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Article

Research on the Integration Path of Administrative Informatization Construction and Intelligent Management Technology in Colleges and Universities under the Strategy of a Strong Education Country

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Abstract: Under the strategy of education power, it is found that the current administrative management level of many colleges and universities fails to meet the standard requirements, for this reason, this paper puts forward the fusion path of administrative informatization construction and intelligent management technology. Through the theoretical analysis of the influencing factors of the integration path, 4 first-level indicators and 20 second-level indicators are identified to form the evaluation index system. Under the role of fuzzy hierarchical analysis method, entropy weight method and fuzzy comprehensive evaluation method, the design work of fusion path evaluation program is finalized. Under the support of research data and program, the evaluation and analysis of the fusion path of this paper is carried out. Through the calculation of the fusion path of this paper, we first get the affiliation degree value (0.4115, 0.0375, 0.0427, 0.0523, 0.0731), and further get the overall assessment result of the fusion path of this paper, 4.0017, which is in the range of 4~5, indicating that the fusion path of this paper has an excellent assessment grade, and it is very good to verify the application effect of the fusion of college administrative informationization construction and intelligent management technology, and make the college administrative informationization construction and intelligent management technology more effective. The application effect of the path makes the administrative management of colleges and universities more in line with the strategy of a strong education country.

Keywords: fuzzy hierarchical analysis; entropy weight method; fuzzy comprehensive evaluation method; strategy of a strong education nation; fusion path

1. Introduction

As China's comprehensive national strength continues to grow, its status and influence on the global stage have become increasingly significant [1]. However, compared to developed countries, there remains a certain gap in China's educational standards and quality [2]. Therefore, to enhance the nation's core competitiveness, the Education Powerhouse Strategy was introduced [3]. The implementation of this strategy aims to improve the quality and efficiency of education, enhance the quality and competitiveness of human resources, and promote educational equity and inclusivity [4-6]. In this context, the integration of administrative informationization and smart management technologies in higher education institutions is an inevitable path for talent cultivation and a crucial foundation for achieving the Education Powerhouse Strategy at the institutional level [7-9].

Currently, the informatization of university administrative systems has become an important means of improving administrative efficiency and service quality [10]. The informatization of administrative management is an inevitable trend in the digital age. Through informatization, data sharing and

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information transmission can be realized in real time and efficiently, thereby improving the accuracy of administrative management and the scientific nature of decision-making [11-14]. At the same time, informatization can reduce administrative costs, improve resource utilization, and make administrative management more convenient and efficient [15-16]. Smart management technology, based on big data, cloud computing, and artificial intelligence, enables precise monitoring and analysis of the entire management process [17-18]. The integration of university administrative informationization and smart management technology can achieve intelligent administrative management, not only reducing labor costs but also improving management efficiency, lowering operational costs, and enhancing educational quality [19-21].

Literature [22] emphasizes the importance of university administrative management and the issues it faces, such as low management personnel levels, and proposes reforms from the perspectives of transforming traditional administrative management models and improving the capabilities of administrative personnel. Literature [23] introduces university administrative management informatization, emphasizing that it is a complex system engineering project involving technical planning, design, and improvement, as well as the integration of functions across university departments and the proper transformation of management models. Literature [24] discusses the impact of information technology on university administrative management in China and the challenges it faces, emphasizing the need to enhance staff's overall capabilities, update hardware facilities, and promote more scientific and modern management to ensure standardized management development. Literature [25] points out that introducing an information management system into university teaching management can effectively promote the rapid operation of teaching management, accelerate the innovative development of academic affairs management, and enhance the modern awareness of academic affairs management personnel. However, issues such as cyberattacks and low management levels exist, necessitating the establishment of a scientific teaching management information system. Literature [26] points out the lagging and inefficient issues in administrative management at private universities, highlights the important role of administrative management innovation, and combines modern management theory with educational governance logic to seek a management model suited to the characteristics of private universities, thereby achieving sustainable development. Literature [27] introduces the design principles and objectives of university administrative management systems, as well as the functional module design of their main subsystems. Based on data mining models and algorithms, it proposes a data mining model for educational decision support systems. Literature [28] aims to design and develop an educational management information system, emphasizing that by leveraging mobile edge technology, academic affairs systems can process and analyze data more efficiently in terms of teacher management and teaching quality.

Aiming at the current administrative dilemma of colleges and universities, this paper puts forward the integration path of college and university administrative informatization construction and intelligent management technology on the basis of the strategy of education power. In order to verify the actual performance effect of the path, firstly, through the analysis of the theory of influencing factors, the evaluation index system of this paper's research is determined, which consists of 4 first-level indexes and 20 second-level indexes. Then the fuzzy hierarchical analysis method and entropy weight method are used to calculate the subjective and objective weights of the evaluation indexes, from which the combined weights of the evaluation indexes can be further obtained. Finally, through the expert questionnaire research method to obtain the initial assessment of the index value, after the fuzzy comprehensive evaluation method of the data processing, and then get the fusion of this paper program affiliation results, based on the final analysis results, successfully verified the college administrative information technology construction and the integration of intelligent management technology path of the actual application performance.

2. Exploration of the Integration Path of Administrative Informatization and Intelligent Management

2.1. National Strategy for Education

The change from "education to save the country" to "education to build the country", from "rejuvenating the country through science and education" to "strengthening the country through education", reflects the profound changes in the destiny of the country, the development environment and the construction tasks, and also reflects the relationship between education and the country of the times, that is, education has distinctive characteristics of the times. This subsection elaborates on the strategy of building a strong country through education from three aspects:

2.1.1. The dimension of the Individual

First of all, according to the different groups of educated people, respond to the educational demands of different aspects and different age groups. In the process of building a strong country in education, according to the differences between groups, we should actively plan relevant strategies to meet the educational demands of the educated, vigorously promote the popularization of inclusive education in preschool education, the high-quality and balanced urban and rural areas of compulsory education, the vertical and horizontal integration of vocational education, and the connotative development of higher education. Secondly, according to the development differences of different regions, respond to the educational demands of the educated. Affected by regional economic conditions and other factors, there is still a certain gap in the education level of different regions, on the road to building a strong country in education, we should explore measures for the high-quality and balanced development of education according to local conditions, "realize the precision of education assistance for difficult groups", and build a "high-quality, balanced, universal and inclusive, wisdom-empowered education development pilot area in ethnic areas", effectively alleviate the dilemma of unbalanced and insufficient education in various places, and meet the people's demand for high-quality education.

