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Influencing Factors of Logistics Management Students' Participation in Innovation and Entrepreneurship Competitions

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Abstract: In the era of "mass entrepreneurship and innovation", society has gradually increased the requirements for students' innovation and entrepreneurship capabilities. The article takes the logistics management major of Xiamen University Tan Kah Kee College as the research object, uses the analytic hierarchy process and the fuzzy comprehensive evaluation method to analyze the influencing factors of students' participation in innovation and entrepreneurship activities with targeted solutions proposed in the final.

Keywords: Innovation and Entrepreneurship Competition; Logistics Management; Influencing Factors

1. Introduction

In 2018, the State Council issued its opinions on promoting the high-quality development of innovation and entrepreneurship and creating an upgraded version of "Innovation and Entrepreneurship". The article pointed out that universities in various regions should continue to carry out various innovation and entrepreneurship competitions to carry forward China's innovation and entrepreneurship. As the country pays more and more attention to the cultivation of college students' innovation and entrepreneurship capabilities, most colleges and universities across the country have organized many innovative and entrepreneurial activities, including the "Internet +" college student innovation and entrepreneurship competition, the China Innovation and Entrepreneurship Competition, and the "Challenge Cup" entrepreneurial plan. Competitions and other events are aimed at cultivating students' innovative ability, improving students' practical ability, and strengthening students' comprehensive ability. However, current college students' innovation and entrepreneurship have many problems such as weak competition awareness, lack of motivation, and insufficient knowledge reserves, which to a certain extent affects the enthusiasm of college students to participate in innovation and entrepreneurship competitions, and reduces the effectiveness of students' ability training during the competition, which is not conducive to the improvement of students' comprehensive innovation ability.

Scholars have provided a lot of research foundation for the practical exploration of innovation and entrepreneurship competitions. Ma and Wang (2021) believe that the support of institutions and students' entrepreneurial intentions have a certain impact on students' enthusiasm for participating in innovation and entrepreneurship competitions, and students with entrepreneurial intentions will participate more actively in innovation and entrepreneurship activities organized by the school. Ma (2021) believes that social capital, family environment, national policies and other factors will affect students' willingness to innovate and start businesses. Sun *et al*. (2021) believe that students' inadequate inquiry ability, lack of endurance, limited family abilities, neglect of schools and teachers, and low efficiency of policy implementation are the key factors to reduce students' participation in innovation and entrepreneurship activities. Zhou and Wang (2020) believe that factors such as personal interests and abilities, a positive social environment, and a professional campus environment are more likely to make students develop innovative and entrepreneurial ideas. Yang *et al*. (2021)

believe that students' entrepreneurial efficacy and attitudes, school services and support, and the teaching effect of the school's innovation and entrepreneurship education will affect the spontaneity of students' participation in innovation and entrepreneurship activities. In order to explore the factors that affect students' participation in innovation and entrepreneurship competitions, this article will analyze the factors influencing participation in the competition based on the participation of students majoring in logistics management at the Xiamen University Tan Kah Kee College, and put forward relevant suggestions.

2. The Potential Influencing Factors of Logistics Management Students Participating in Innovation and Entrepreneurship Competitions

2.1. Team

In a competition, the team is the prerequisite for all work and affects the situation of students participating in the competition. The number of the team, the professional mix, the leadership level of the captain, and the cooperation of the entire team are all factors that may affect students' participation in innovation and entrepreneurship competitions. The limitation or failure of the team size is the reason why some students choose to give up participating in the competition. A relatively reasonable and comprehensive professional combination will have a higher impact on students joining the team, and will also increase the willingness of students to participate in the competition. The leadership level of the team leader is the key for students to measure the level of the team, a higher team level can increase the probability of a student winning, so it can attract students to participate in the competition. The cooperation of the team shows the degree of unity and tacit understanding of the team. Teams that can perfectly cooperate with each other are often better, and to a certain extent, it is also a sign of promoting students to participate in the competition.

2.2. Project

The quality of a project is a sign of judging the result of the competition, and it is also a key indicator of whether students choose to participate in the competition. Factors such as the scientific and technological gold content or professional gold content of the project, the revenue and implementation of the project, related policy support, and the social compatibility of the project will affect the choice of students to participate in the competition. The higher the scientific and technical gold content or professional gold content of a project, the more likely the project is to win awards and even achieve excellent competition results. This reason encourages many students to actively communicate with teachers and establish high-quality projects to participate in the competition. The smoother the implementation of the project, the more profits, and the students' enthusiasm for competitions will increase. With the support of the national policy, the closer the project is to the policy, the easier it is to establish and develop. The resistance of the competition will also be relatively reduced, and the students' willingness to compete will be more determined. Similarly, the social fit of the project is the same. The more helpful the project is, the more it will be accepted and supported, and the higher the prize of the competition result will be. This reason will also have an impact on the number of students in the competition.

