

Collaborative Development Mechanism of Tourism Management Higher Education in the Era of Big Data

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Abstract: With the advent of the era of big data(BD), there has been a large number of unstructured data, most of which are combined with human activities. Work, life and learning are also unstructured models. In the era of BD, the collaborative development(CD) mechanism of higher education(HE) has become a research hotspot. Therefore, based on the era of BD, this paper analyzes the CD mechanism of HE of tourism management specialty, discusses the construction principles and CD strategies of the CD mechanism of Tourism Management Specialty in Colleges and universities in the era of BD, and constructs an evaluation model of the collaborative mechanism between Colleges and enterprises in HE. Through this model, an empirical analysis of the CD mechanism of HE of tourism management specialty is carried out, The analysis results show that the comprehensive development level of the collaborative education system of schools and enterprises has been rapidly improved, breaking the original coordination state. The level of CD has gradually increased, entering a new primary CD period, and showing a development trend of constantly improving the level of coordination, and has achieved ideal educational results.

1. Introduction

With the rise of network, the improvement of network infrastructure, the continuous change of computer technology and media, mobile Internet, Internet of things and other applications emerge in endlessly. The generation time of data value is longer and longer, and the processing ability of data is continuously improved. Data with resource characteristics shows growth value to a certain extent. At the same time, the speed of social operation is getting faster and faster, which requires rapid response and refined management. The era of BD will lead to revolutionary changes in work and education. As a product of the information age, the definition of BD in different social fields also changes over time. Based on the background of BD era, this paper discusses and analyzes the CD mechanism of HE of tourism management specialty.

The goal of HE is to cultivate talents with technical skills. The construction of training base is very important for students to learn practical skills. However, in the major of tourism management,

there are many problems, such as imperfect facilities and equipment in the training base, backward management system, and unable to meet the students' practical skills learning [1]. In order to solve these problems, the school can establish a cooperative construction mechanism of training bases with enterprises. Its purpose is to achieve the maximum benefit of the whole and achieve the overall optimization, so as to make the existing resources cooperate and coordinate with each other and give full play to the maximum function of the whole. Enterprise school resource coordination is expressed in the thinking mode of system theory at the level of strategic thinking. Through organization and coordination, we should integrate the related but separated resources of enterprise groups and group higher vocational colleges, and achieve the effect of $1+1>2$ [2].

Based on the background of BD era, this paper selects two main stakeholders in school enterprise collaborative education: schools and enterprises, and takes the school collaborative education system and enterprise collaborative education system as the evaluation index system of school enterprise collaborative education degree of Tourism Management Major(TMM) in Colleges and universities, so as to build a collaborative mechanism, and use the coupling coordination degree evaluation model for reference to build the evaluation model of school enterprise collaborative education degree of TMM in Colleges and universities, The application results of the model show that the growth rate of the comprehensive development level of the enterprise collaborative education system is faster than that of the school collaborative education system; This paper analyzes the HE school enterprise collaboration mechanism in detail from three aspects: the recognition of enterprise executives to collaborative education, the participation of enterprises in the construction of collaborative education system, and the participation of enterprises in the construction of benefit sharing mechanism of collaborative education [3].

2. Research on the CD Mechanism of Tourism Management HE in the Era of BD

2.1 BD Era

The era of BD is an era of acceleration. With the increasing market competition, HE school enterprise collaboration has become the only way. Due to the diversification, dispersion, incompleteness and redundancy of BD, as well as the decentralization of people's learning perspective, the quality and value of BD itself is very low. It just brings a pile of disordered knowledge fragments to enterprises, creates an unprecedented fragmented learning environment, and increases the difficulty of knowledge acquisition [4-5]. At the same time, the fundamental purpose of obtaining data is to discover knowledge. The emergence of BD has given rise to problems based on BD analysis technology. BD is a way of thinking and technological change that subverts the traditional. Data resources can change the mode of economic growth, and of course, it can also become the foothold of knowledge management. Colleges and enterprises should keep pace with the times, actively change the education mode, establish the BD view in the "Internet +" era, coordinate the development of colleges and enterprises with the help of internal and external forces of enterprises, and strive to tap more value from college learning.