2.1.2. The Social Dimension

The high-quality implementation of the strategy for a strong education nation not only requires internal changes in the strategy's own system, but also cannot be separated from the support of external social conditions. At present, the social support of the strategy for a strong education is the short board of the implementation of the strategy for a strong education, so the process of promoting the strategy for a strong education is of great significance to make up the social support system. Firstly, optimize the input mechanism of the strategy of a strong education nation and promote the development of quality, balanced and high-quality education, and education input is a necessary condition to guarantee the strategy of a strong education nation. Secondly, to build a pluralistic governance pattern and form a new synergistic pattern, families, schools, government and society all have the responsibility to do a good job in education. Finally, the strategy of a strong education cannot be separated from the social environment support and social cooperation support, it is especially important to give full play to the role of the government and all sectors of society in the development of education and functional protection, education should be based on the social ecosystem, reconstructing the relationship with the main social parties, to meet the interests of the social pluralism of the main body's aspirations, and actively accept the interests of the main social pluralism of the main body's demand, shaping the strategy of strong education to form a new pattern of governance.

2.1.3. The National Dimension

It is necessary to insist that science and technology is the first productive force, talent is the first resource, and innovation is the first driving force, and to implement in depth the strategy of developing the country through science and education, the strategy of strengthening the country through talent, and the strategy of innovation-driven development, so as to open up new fields and new tracks of development, and to continually shape new dynamics and new advantages in development. Continuously strengthening the construction of the education system and building a high-quality education system under the concept of education will help to promote the modernization of the strategy of strengthening the country through science and technology and talents, thereby creating a new picture of the new form of human education.

This subsection proposes the fusion path of university administrative information construction and intelligent management technology from three aspects under the perspective of the strategy of education power, aiming to improve the quality of university administrative information construction and intelligent management. The detailed description of the integration path is shown below:

2.2. Designing the Integration Path

2.2.1. Opening Up Multi-Source Data Channels

In the era of big data, data integration and sharing are important features and technical indicators of intelligent information systems. For colleges and universities, administrative data and teaching operation data, party committee organization data, security and safety, financial payroll data, etc. are closely related, often the work process of business data upstream and downstream relationship, multi-departmental data circulation system architecture as shown in Figure 1. However, due to the business system of each department and data authority differences and other reasons, often appear in the information system data update is not timely, slow data transfer efficiency, data format incompatibility and other issues. Through scientific management of data reading and writing rights, building information

center data transit platform, differentiated processing and design of data access channels, etc., data can be shared intelligently, which not only improves the difficult status quo of old data of each department, but also provides convenient data support for school reform decision-making through big data analysis technology, which greatly facilitates the administrative work.

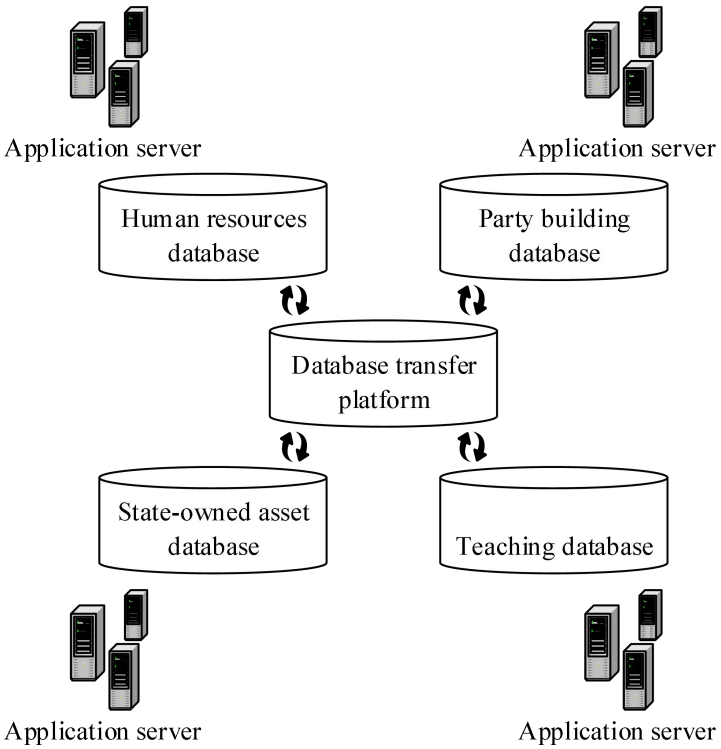

Figure 1. Multi-department data circulation system architecture.

2.2.2. Robust Self-Service System

"Self-service" is another important feature of the intelligent information platform, and the first-class user experience mode is an important goal for the construction of intelligent information system. Referring to and introducing the self-service mode widely adopted by the government, enterprises and public institutions, it not only saves a lot of time for the users to handle business and get high satisfaction from the users, but also greatly improves the efficiency of the administrative office and creates a modernized and intelligent office service mode. Through accurate sorting and refinement of business hierarchy, multi-faceted to create a self-service mode, the development and construction of APP client, expanding the business online processing and audit mode, etc., the staff business for the business of the larger demand for self-service, intelligent services, not only greatly facilitates the staff's business, but also effective in improving the efficiency of the administrative staff, thus forming the highlights of the work of the university administrative services.

2.2.3. Intelligent Models for E-Archiving

"Paper file" is still the traditional concept of administrative business processing in universities, in the face of increasing administrative work and information interviews, a large number of paper administrative information in the rapid search, clean up statistics and other aspects of the existence of great difficulties. The current mature development technology in the field of information, can be a good solution to the paper business to information technology to handle the rapid transition, such as banking business process widely promoted electronic signature, can be introduced to the administrative labor contract management business, title management, disciplinary rewards management and so on. Through the establishment of a complete index of electronic documents, drawing on the refined management of the archives, the introduction of mature technologies in the field of information, for the business of colleges and universities, put forward and formulate administrative business processes suitable for the University, to create a data processing, electronic archives based mainly on electronic information business flow, is practicable and intelligent and convenient, is the focus of the direction of the

optimization of the construction of information technology in colleges and universities and the construction of the key direction.

