The Quantitative Evaluation Index System of College Student Party Members based on AHP

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Abstract. As an important part of colleges and universities, student party members are the foundation of the development of colleges and universities and the progress of society. Although the development of college student party members has made some progress in recent years, there are still some problems. Based on this situation, this paper studies the quantitative evaluation index system of college student party members based on AHP, and analyzes the quantitative evaluation index of student party members and the weight of each level of index. Among the factors of constraint level B, the largest learning evaluation weight (5.3991) has become an important factor affecting the quantitative evaluation of college student party members. Sub Constraint Level C contains 17 secondary indexes Among them, the weight of daily performance evaluation (0.1906) is the largest, which has become the primary factor affecting the quantitative evaluation of college student party members.

Keywords: AHP Analytic Hierarchy Process, College Student Party Members, Quantitative Assessment of Party Members, Assessment Indicators

1. Introduction

In the new era of teaching reform, it is necessary to innovate the management and assessment mechanism of student party members, quantify and refine the assessment standards, scientifically set and select assessment indicators, make objective, scientific, accurate and comprehensive assessment from all stages of Party member development[1-2], and establish a fair, fair and reasonable management and assessment training system for student party members[3-4].

At present, colleges and universities have established an assessment system for the development and management of student party members, but the assessment is mainly based on the judgment of personal subjective experience, with few quantitative evaluation, and the subjective randomness of assessment is very large[5-6]. To overcome these shortcomings, we must strengthen the construction of the quantitative evaluation index system of the management of student party members[7-8]. in view of the current problems in the evaluation system of Party members' management in universities, this paper establishes a quantitative assessment index system for the management of student party
members in Colleges and universities, so as to remind students to maintain their advanced nature and establish a long-term mechanism \cite{9,10} for Party members’ supervision and education.

This paper first introduces AHP, lists the detailed steps based on the content of this study, then analyzes the ideas and standards of establishing the quantitative assessment system of college student party members, and then summarizes the content of the quantitative assessment system of college student party members, and finally determines the quantitative assessment index system of college student party members. At the same time, this paper expounds the development and management of college student party members and the significance of the quantitative assessment system of college student party members.

2. The Significance of Analytic Hierarchy Process and the Quantitative Assessment System of College Student Party Members

2.1. AHP Analytic Hierarchy Process

(1) In order to solve the practical problems, the first step is to make clear the objective problems to be analyzed, then analyze the influencing factors, and sort out the hierarchical structure according to a certain order.

(2) There is a certain level relationship among the elements of the system of constructing the judgment matrix. The relative importance of the elements in the same level is determined, and the two are compared. The relative importance is expressed by the appropriate scale. The written matrix is the judgment matrix.

(3) Weight calculation of each index

1) Calculate the score \( M_i \) of each line element of the judgment matrix

2) Calculate the n-th root \( W_j \) of \( M_i \)

\[
W_j = \sqrt[n]{M_i}
\]  

(1)

3) Normalized vector

\[
W_i = \frac{W_j}{\sum_{j=1}^{n} W_j}
\]  

(2)

Then the eigenvector is \( W = [W_1, W_2, ..., W_n]^T \).

4) Calculate the maximum eigenvalue \( \lambda_{\text{max}} \) of judgment matrix

\[
\lambda_{\text{max}} = \frac{(AW)^i}{nW_i}
\]  

(3)

(4) Consistency test
When $CI = 0$, the judgment matrix should be completely consistent. The larger the CI, the worse the consistency of the judgment matrix. Generally speaking, when $CR < 0.1$, the judgment matrix has satisfactory consistency, indicating that the distribution of the importance of the judgment matrix conforms to the mathematical logic, and the weight can be calculated according to the matrix, otherwise, the judgment matrix should be adjusted until $CR$ requirements $< 0.1$ are met.

2.2. Significance of the Quantitative Assessment System of College Student Party Members

In the new era, the quantitative assessment of college student party members is conducive to enhance the understanding of College Students' Party members, so that colleges and universities can better play a leading role of college student party members, and also provide theoretical support for the change of some bad phenomena in college student party members. In the education of College Students' Party members, the quantitative assessment of Party members can be further improved. In the new era and new background, the spirit of the 19th National Congress of the Communist Party of China can be better implemented only when the quantitative assessment of College Students' Party members can be effectively educated.

3. The Design of Quantitative Assessment Content of College Student Party Members

(1) Evaluation index

According to the objective reality of the development of Party members in Colleges and universities, this paper sets up a set of reference indicators for the assessment and evaluation of Party members in Colleges and universities. There are four first-class indicators: Party Class B1, learning evaluation B2, mass evaluation B3 and self-evaluation B4. There are 15 second-class indicators in c11-c12, c21-r25, c31-c34 and c41-c44.