2.3. Incentives

Material and spiritual rewards directly affect students' willingness to compete. The acquisition of credits, the improvement of their own abilities, the setting of rewards and bonuses, the increase of interpersonal relationships, and the increase of social recognition will cause the scale of participating students to change. Various competitions are the fastest and most convenient way for students to obtain credits outside of teaching. Attracted by credits, many students will actively participate in competitions. The competition is also an exercise and assessment of students' abilities, linking theory to practice, helping students to better understand and master knowledge, and improve their ability level. Therefore, many research-oriented students will participate in the competition. Material attraction is also an influencing factor for students to participate in the competition. The higher the bonus set for a competition, the more students will sign up. In contrast, spiritual attraction is mainly reflected in the enhancement of communication skills and social recognition, the expansion of the scope of making friends, the increase of the quality of making friends, and the increase of social influence are the reasons why some students choose to participate in competitions.

2.4. Organization

At present, there are various forms of holding competitions, and different types of competitions have different procedures and rules. These two factors indirectly affect the number of participants in the competition to a certain extent. The planning of the process determines the time and place of the competition, as well as the links and format of the entire competition. Some students will not participate in related competitions due to time and space constraints and unfamiliar forms; different rules will also make students' participation in different situations. The difference is that ordinary students' enthusiasm for participating in art competitions is lower than that of innovation competitions. Therefore, the number of ordinary students in art competitions will be relatively small. In other aspects, the openness and transparency of the organization is also one of the reasons that affect students' participation in the competition.

3. Investigation and Research on Logistics Management Students' Participation in Innovation and Entrepreneurship Competitions

3.1. Summary of the Questionnaire

In order to better study the factors that affect the logistics management students of the Xiamen University Tan Kah Kee College to participate in the innovation and entrepreneurship competition, analyze the influence of each factor, the research team will issue questionnaires to logistics management students of 2018, 2019, 2020, and 2021 on September 30, 2021. As of September 6, 122 valid questionnaires have been received.

In terms of teams, 65% of the students said that the team is a very important influencing factor, 33% of the students think that the team is a less important influencing factor, and there is no student who thinks that the team is a general influencing factor, 2% of students believe that the team is not a factor that affects their participation in the competition.

In terms of projects, 41.67% of students think that the impact of the project is very important, 56.67% of the students said that the project is a less important factor, 1.66% of the students think that the impact of the project is relatively general, and no students think that the project is not important.

In terms of incentives, there are 36.67% of students who think that motivation is the key factor affecting the competition, 56.67% of the students think that the influence of motivation on the competition is less important, and 6.66% of students say that motivation is a general influencing factor. No student agrees that motivation is not important.

In terms of organization, 35% of students said that the impact of organization is very large, 61.67% of students said that organization is a less important influencing factor, 3.33% of students said that the impact of organization is more general, and no students said that organization is not important. From the above data, most students believe that teams, projects, incentives, and organization are important factors that affect their participation in competitions, but there are still a small number of students who say that the impact of these factors is generally or even unimportant.

3.2. Analysis of the Importance of Influencing Factors

3.2.1. Establish Factor Set and Evaluation Set

First, the influencing factors of the team mainly include the number of team members, professional collocation, leadership, and cooperation, which are respectively denoted as $u1$, $u2$, $u3$, and $u4$. Therefore, the set of influencing factors is expressed as:

$$U = (u1, u2, u3, u4) \tag{1}$$

Secondly, the weight value of each influencing factor is determined by the analytic hierarchy process (AHP). The first step is to establish a pairwise comparison matrix, as shown in Table 1. The second step is to establish a standardized pairwise comparison matrix to obtain the weight value of each influencing factor, as shown in Table 2.

Table 1. Pairwise comparison matrix.

Factor	u1	u2	u3	u4
u1	1.00	0.33	1.00	2.00
u2	3.00	1.00	2.00	3.00
u3	1.00	0.50	1.00	2.00
u4	0.50	0.33	0.50	1.00

Table 2. Standardized pairwise comparison matrix.

Factor	A1	A2	A3	A4	Weight
A1	0.18	0.15	0.22	0.25	0.20
A2	0.55	0.46	0.44	0.38	0.46
A3	0.18	0.23	0.22	0.25	0.22
A4	0.09	0.15	0.11	0.13	0.12

The third step is to calculate the consistency ratio and test it.

$$CI = (4.04 - 4) \div 3 = 0.014 \tag{2}$$

$$CR = 0.014 \div 0.9 = 0.015 \tag{3}$$

Therefore, the consistency of the pairwise comparison of the team's influencing factors meets the requirement. Then the weight distribution of the influencing factor set is: B = (0.20, 0.46, 0.22, 0.12).

3.2.2. Fuzzy Comprehensive Evaluation

Through a survey of students of all grades in the logistics management major of the Xiamen University Tan Kah Kee College, the degree of membership matrix D1 of the importance of the students' influence on the team's participation in the competition is obtained, as shown in Table 3:

Table 3. Subordination matrix of the importance of team factors.