3. Convergence Pathway Assessment Program Design

3.1. System of Evaluation Indicators

3.1.1. Impact Factors

(1) Infrastructure

The carrier of the informationization construction of the administration is the infrastructure construction, and all the "ideas" of informationization are built on the informationization infrastructure construction, and the "presence or absence" of the infrastructure is a sufficient and necessary condition for the realization of the informationization construction. For the construction of administrative informatization, the main influencing factors include: the construction of informatization platform management service platform, the situation of informatization equipment, the construction of campus network, the basic information database, platform servers, and so on.

(2) Application of informatization

The application of informatization can solve the complex procedures in the administrative office of universities, complete the daily management of documents, icons and other items in the administrative office, and can realize online access to informatization traces of the office, reducing a lot of time for approval. The main factors included in the application of informatization are: informatization of information reports, informatization of administrative business approvals, informatization of office, informatization of student performance statistics, informatization of teaching and so on.

(3) Informatization Leadership

The realization of informatization of college administration depends very much on the decision-making of the college leadership, so whether the leadership has informatization literacy plays a vital role in whether the college realizes the informatization of administration. The main factors of informatization leadership are: informatization literacy of administrators, informatization organization, informatization skills, informatization management team, informatization leadership style and so on.

(4) Informatization talent situation

Informatization talent is the "operator" of informatization construction, and informatization talent is the concrete realizer of informatization, and the main influencing factors include: input of informatization training, input of informatization application, input of educational resources, input of policies, input of funds and so on.

3.1.2. Construction of the System

Through the above analysis of the factors influencing the integration path of the administrative informatization construction of colleges and universities and intelligent management technology under the strategy of education power, four primary indicators and 20 secondary indicators can be selected, which together constitute the evaluation index system, and the evaluation index system is shown in Table 1. Convergence path assessment.

Table 1. Evaluation index system.

Objective	Symbol	First-level indicator	Symbol	Secondary indicators	Symbol
Fusion path evaluation	A	Infrastructure situation	B1	Platform construction situation	C1
				Information technology equipment situation	C2
				Network construction situation	C3
				Basic information database	C4
				Platform server	C5
		The application situation of informatization	B2	Information-based information reports	C6
				Information-based administrative business approval	C7
				Information-based office work	C8
				Information-based statistics of grades	C9
				Information-based teaching	C10
		Information-based leadership	B3	Information literacy	C11

				Information-based organizational structure	C12
				Information skills	C13
				Information Management Team	C14
				Information-based leadership style	C15
		The situation of information technology talents	B4	Investment in information-based training	C16
				Investment in information technology application	C17
				Investment in educational resources	C18
				Policy input	C19
				Capital investment	C20

3.2. Evaluation Indicator Weights

3.2.1. Fuzzy Hierarchy Analysis

This method integrates the "fuzzy consistency matrix" into the "hierarchical analysis method", reduces the bias of subjective scoring by experts, simplifies the calculation process, makes the calculation more efficient, makes the results more scientific, improves the credibility, and improves the shortcomings of the hierarchical analysis method [29]. The steps of fuzzy hierarchical analysis are as follows: establish an organized hierarchical structure model, measure the importance of each indicator according to the 0.1~0.9 scale, so as to construct a fuzzy complementary matrix, calculate the corresponding fuzzy consistency matrix, and calculate the weights of the indicators at different levels respectively. The specific calculation process is as follows:

(1) Constructing the progressive hierarchy model

Combined with the specific research problem, the recursive hierarchical structure model can be divided into many layers, but in the research on the integration path assessment of the administrative informatization construction of colleges and universities and the intelligent management technology, a three-layer structure is generally used as shown in Figure 2. According to the specific objective A of the research problem, the objective is further subdivided downward into multiple guidelines to construct the guideline layer, so as to make the objective more specific and organized. Based on the intrinsic connection between different indicators and each criterion, each criterion in the criterion layer is further subdivided into multiple indicators to construct the decision layer. The hierarchical model can lay a good foundation for further calculating the weight of each indicator in the decision layer in the objective A.

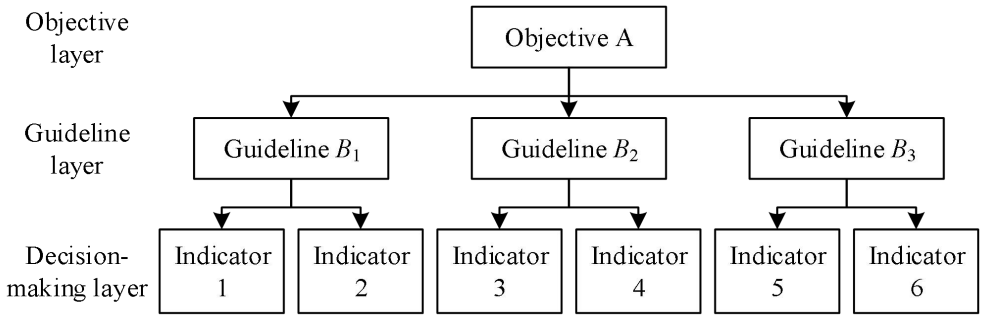

Figure 2. Three-level hierarchical structure model.

(2) Construction of fuzzy consistency matrix R.

According to the definition of fuzzy complementary matrix, we generally choose "0.1~0.9 five scale method" as the quantitative standard, which is to compare the importance of the two indicators and quantify the degree of importance and the corresponding quantitative values are shown in Table 2.

Table 2. 0.1~0.9 five-scale method.

Scale	Meaning
0.1	A is extremely important than B

0.3	A is obviously more important than B
0.5	A is as important as B
0.7	B is obviously more important than A
0.9	B is extremely important than A
0.2,0.4,0.6,0.8	The median between two adjacent scales

Let the fuzzy complementary matrix $R=\left(r_{ij}\right)_{n\times n}$, if it satisfies $r_{ij}=r_{ik}-r_{jk}+0.5\left(i,j,k\in 1,2,\ldots n\right)$, then R is a fuzzy consistent matrix. The steps are as follows:

Sum the fuzzy complementary matrix B by rows and write it as r_{i} as shown in equation (1):

$$r_i=\sum_{k=1}^{n}b_{ik} \tag{1}$$

where n - the order of B.

b_{ik} - the element of the i-th row and k-th column in B, $i=1,2,\ldots n$.

The formula for each element in R_B is equation (2):

$$r_{ij}=\frac{r_i-r_j}{2(n-1)}+0.5 \tag{2}$$

where r_{ij} - the ith row and j th column element in R_B.