2.2 Synergy Theory

The word "synergy" comes from Greek, which means to work together. "Synergy theory" is "Synergetics", also known as "synergy theory" or "Concord". Professor Haken introduced "synergy" into complex systems and believed that there are all kinds of complex systems in nature and human society. These complex systems are composed of many subsystems, which contain various elements. Through mutual coordination and cooperation, these subsystems and their internal elements realize the transformation of the system from disorder to order. This is a universal law,

which is applicable to everything in nature and human society [6]. In school enterprise collaborative education, it mainly includes four systems: government, school, enterprise and industry. These four systems help and cooperate with each other in collaborative education, forming a close and complex collaborative relationship, and gradually forming a long-term collaborative education mechanism to promote the development of collaborative education between schools and enterprises.

School enterprise collaborative education is an important way to improve the teaching quality of secondary vocational schools, enhance the innovation and R & D ability of enterprises, improve the human resource structure of enterprises, integrate the advantages of both schools and enterprises, and realize resource complementarity. Although both schools and enterprises, as different social organizations, bear different responsibilities in society, the school is the main body of education and the enterprise is the main body of talent reception. Both of them urgently hope that the people trained by the school can meet the needs of social and economic transformation and upgrading and enterprises for high-quality technical and skilled talents. In essence, the two have the same demand and expectation for talents. In addition, both schools and enterprises can realize the integration of superior resources and the complementarity of inferior resources in terms of educational resources, which provides feasibility and operability for the implementation of school enterprise collaborative education.

2.3 Construction of CD Mechanism of TMM in Colleges and Universities

Firstly, starting from the interactive mechanism of school enterprise collaborative education, the evaluation index system is designed with the objective of effectively evaluating the synergy degree of school enterprise collaborative education; Secondly, through the evaluation index system, we can effectively and accurately find the factors that affect the degree of synergy between school and enterprise; Finally, the selected indicators should be comparable and logical. To sum up, the following principles should be followed when constructing the coordinated development mechanism between schools and enterprises of Tourism Management Major in Colleges and Universities:

The principle of scientificity: the evaluation index system of the synergy between school enterprise association and education should not be too large. Appropriate index numbers should be selected, and appropriate research methods can be used to accurately process the data, so that the evaluation results can scientifically reflect the synergy of school enterprise collaborative education, and ensure the scientificity and rationality of the index system.

Principle of operability: the evaluation index system of school enterprise collaborative education synergy degree should pay attention to the operability of the index and the feasibility of index data collection, and can use scientific research methods to accurately test the synergy degree of school enterprise collaborative education, reflecting the operability of the index system.

Integrity principle: the integrity principle requires that the established index system should include the main stakeholders of school enterprise collaborative education, that is, including the two major stakeholders of school and enterprise [7].

Guiding principle: the evaluation index system of the synergy degree of school enterprise collaborative education should not only accurately measure the synergy degree and CD level of school enterprise collaborative education, but also find the influencing factors of the synergy degree of school enterprise collaborative education at the current stage through empirical testing, so as to have a clear and positive guiding role in improving the synergy degree of school enterprise collaborative education.

Principle of simplicity: the evaluation index system of school enterprise collaborative education should accurately reflect the evaluation objectives, avoid the redundancy of the index system, and

achieve the goal of concise, accurate and operable index system.

2.4 CD Strategy of Tourism Management in the Era of BD

From the perspective of schools, first of all, the government can promote the internal governance of schools, lay the foundation for the establishment of long-term integration of industry and education, and try to encourage the introduction of tourism enterprises, industry groups, etc. to participate in the management of schools; Encourage tourism enterprises and industries to participate in the professional construction of vocational schools, establish master (famous teacher) studios, innovation bases and training bases, and promote tourism enterprises and industries to truly enter the whole process of talent training; Schools should pay attention to the choice of cooperative tourism enterprises, not only consciously screen target tourism enterprises, but also put forward reasonable requirements for the cooperation mode according to the school's professional talent training plan [8-9].