Content	Proportion of very important people	Proportion of less important people	Proportion of general population	Percentage of unimportant people
Number of team	0.17	0.60	0.22	0.02
Professional collocation	0.42	0.50	0.08	0.00
Leadership	0.53	0.43	0.03	0.00
Cooperation	0.52	0.42	0.07	0.00

Perform a combined operation on D1 and B, and get the evaluation results of each degree of importance as:

$$E1 = B \times D1 = [0.45, 0.46, 0.08, 0.00] \tag{4}$$

3.2.3. Fuzzy Comprehensive Evaluation Results

Let F be the evaluation set, which is used to express the evaluation grades of the logistics management major of the Xiamen University Tan Kah Kee College on the team influencing factors and are specifically divided into very important, less important, general, and unimportant that are respectively denoted as f1, f2, f3, and f4. So the evaluation set is expressed as:

$$F = (f1, f2, f3, f4) \tag{5}$$

Suppose that “very important” in the evaluation set is converted into a score of 100, “less important” is converted to a score of 85, “general” is converted to a score of 70, and “unimportant” is converted to a score of 55. Then the standard importance vector is: FE= [100, 85, 70, 55], and finally the fuzzy comprehensive evaluation score U=FE*E1T.

$$U1 = [100, 85, 70, 55] \times [0.45, 0.46, 0.08, 0.00]\, T = 90.46 \tag{6}$$

In the same way, the fuzzy comprehensive evaluation score of project influence factor U2 is 88.33 points; the fuzzy comprehensive evaluation score of incentive influence factor U3 is 88.67 points; the fuzzy comprehensive evaluation score of organization influence factor U4 is 87.86 points. After comparison, U1>U3>U2>U4 is obtained. Therefore, the influence of the team is the most significant, followed by the influence of the incentive and the influence of the project, and the least influence is the organization factor.

It can be seen that logistics management students generally believe that factors such as team, project, incentive, and organization are important to the competition, and the influence of team factors is the most important. This shows that in the process of students choosing whether to participate in the competition, more consideration is given to whether the team can support themselves to participate in the competition. Secondly, it will be affected by incentive factors and project factors, and finally will consider organization factors.

4. Countermeasures and Suggestions

Using analytic hierarchy process and fuzzy comprehensive evaluation method to calculate and analyze various influencing factors, the research team found that the student team has problems such as single professional collocation, unfamiliar with the competition, lack of practice, and insufficient school support.

4.1. A Reasonable Match of Members

In the process of forming a team, team members should be composed of students from different majors as much as possible, which increases the diversity of the team and improves the efficiency of the team to a certain extent. The team leader can assign work according to each team member’s specialty and field of expertise, and the team members can also use their best ability to improve the overall level of the team, increase the probability of winning the team, and attract more students to join the team and the competition.

4.2. Increase Pre-match Guidance

Properly organize pre-match guidance for various competitions. Schools can start from both online and offline channels to carry out different pre-match guidance for different types of competitions. As online channels are more flexible and convenient, and are more suitable for the guidance of A and B competitions, the school can invite professionals such as competition referees and competition instructors to conduct an online guidance meeting. Offline guidance meetings are more suitable for the holding of C and D competitions, and can be guided and explained by relevant professional teachers or students from the undertaking department to help the student team increase their understanding of the competition. The team can better exert their strength and get a greater chance of being shortlisted, and indirectly inspire more students to participate in the competition.

4.3. Integration of Theory Teaching with Practice

Most of the content of the innovation and entrepreneurship competition needs to cater to the current social policies and solve practical problems. Therefore, the innovation and entrepreneurship education launched by the school can increase practical teaching based on theoretical teaching, link theory to practice, make competition and teaching complement each other, and promote the integrated development of theoretical teaching and practical teaching. It also enables students to use theoretical knowledge more proficiently in the competition, encourages students to actively participate in the competition, and pass the competition to test the results.

4.4. Increasing the Emphasis on Innovation and Entrepreneurship Competitions

It is recommended that schools increase their support for innovation and entrepreneurship competitions, and strengthen the promotion of innovation and entrepreneurship competitions so that more students can get in touch with and understand the innovation and entrepreneurship competition. They can also increase the setting of credits or bonuses to stimulate students' enthusiasm for participating in innovation and entrepreneurship competitions. Further, they can also encourage all departments to increase relevant innovation and entrepreneurship competitions, lower the threshold of the competition, and ensure that junior students and inter-professional students can also participate to achieve the goal of full participation in the competition.

4.5. Supervise Oneself

As the main body of the competition, students should increase their awareness of independent participation, urge themselves to always carry out relevant learning, actively register for the innovation and entrepreneurship education organized by the school, pay attention to and browse related articles or videos on their own, strengthen contact with classmates and teachers, and actively form or participate in teams. In the competitions and case analysis, test your own learning situation, reflect on your own shortcomings, and learn from the experience through continuous summary of problems, improve your ability and enhance your confidence. If things go on like this, students will be more willing to participate in the competition.

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