(3) Calculate the weights

The weights ω are calculated using the fuzzy consistency matrix R, and the weight calculation formula is shown in equation (3):

$$\begin{cases}\omega=\dfrac{1}{n}-\dfrac{1}{2a}+\dfrac{1}{an}\cdot\sum_{k=1}^{n}r_{ik}\\ a=\dfrac{n-1}{2}\end{cases} \tag{3}$$

where n - the order of R.

r_{ik} - the element of the ith row and k th column in R.

3.2.2. Entropy Weight Method

"Entropy", entropy was first used in thermodynamics to describe the disordered state of particles. Later, entropy was combined with information theory to put forward the concept of "information entropy", which is used to describe the size, complexity, and organization of a system. Based on the principle of "information entropy", the "Entropy Weight Method (EWM)" for calculating objective weights was derived, and this method is widely used in various disciplines. The "information entropy" in the "entropy weight method" can be used to explain the dispersion of the index, and the weight of the index is closely related to the information entropy, that is, the larger the information entropy, the smaller the dispersion of the indicator is, and the smaller the corresponding weight. The calculation steps are as follows:

Suppose there are m samples and n indicators, denoted as $X_{ij}=(x_{ij})_{m\times n}$, where $1\le i\le m$ and $1\le j\le n$.

(1) Normalize each indicator as shown in equation (4) to create $A_{ij}=(a_{ij})_{m\times n}$:

$$\begin{cases}Positive\ indicators: a_{ij}=\dfrac{x_{ij}-\min(x_{ij})}{\max(x_{ij})-\min(x_{ij})}+0.0001\\ Negative\ indicators: a_{ij}=\dfrac{\max(x_{ij})-x_{ij}}{\max(x_{ij})-\min(x_{ij})}+0.0001\end{cases} \tag{4}$$

(2) Calculate $P_{ij} = (p_{ij})_{m\times n}$ as shown in equation (5):

$$p_{ij} = \frac{a_{ij}}{\sum_{i=1}^{m} a_{ij}} \tag{5}$$

where p_{ij} - the weight of the j th indicator in the i th sample.

(3) Determine the number of samples m, calculate the K value and information entropy e_j, as shown in equation (6):

$$\begin{cases} K = -\dfrac{1}{\ln m} \\ e_j = K\sum_{i=1}^{m} p_{ij} \ln(p_{ij}) \end{cases} \tag{6}$$

(4) Calculate the coefficient of variation g_j as shown in equation (7):

$$g_j = 1 - e_j \tag{7}$$

(5) Calculate weight ω_j as shown in equation (8):

$$\omega_j = \frac{g_j}{\sum_{j=1}^{n} g_j} \tag{8}$$

where ω_j - the weight of the j th indicator.

3.2.3. Combined Weights

The additive synthesis method, i.e., separately for different weight calculation methods to determine its proportion of the portfolio weight, the calculation formula is shown in equation (9).

$$\omega_j = \lambda a_j + (1-\lambda) b_j \tag{9}$$

where λ, $1-\lambda$ - weight coefficients, also known as preference coefficients.

a_j - subjective weight of the j th factor.

b_j - the objective weight of the j th factor.

ω_j - additive synthesis method combination weights.

Using the additive synthesis method to calculate the combination weight of each subjective factor, the preference coefficient λ is taken to be 0.5, indicating that the subjective and objective weights are equally important.

3.3. Fuzzy Integrated Evaluation Method

3.3.1. Principles of the Fuzzy Integrated Evaluation Method (FIEM)

Fuzzy comprehensive evaluation in general provides a comprehensive evaluation method with the help of the theories in fuzzy mathematics to provide a comprehensive evaluation method for the problems occurring in life that are not easy to be evaluated directly. In other words, fuzzy comprehensive evaluation is a method of comprehensively evaluating the subordinate grade status of the evaluated object from various aspects by applying fuzzy relationship synthesis based on the concepts and theories of fuzzy mathematics and quantifying the factors that are not easy to be quantitatively analyzed in life through mathematical methods.

3.3.2. Determination of Evaluation Levels

According to the specific situation of the evaluated object, the hierarchical structure diagram of the

evaluation index system is established by analyzing and determining each evaluation index and evaluation level.

Let the evaluation index be U :

$$U = \{u_1, u_2, \ldots, u_m\} \tag{10}$$

Denote m indicators of the evaluated object.

Let the evaluation level be V .

$$V = \{v_1, v_2, \ldots, v_n\} \tag{11}$$

Represent the n kinds of decisions for the state in which each indicator is located.

Single-indicator judgment and evaluation matrix construction

First of all, according to the specific evaluation object, determine the single indicators $u_i\ (i = 1, 2, \ldots, m)$ in the indicator set U , and judge the single indicators by expert scoring and other methods. For each u_i in the indicator, the affiliation degree (degree of likelihood) r_{ij} of the factor to the evaluation level $v_j\ (j = 1, 2, \ldots, n)$ is determined, and the set of single-indicator judgments for the i th factor u_i can be derived in this way: $r_i = (r_{i1}, r_{i2}, \ldots, r_{in})$.

Similarly, it can be derived that the evaluation set consisting of m indicators is constructed as a total evaluation matrix R . For:

$$R = \begin{pmatrix} r_{11} & r_{12} & \cdots & r_{1n} \\ r_{21} & r_{22} & \cdots & r_{2n} \\ \cdots & \cdots & \cdots & \cdots \\ r_{m1} & r_{m2} & \cdots & r_{mn} \end{pmatrix} \tag{12}$$

The evaluation matrix R is the fuzzy relationship between the set of indicators U and the set of evaluation ratings V , which represents the degree of affiliation of the indicator u_i to the evaluation rating v_j .

The different rows in the evaluation matrix R can accurately reflect the degree of affiliation of the evaluated thing under study from a single indicator to each grade. In our study, by introducing the fuzzy weight vector A and synthesizing the different rows, we can get the degree of affiliation of the evaluated thing as a whole to the fuzzy subsets of each grade, i.e., the vector of fuzzy comprehensive evaluation results. Generally, let $B = A * R$, which is called fuzzy transformation. A fuzzy subset B is introduced and is called a fuzzy evaluation set, also known as a decision set. $B = (b_1, b_2, \ldots, b_n)$.