From the perspective of enterprise industry, school enterprise cooperation should encourage "double selection". Vocational schools should carefully select enterprises and industries. Tourism enterprises and industries should also comprehensively investigate the school running level, teaching staff, teaching quality, training facilities, student employment, etc. of vocational schools.

In the era of BD, we should pursue benefit sharing, try to build a "school enterprise bank" cooperation and promote the construction of a "school enterprise bank" double qualified teacher team. For colleges and universities, we can take advantage of the human resources of tourism enterprises and industries to take part in some courses at the school, or invite industry experts to introduce the advanced concepts and innovative means of tourism enterprises in the actual operation into the school and teach them to students. In addition, cooperative tourism enterprises can also recommend experts with rich industry experience to hold special academic lectures in the school regularly, and disseminate the latest development trends of domestic and foreign industries to the school [10].

In this way, not only industry experts and tourism enterprise instructors are more familiar with the actual teaching situation of the school, but also school teachers and students have an in-depth understanding of the actual situation of the real industry, so as to promote the two-way communication and growth of "school enterprise business" dual qualified teachers; For tourism enterprises and industries, it is necessary to carry out practical training for school teachers on a regular basis to facilitate teachers' understanding of actual positions and ensure that their teaching content is closer to the needs of the industry [11]. School teachers, industry experts and tourism enterprise personnel should also regularly carry out professional teaching and discussion activities. By allowing teachers to participate in the training of tourism enterprises and industries, we should broaden the knowledge of professional teachers and update the structure of professional knowledge. The discussion can also deepen the school teachers' cognitive level of professional knowledge, so as to improve the teachers' ability of technology application and innovation, and then promote the construction of "double qualified" teachers.

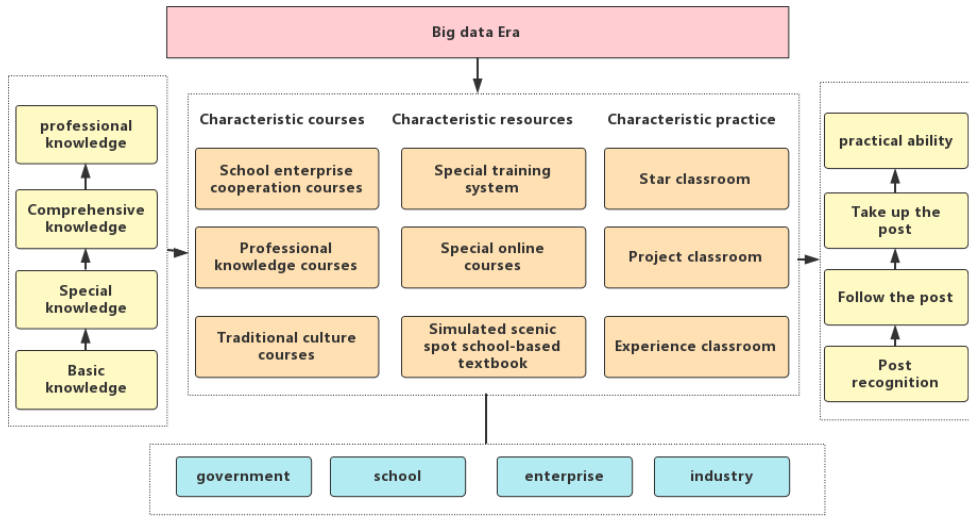


Figure 1: Schematic diagram of CD of Tourism Management in the era of BD

As shown in Figure 1, the research results of promoting the construction of "school enterprise bank" joint training base show that many tourism enterprises cooperate with schools in the construction of training base, but simply believe that investing in some obsolete and outdated teaching software or equipment does not really solve the problem. What the school really needs is that tourism enterprises should pay more attention to the tourism major in secondary vocational schools, provide the school with the facilities and equipment required by the industry, and, when necessary, send industry experts to guide the teachers and students in the school in the use of equipment, so as to facilitate students to take practical positions in the future [12]. Secondly, the school is more willing to directly use the field of tourism enterprises as the off campus base of the school's practical training courses, so that teachers and students can participate in practice in real posts in batches, and even participate in product research and development, so as to obtain direct experience and improve the professional ability of teachers and students.