(2) Evaluation grade

Calculate the relative weight, get the maximum value of crisis matrix $U$ under $A1\lambda_{max}$, standardize the corresponding eigenvector, and the result is the relative weight of each rating index. In order to ensure that the relative weight distribution of each evaluation index meets the specific logic, it is necessary to check the consistency of the judgment matrix. The consistency check should use the following formula:

$$CR = \frac{CI}{RI}, \text{ where } CI = (1max - n)(n - 1)$$

and $RI$ are the random consistency index, which can be found in Table 1. When $CR < 0.10$, It is considered that the judgment matrix has satisfactory consistency, otherwise, it is necessary to compare the underlying goals repeatedly and adjust the relevant importance scale to achieve consistency.

| Matrix order | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| RI           | 0   | 0   | 0.058 | 0.9 | 1.12 | 1.24 | 1.32 | 1.41 | 1.45 |

4. Quantitative Assessment of College Student Party Members by AHP
4.1. Analysis of the Current Situation of the Development and Management of College Student Party Members

In this paper, many universities in China are investigated to investigate the current situation of the management of student party members. The specific analysis is shown in Figure 1.

**Figure 1. Development and management of student party members in Colleges and Universities**

- Diversified motivation of student party
- There is a certain degree of slack in the political study of Party members after joining the party
- After joining the party organization, some party members are not active in their actions and do not actively participate in the activities of the party organization
- The management standard of Party members is not uniform

It can be seen from Figure 1 that the management of student party members in domestic universities mainly has the following problems:

1. **The motivation of students' party is diversified, accounting for 25.7%**

   Under the background of the increasingly diversified social life, the motivation of students to join the party also presents a trend of diversified development. At present, the political and ideological status of college student party members is generally good, but there are also some student party members who pursue their own interests and regard joining the party as a stepping stone for future evaluation, job-hunting and public official examination. Due to the wrong motivation of joining the party, it is often reflected in the unclear understanding of the basic knowledge of the party. When facing specific problems, first of all, consider personal gains and losses, lack of preparation for the long-term assessment of the party, and damage the overall image of college student party members.

2. **After joining the party, the ideological and political learning of students began to relax, accounting for 22.1%**

   Before joining the party, the school will check whether the students are qualified to join the party, ensure that party members carefully study the party's knowledge, understand the party's policies and guidelines, and learn the party's advanced ideas before joining the party. However, after some party members joined the party, they began to relax in their thinking. They believed that they had joined the party organization and did not need to continue to learn. Due to the changes of social development, in order to keep up with the changes of the times, student party members must continue to learn the new policies and policies of the party, so as to become qualified party members.

3. **After joining the party organization, some party members are not active in their actions and do not actively participate in the activities of the party organization, accounting for 12.3%**

   The reason for this phenomenon is that the party members lack of ideological understanding and do not really realize the importance of the party's organizational activities. On the other hand, the activities organized by the school Party branch are also one of the factors. For example, the ideological and political education activities are relatively rigid. Usually, the student party members are gathered to hold meetings for ideological and political education. As a result, the student party members are not interested in the activities organized by the school Party branch.

4. **The management standards of Party members are not unified, accounting for 11.4%**

   The majority of the Secretary of the student Party branch is held by the student counselor. Because of the change of the counselor team and the flow of student party members, the training and
examination of the students in the branch are not continuous, which is more likely to cause the inaccurate examination results. In the assessment of student party members, it is inevitable that there is a phenomenon of "homogenization". Some only pay attention to academic achievements, some only pay attention to work performance, some only pay attention to "honest people", ignoring the development of comprehensive quality, so the evaluation standard is one-sided.

(5) The inspection system for Party members is not sound, accounting for 18.3%

Before joining the party, the school will use various ways to assess whether the students meet the conditions of joining the party, but after joining the party, there is no corresponding assessment mechanism.

(6) Party member management lacks long-term mechanism, accounting for 10.2%

The management of student party members in Colleges and universities is not only related to the exemplary role of student party members in political ideology, but also closely related to the development of the country. At present, many college students' Party branches have the problems of emphasizing development and neglecting education. Students' Party members do not take the initiative to participate in the activities of the branch after becoming regular, and lack the long-term mechanism of Party members' supervision and education.