4. Integration Pathway Assessment Risk

4.1. Calculation of Weights

4.1.1. Calculation of Weights Based on Fuzzy Hierarchical Analysis

Since the weight of each evaluation index on the fusion path in Table 1 is not the same, this paper first calculates the weight of each evaluation index based on the fuzzy hierarchical analysis method, and the modeling software used is YAAHP, and the specific analysis process is as follows. On the basis of the fusion path evaluation hierarchical model, this paper organizes experts in related fields, a total of 20, to calculate the weight of each evaluation index. According to the experts' mutual comparison of each evaluation index, the evaluation index judgment matrix is obtained, and the judgment matrix of each index is shown in Fig. 3~Fig. 7, and the corresponding consistency test results are shown in Fig. 7. Based on the numerical performance in the figure, it can be seen that the CR values of judgment matrix A, judgment matrix B1, judgment matrix B2, judgment matrix B3 and judgment matrix B4 are all less than 0.01, with the specific values of 0.0188, 0.0111, 0.0160, 0.0154 and 0.0124, so that the calculated evaluation index weight values are more in line with the requirements of the research standards, and at the same time ensure that the results of the study are Rigor.

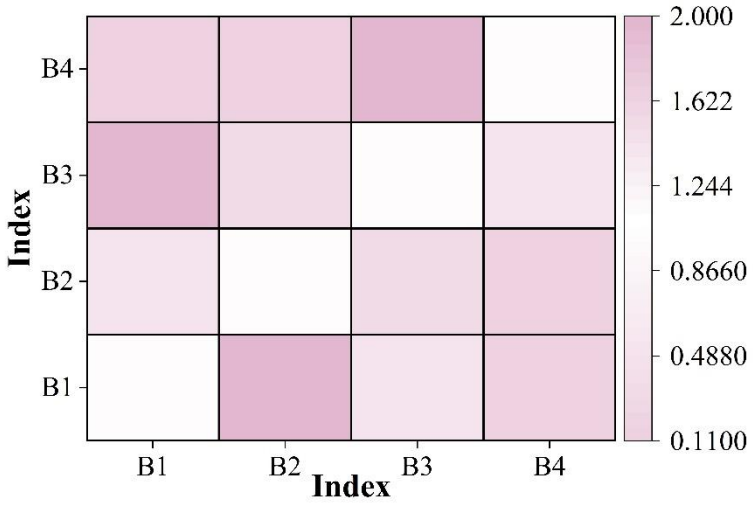

Figure 3. Index judgment matrix(A).

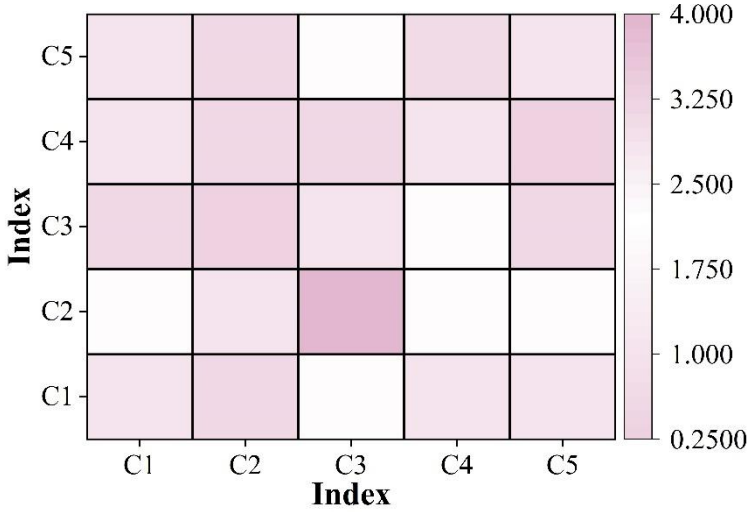

Figure 4. Index judgment matrix(B1).

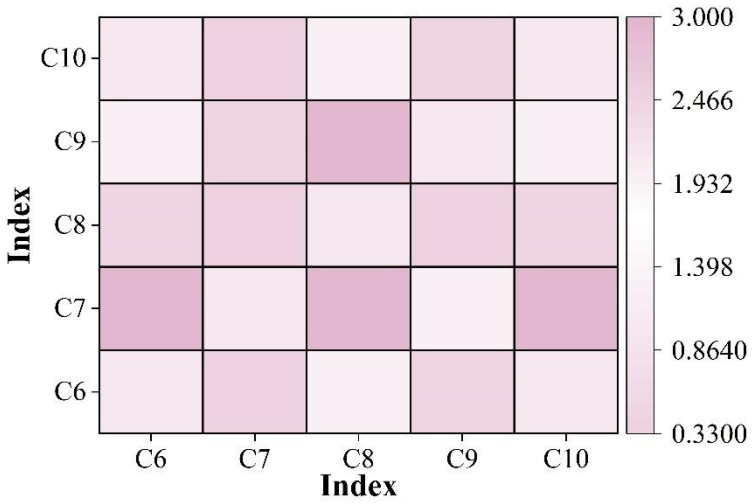

Figure 5. Index judgment matrix(B2).

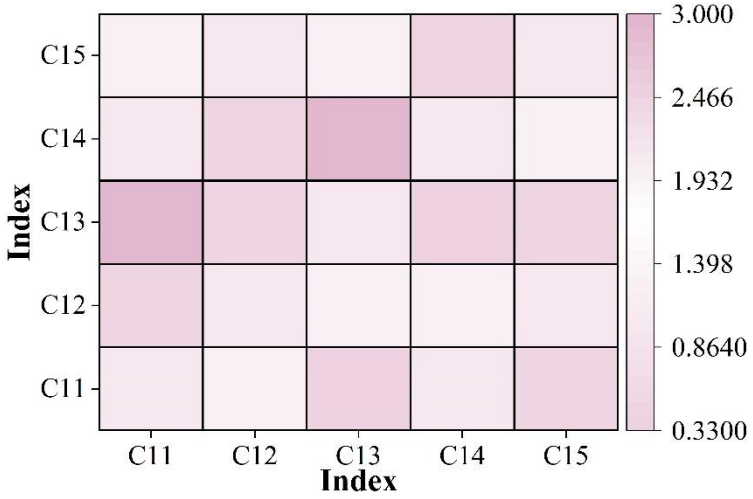

Figure 6. Index judgment matrix(B3).