3. Construction of Evaluation Model of University Enterprise Collaboration Mechanism in HE in the Era of BD

To analyze the synergy degree of the CD of schools and enterprises, we need to calculate the comprehensive development level of schools and enterprises respectively, and then build a quantitative evaluation model according to the coordination degree formula to empirically analyze the synergy degree and CD level of the collaborative education between schools and enterprises.

3.1 Calculation model of System Development Level

In this paper, the weighted linear method is used to calculate the development level index GI of a system in the first year. The formula is:

$$g_i = \sum_{j=1}^n v_j z_{ij} \quad (1)$$

Where v_j represents the weight of the j th index, and Z_{ij} represents the standardized value of the original data. Suppose that the development level of school system and enterprise system are G_R and G_e respectively, then:

$$\begin{aligned} g_R &= \sum_{n=1}^n s_j a_{ir} \\ g_E &= \sum_{n=1}^n z_j a_{ie} \end{aligned} \quad (2)$$

Where, SJ and ZJ are the weight vectors of the corresponding evaluation indicators, and air and AIE are the feature vectors of the corresponding development level.

3.2 Collaborative Degree Calculation Model

The degree of collaboration is an important indicator to reflect whether the two systems are collaborative. There are many methods to calculate the degree of synergy between the two systems. This paper uses the coefficient of variation method in mathematical statistics to calculate. Let the deviation coefficient between the school system GR and the enterprise system Ge at a certain time be QH, then:

$$Q_h = \frac{|g_R - g_E|}{\frac{1}{2}(g_R + g_E)} = \sqrt{1 - \frac{g_R * g_E}{(\frac{g_R + g_E}{2})^2}} \quad (3)$$

The smaller the dispersion coefficient QH, the more collaborative the two systems are. Therefore, the degree of synergy between HE system and enterprise system can be defined as:

$$Q = \left[\frac{g_R * g_E}{(\frac{g_R + g_E}{2})^2} \right]^k \quad (4)$$

Where, K is the adjustment coefficient, and its value is $k \geq 2$. The larger the value of K, the smaller the static gap between the two systems, and the more collaborative the two systems are.

4. Empirical Analysis on the CD Mechanism of Tourism Management HE in the Era of BD

Table 1: Data sheet of development level of school enterprise collaboration mechanism

particular year	2013	2014	2015	2016	2017	2018
School coordinated comprehensive development level	0.1804	0.2913	0.3667	0.5412	0.6033	0.8286
Comprehensive development level of enterprise collaboration	0.1257	0.2271	0.3294	0.4561	0.7462	0.8485
School enterprise comprehensive score	0.1530	0.2592	0.3480	0.4987	0.6748	0.8386
Synergy degree	0.4840	0.4923	0.4986	0.4964	0.4944	0.4999
CD level	0.2722	0.3572	0.4166	0.4975	0.5776	0.6475
CD level	imbalance	imbalance	Verge of disorder	Verge of disorder	Verge of disorder	Primary coordination

As shown in Table 1, Analysis on the CD level of school and enterprise collaborative education according to the above evaluation model, the comprehensive development level of school and enterprise collaborative education system from 2013 to 2018, the degree of synergy between the

two systems and the level of CD can be calculated.

