.152	C ₉ : Professional industry suitability	0.250	D11: The proportion of people engaged in related work in their major after graduation	1.00	0.038
			C ₁₀ : Graduate employment satisfaction	0.750	D12: Graduates' satisfaction with the company's development prospects, salary and benefits, etc	1.000	0.1140

3.3. Early Warning System and Framework for Higher Education Talent Training Based on Supply and Demand

3.3.1. Early warning system framework

The early warning system is composed of multiple modules. It can clarify the alarm situation, find the alarm source, analyze the warning signs, establish an early warning model, divide the alarm limits, increase the alarm degree, make early warning management decisions, and eliminate alarm risks. Its core parts are the indicator system and the construction of mathematical models. Determining the alarm critical value and establishing an early warning information release and feedback system are key points. Clarifying the functions of each part is very important for the establishment of an early warning system.

3.3.2. Information sharing and monitoring mechanism.

Improve the awareness of information sharing, clarify the requirements for top polices, establish an information sharing database (such as the professional settings of colleges and universities, supply and demand data systems, employment information systems, professional employment relevance, etc.), establish an information sharing system guarantee system; determine the top professional settings The information scope of police assessment is established, and a top police information collection system is established; a dynamic database monitoring system is established to implement comprehensive inspection and monitoring; threat factors are identified and weak links are determined; the level and probability of risks and comprehensive assessment methods are determined, and an assessment report is formed.

3.3.3. Regulatory decision-making and evaluation mechanism.

The higher education talent training supervision mechanism mainly focuses on the quality of talent training. Its essence is to evaluate and judge whether the talent training in higher education institutions supports economic development well. The structure, quantity and feasibility of talent training in higher education and the talent demand of economic development are Is the ongoing relationship healthy? This directly involves the basic factors of talent training such as the professional settings, enrollment numbers, and distribution of colleges and universities. Through the analysis of the top police system, it will ultimately form the basis for educational development decisions made by the education authorities and colleges and universities. Provide decision-making support for the development of education and higher education institutions.

4. SUMMARY

Colleges should strengthen informatization construction, make full use of Internet technology to establish graduate employment information monitoring systems, collect employment data of various majors in real time and dynamically, and conduct regular dynamic monitoring of graduates and employers of each major.

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