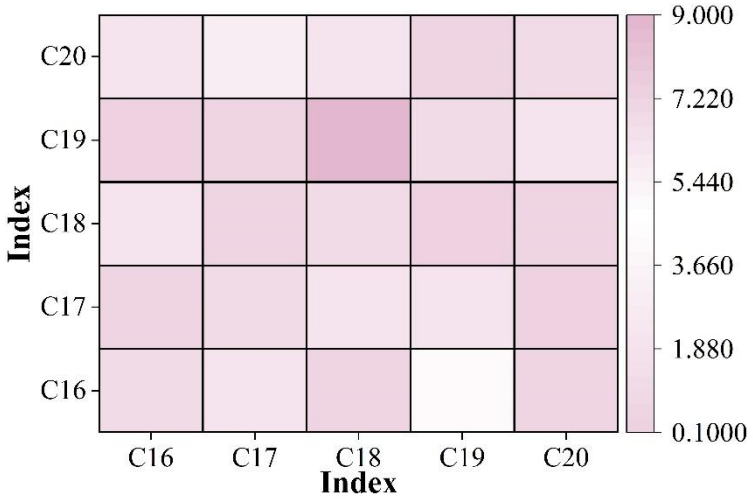

Figure 7. Index judgment matrix(B4).

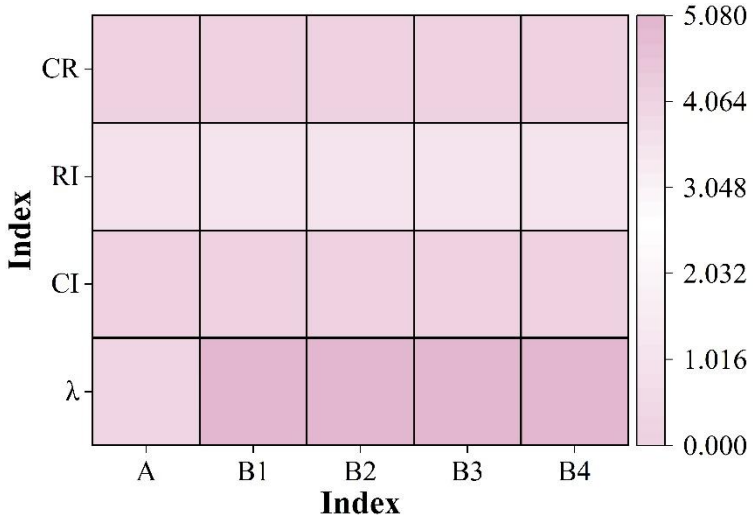

Figure 8. Consistency test results.

On the basis of judgment matrix, fuzzy hierarchical analysis is used to calculate the evaluation index weight values, and the numerical results of each evaluation index are shown in Table 3. Based on the data results in the table, it can be seen that in terms of the weight of the first-level indicators: informatization leadership (B3: 0.3462) > infrastructure situation (B1: 2802) > informatization application (B2: 0.2376) > informatization talent situation (B4: 0.136). As for the weights of secondary indicators: informatization skills (C13: 0.0894) > informatization office (C8: 0.0855)>informatization literacy (C11: 0.0844) > basic information database (C4: 0.0843)>network construction situation (C3: 0.0778) > informatization organization (C12: 0.0590) > informatization leadership style (C15: 0.0590) > Informatization management team (C14: 0.0544) > Informatization of teaching (C10: 0.0521) > Informatization of information report (C6: 0.0520) > Platform construction (C1: 0.0513) > Input of educational resources (C18: 0.0459)>Platform server (C5: 0.0412)>Informatization of statistics of achievements (C9: 0.0292)>Input of informatization application (C17: 0.0279) > Informatization equipment situation (C2: 0.0256) > Input of informatization training (C16: 0.0224) > Input of policy (C19: 0.0219) > Informatization administrative and operational approval (C7: 0.0188) > Input of funds (C20: 0.0180).

Table 3. The numerical results of various evaluation indicators.

Objective	Weight	First-level indicator	Weight	Secondary indicators	Weight
A	1	B1	0.2802	C1	0.0513
				C2	0.0256
				C3	0.0778
				C4	0.0843
				C5	0.0412
		B2	0.2376	C6	0.0520
				C7	0.0188
				C8	0.0855
				C9	0.0292
				C10	0.0521
		B3	0.3462	C11	0.0844
				C12	0.0590
				C13	0.0894
				C14	0.0544
				C15	0.0590
		B4	0.136	C16	0.0224
				C17	0.0279
				C18	0.0459
				C19	0.0219
				C20	0.0180

4.1.2. Weight Calculation Based on Entropy Weight Method

Based on the collection of evaluation index data for the construction and intelligent management of university administration, and using the entropy weight method mentioned above to calculate the weights of evaluation indexes, the results of weight calculation based on the entropy weight method are shown in Table 4. Based on the weight values in the table, it can be seen that there exists informatization leadership (B3: 02836) > informatization application (B2: 02704) > infrastructure (B1: 0.2415) > informatization talent (B4: 0.2045) in the first-level indicators, and there exists informatization management team (C14: 0.0729) > informatization organization (C12: 0.0680)>Platform server (C5: 0.0661)>Information report of informatization (C6: 0.0661)>Informatization office (C8: 0.0645)>Informatization teaching (C10: 0.0566)>Informatization literacy (C11: 0.0553)>Platform construction situation (C1: 0.0547)>Informatization leadership style (C15: 0.0537)>Informatization administrative and business approval (C7: 0.0534)>Informatization equipment situation (C2: 0.0469)>Policy input (C19: 0.0462)>Funding input (C20: 0.0432)>Input of informatization training (C16: 0.0428)>Input of educational resources (C18: 0.0392)>Basic information database (C4: 0.0391) > Network construction (C3: 0.0346) > Input of informatization application (C17: 0.0340) > Informatization skills (C13: 0.0338) > Achievement informatization statistics (C9: 0.0297).