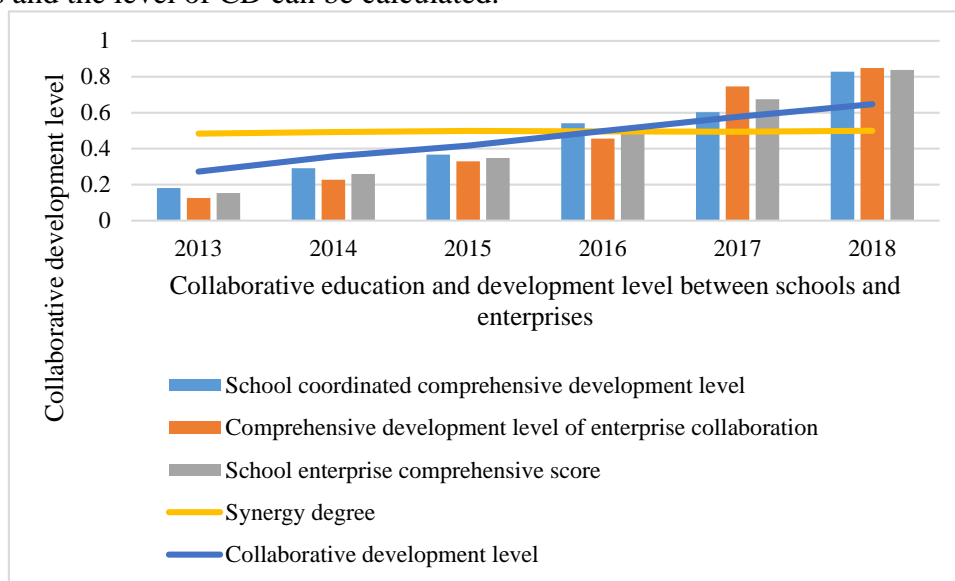


Figure 2: Collaborative education and development level between schools and enterprises

As shown in Figure 2, it can be seen from the above figure that the CD level of collaborative education between tourism management professional schools and enterprises in Colleges and universities continues to improve, and has experienced the process from imbalance to verge on imbalance to reluctantly coordination to primary coordination. Through in-depth analysis of the degree and level of CD between schools and enterprises, it can be concluded that the degree of collaborative education between schools and enterprises fluctuates slightly, but the overall level has been improved. The gradual improvement period from 2013 to 2015. During this period, the synergy showed a gentle upward trend, rising steadily from 0.4840 in 2013 to 0.4986 in 2015. The direct reason for the steady rise in this period is that the comprehensive development level of the collaborative education system of schools and enterprises showed a steady upward trend, and did not show a significant increase or decline. The level of CD has been generally improved, showing a steady growth trend.

In the era of BD, the university tourism management professional school enterprise collaborative education synergy degree and countermeasures research the impact of rapid growth, the two-year CD level showed a steady growth trend, experienced imbalance - on the verge of imbalance, and finally developed to a barely coordinated stage; In this period, the comprehensive development level of the collaborative education system between schools and enterprises has been rapidly improved, breaking the original coordination state. The level of CD has gradually increased, entering a new primary CD period. To sum up, the CD level of collaborative education between schools and enterprises has experienced the above three different development periods, and the development levels of the two systems are different, but compared with 2013, the level of CD has still been improved. On the whole, it has experienced the development state of imbalance - verging imbalance - reluctantly coordination - primary coordination, and presents the development trend of constantly improving the level of coordination.

5. Conclusions

Based on the background of BD era, this paper studies the CD mechanism of HE of TMM, and constructs an evaluation model of the CD mechanism between colleges and enterprises of TMM in Colleges and universities, which has achieved good results, but there are also deficiencies. In the

collaborative education between schools and enterprises, universities and enterprises, as the two main bodies of education, bear the main responsibility of education, but external environmental factors also have a great impact on the degree of synergy of school enterprise collaborative education. In addition to the protection and guidance of government policies and regulations, the participation and guidance of industry and industry associations to school enterprise collaborative education are equally important. Therefore, in order to build a more scientific, reasonable and comprehensive school enterprise CD mechanism, promote the normalization of school enterprise collaborative education and achieve ideal educational results, we must consider the participation and support of the industry for school enterprise collaborative education. This paper does not involve the industry when exploring the CD mechanism, which will be a direction to improve the CD mechanism in the future.

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