4.2. Ideas and Standards for the Establishment of a Quantitative Assessment and Evaluation System for College Student Party Members

(1) Thoughts on the quantitative assessment and evaluation system of college student party members

Establish five levels of development stage, five levels of training step by step, strictly control the assessment standards of each stage, evaluate the situation of student party members according to the "five aspects", i.e. daily communication, conversation of Party organizations, democratic assessment, participation in inner-party activities, personal actual assessment (interview, written test), quantify according to the dimensions of thought, learning, style, organization, discipline, etc., and set up nine indicators. Use feedback from all levels to ensure system consistency. Formulate quantitative assessment and evaluation indicators, define the requirements of quantitative assessment system, determine the assessment subject of quantitative assessment system, innovate the assessment method of quantitative assessment system, and finally ensure the specific implementation of quantitative assessment system in the stage, so as to form a three-dimensional assessment system. At the same time, the competition mechanism is introduced in the evaluation process, and dynamic management is implemented in each stage, so that each stage of management, education and training can be specific and targeted.

(2) The standard of quantitative assessment and evaluation system for college student party members

The five aspects and four indicators comprehensive three-dimensional development evaluation mode starts from the grass-roots level construction, level by level check, solid foundation, coordinated development of the edges, and finally reaches the predetermined peak height for the development of Party members. The "five aspects" are integrated into the "five layers", and four index systems are introduced for systematic evaluation, including four indexes of party class situation evaluation, learning evaluation, mass evaluation and self-evaluation. Corresponding scores are set for each grade, and each project has specific requirements. Whether college students meet the requirements of joining Party members is evaluated, and comprehensive quality of training objects is comprehensively and objectively assessed through interaction.

4.3. Quantitative Assessment Index System of College Student Party Members

In this paper, through qualitative research, combined with the views of many experts, the factors affecting the quantitative assessment of student party members are divided into four categories, and the specific hierarchical structure is shown in Table 2.
Table 2. Quantitative assessment hierarchy of college student party members

| Target layer A | Constraint layer B | Sub constraint layer C |
|----------------|--------------------|------------------------|
|                | Party class evaluation B1 | Party class learning situation C11 |
|                |                       | Ideological report C12 |
|                | Learning evaluation B2 | Evaluation of Ideological and political course C21 |
|                |                       | Academic performance evaluation C22 |
|                |                       | The second classroom evaluation C23 |
|                |                       | Daily performance evaluation C24 |
|                | Mass evaluation B3 | Award evaluation C25 |
|                |                       | Class evaluation C31 |
|                |                       | Teacher evaluation C32 |
|                |                       | Group organization evaluation C33 |
|                |                       | Political review C34 |
|                | Self assessment B4 | Ideological and political situation C41 |
|                |                       | Learning situation C42 |
|                |                       | Communication integrity C43 |
|                |                       | Existing problems and rectification measures C44 |

It can be seen from Table 2 that the quantitative assessment of student party members in Colleges and universities is mainly divided into four levels, namely, party class situation assessment, learning assessment, mass assessment and self-assessment. Each level-1 indicator includes multiple level-2 indicators, among which party class situation assessment includes party class learning situation, ideological report situation, learning assessment includes ideological and political class assessment, learning achievement assessment and second class assessment price, daily performance evaluation, award-winning evaluation and other five secondary indicators, mass evaluation includes class evaluation, teacher evaluation, League organization evaluation, political review and other four secondary indicators, self-evaluation includes ideological and political situation, learning situation, communication integrity, existing problems and rectification measures.

Figure 2 is the combined weight analysis of the sub constraint layer on the target layer, $\lambda_{b1} = 2.0000, \lambda_{b2} = 5.3991, \lambda_{b3} = 4.2561, \lambda_{b4} = 4.2543$, which is verified respectively according to the consistency test formula, so that the results of the overall ranking of this layer meet the consistency requirements.
Figure 2. Combined weight of sub constraint layer to target layer

It can be seen from Figure 2 that among the various factors of constraint layer B, learning evaluation weight (5.3991) has become an important factor influencing the quantitative assessment of College Students' party. Secondly, the proportion of mass evaluation weight and self-evaluation weight is relatively high, which are 42561 and 42543 respectively. In sub Constraint Level C, daily performance evaluation (0.1906) has the highest weight, which is the main factor affecting the quantitative assessment of student party members. The second is teacher evaluation (0.1597). Teachers are the main body of the management process of college student party members. Therefore, teacher evaluation plays an important role in the quantitative assessment of college student party members. Of course, the evaluation of academic performance (0.1257) is also a relatively high weight indicator.

5. Conclusion

In this paper, based on the AHP analytic hierarchy process, the quantitative evaluation index system of college student party members is studied. According to the requirements of shaping the overall quality development of college student party members, starting from the emphasis on the quality of each stage of student party members training, the effective evaluation mechanism is formed from the five levels, five aspects and four indicators, to solve various kinds of quantitative evaluation problems in different periods of the development of college student party members, and strictly check. We will assess and select excellent college students step by step to join the Communist Party of China.

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