Table 4 The weight calculation result based on the entropy weight method

Objective	Weight	First-level	Weight	Secondary	Information	Coefficient of	Weight

		indicator		indicators	entropy	difference	
A	1	B1	0.2415	C1	0.7983	0.2017	0.0547
				C2	0.8271	0.1729	0.0469
				C3	0.8723	0.1277	0.0346
				C4	0.8558	0.1442	0.0391
				C5	0.7564	0.2436	0.0661
		B2	0.2704	C6	0.7565	0.2435	0.0661
				C7	0.803	0.197	0.0534
				C8	0.7622	0.2378	0.0645
				C9	0.8904	0.1096	0.0297
				C10	0.7913	0.2087	0.0566
		B3	0.2836	C11	0.7962	0.2038	0.0553
				C12	0.7494	0.2506	0.0680
				C13	0.8756	0.1244	0.0338
				C14	0.7314	0.2686	0.0729
				C15	0.8019	0.1981	0.0537
		B4	0.2045	C16	0.8421	0.1579	0.0428
				C17	0.8745	0.1255	0.0340
				C18	0.8556	0.1444	0.0392
				C19	0.8333	0.1667	0.0452
				C20	0.8408	0.1592	0.0432

4.1.3. Calculation of Portfolio Weights

According to the subjective weights and objective weights of the evaluation indicators calculated above, the formula (9) is used to calculate the combined weights of the evaluation indicators, and the results of the combined weights of the evaluation indicators are shown in Figures 9 to 10, of which Figure 9 is the combined weights of the second-level evaluation indicators and Figure 10 is the combined weights of the first-level evaluation indicators. Comprehensive Figure 9~Figure 10 shows that the achievement informatization statistics C9<Investment of funds C20<Investment of informatization application C17<Investment of informatization training C16<Investment of policy C19<Approval of informatization administration and business C7<Informatization equipment situation C2<Investment of educational resources C18<Platform construction situation C1<Platform servers C5<Informatization teaching C10<Network construction situation C3< Informatization Leadership Style C15<Informatization's Information Statement C6<Informatization Skills C13<Basic Information Database C4<Informatization Organization C12<Informatization Management Team C14<Informatization Literacy C11<Informatization Office C8, and additionally Informatization Talent Situation B4<Informatization Application Situation B2<Infrastructure Situation B1<Informatization Leadership B3.

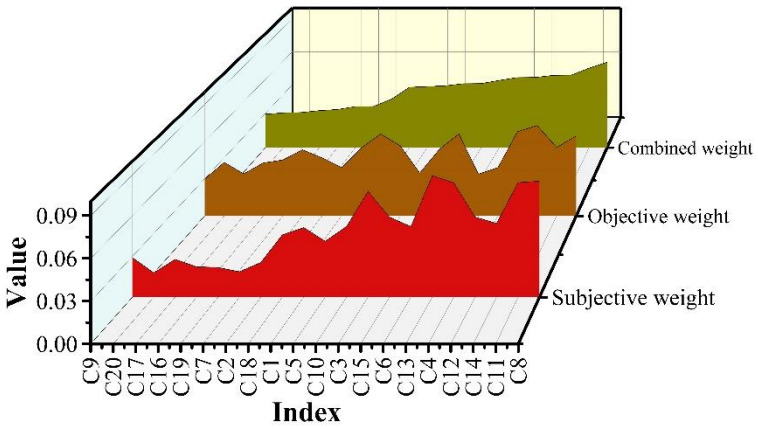

Figure 9. The combined weight values of secondary evaluation indicators.

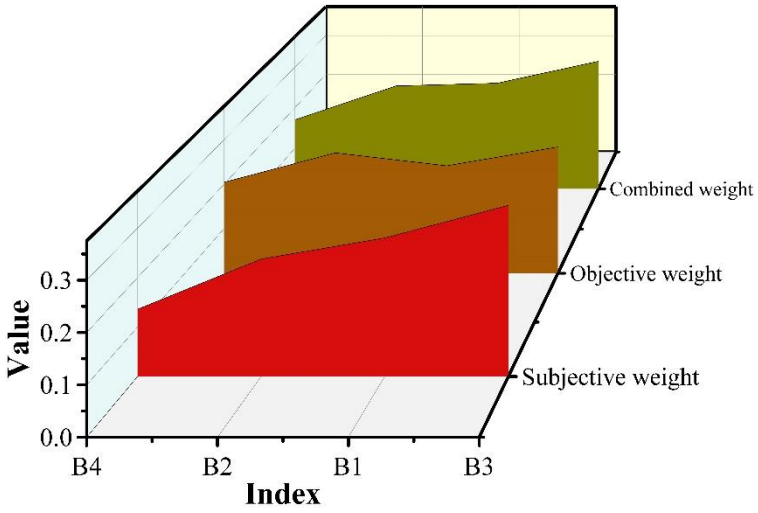

Figure 10. The combined weight values of the first-level evaluation indicators.

4.2. Fuzzy Integrated Evaluation Analysis

4.2.1. Integration of Questionnaire Scoring

This paper adopts the expert consultation hair to obtain the fuzzy comprehensive evaluation method data, questionnaire scoring experts are from the field of Tarzan, a total of 50 questionnaires were sent out in this research, and 50 valid questionnaires were retrieved to integrate the questionnaires, integrated questionnaires scored as shown in Fig. 11, where V1, V2, V3, V4, and V5 indicate excellent (4~5), good (3~4), and moderate (2~3), respectively, poor (1~2), and poor (0~1). It can be clearly seen that the number of questionnaire copies for V1 far exceeds that of V2, V3, V4, and V5.

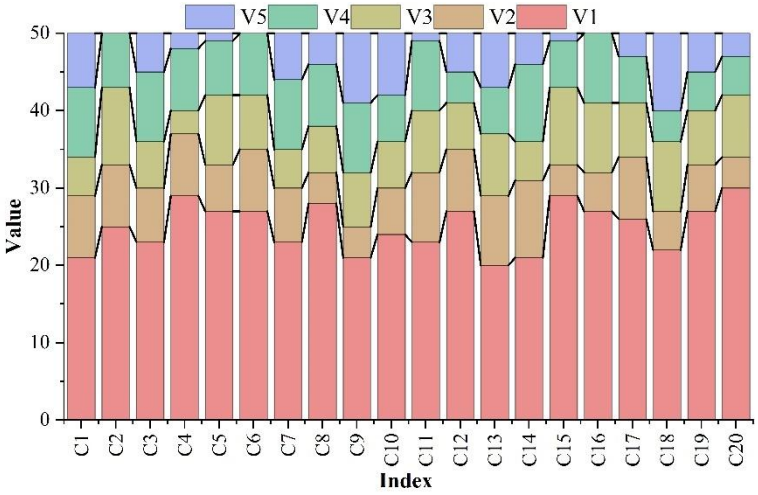

Figure 11. Integrate the scoring situation of the questionnaires.

4.2.2. Analysis of Results

Combined with the above questionnaire data, the fuzzy judgment matrix of each evaluation index can be constructed, and the fuzzy judgment matrix is shown in Fig. 12 to Fig. 15. Based on the weight values of the combination of evaluation indexes and the fuzzy judgment matrix of the indexes, the assessment affiliation values of the integration path of this paper are calculated as (0.4115, 0.2375, 0.1427, 0.1523, 0.1731), and the scoring results of B1, B2, B3, and B4 are 2.2075, 0.95, 0.4281, 0.4146, and the overall score is 4.0017, getting the assessment grade of this paper's fusion as excellent, confirming the value of the application of the fusion path of administrative informatization construction and intelligent management technology in universities under the strategy of education power.

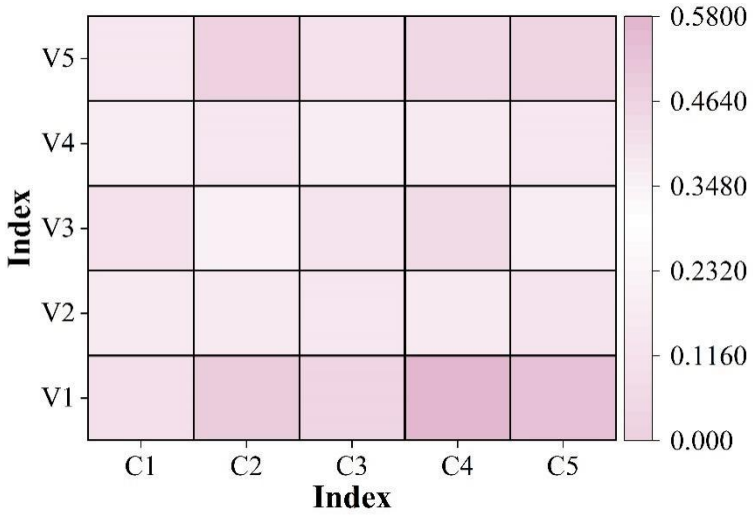

Figure 12. Fuzzy judgment matrix(B1).

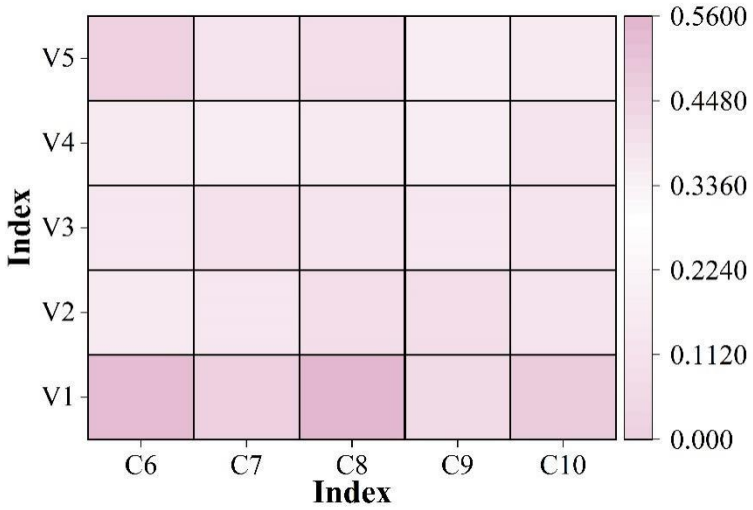

Figure 13. Fuzzy judgment matrix(B2).

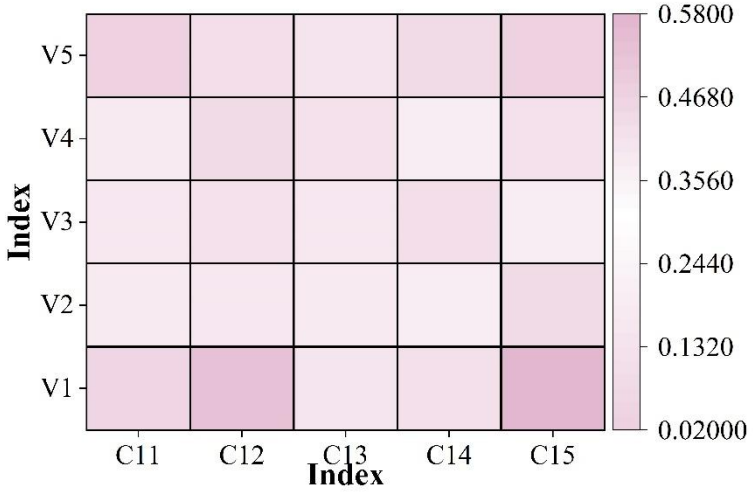

Figure 14. Fuzzy judgment matrix(B3).

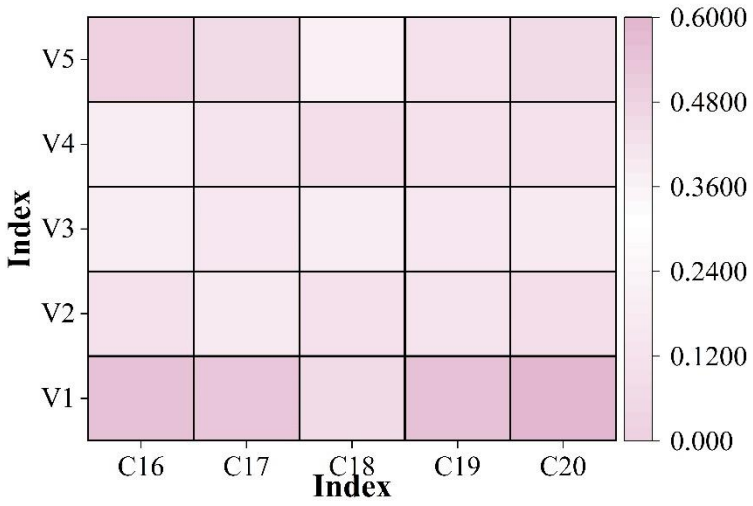

Figure 15. Fuzzy judgment matrix(B4).

5. Conclusion

In order to implement the strategy of a strong education country, colleges and universities propose the fusion path of administrative information construction and intelligent management technology in colleges and universities from three different dimensions. In order to prove the effectiveness of the fusion path in this paper, a fusion path assessment program is developed with the help of fuzzy hierarchical analysis, entropy weight method and fuzzy comprehensive evaluation method. Under the theoretical support of this program, the confirmation assessment analysis is carried out. The final result is that the overall rating result of the fusion path of this paper is 4.0017, which indicates that the assessment level of the fusion path of administrative information construction and intelligent management technology in colleges and universities is excellent, and it can improve the level of intelligent management in colleges and universities.

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