

Probe into the Collaborative Path of Production-Study-Research in University

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ABSTRACT

Collaborative development of production–study–research in university is an important measure to improve the quality of talent cultivation in China. The so-called collaborative development of production–study–research, namely, enterprises, schools and scientific research institutions in the industry coordinate with each other, and give full play to advantages respectively, forming Integrated advanced systems for research, development and production, and also reflecting comprehensive advantage in the process of the whole system operation. Enterprises are the demand side of the talent and technology, universities and research institutes, through technological development and training students in teaching, provide enterprises with talents and technology to meet various needs in the process of enterprise production and ensure that the high-quality talents can get better development and adapt to the social environment. In this paper, the method of documentary and field interview are used, firstly, the current research status of the collaborative path of production–study–research in university is analyzed, reflecting the main perspective of the collaborative path construction of collaborative path of production–study–research in university. Secondly, the research results shows the involving condition for building collaborative path of production–study–research in university, indicating the significance of constructing material basis, strengthen the credibility foundation of the cooperative subject, coordinate the property rights of each subject as well as establish integration mechanism of production-teach-research, and it provides theoretical support for the further research work.

Keywords: “Production–study–research” in university, collaborative path, research status, results and discussion

INTRODUCTION

Collaborative development of “Production–study–research” in university not only helps for universities to change the traditional cultivation mode of elite talent, but also help school, enterprises, government and institute to develop value-added effect. During the 13th five years, we should focus on upgrading the contribution of science and technology innovation in economic growth, and stick to facing to the market demand and concern industrialization, promote institutional reform in the field of education. In terms of current construction of “Production–study–research” in university, the perspective of research is too centralized and there are obvious limitations in the analysis of existing problems. Therefore, in the aspect of exploring production-study-research cooperative path, we should start from small aspect, analyze from the perspective of interest relationship, ensure that realize win-win collaborative path among university, enterprise and scientific research institutions (Chen and Shi, 2015; Durksen et al., 2017; Instefjord and Munthe, 2017).

Contribution of this paper to the literature

- This paper has proposed the idea that building a material foundation to create a soft and hard environment for collaborative development. It is helpful for collaborative subjects to strengthen the information symmetry and change the phenomenon that the coordination is not strong because of information asymmetry.
- In the view of strengthening the credibility foundation of the collaborative subjects and realizing the connection of collaborative subjects, the persistence of collaborative subjects can be improved.
- As for coordinating the property rights of each subject to ensure the equitable distribution of intellectual property rights, it has laid a solid foundation for guaranteeing the basic rights and interests of the collaborative subjects.

LITERATURE REVIEW

Collaborative development of “production–study–research” in university refers to that knowledge increment as the center, collaborative subjects such as enterprise, research institutes and government participate in, achieving the goal of win-win cooperation. There is an obvious difference between the collaborative development of “Production–study–research” in university and the cooperation of “production–study–research”, the latter is the foundation and the former is the highest form of the latter. China begun to implement “Production–study–research joint development project” in the early 1990s, many scholars has carried on the related exploration work in this field, China started the innovation ability improving plan of higher education until 2012, laying a solid foundation for collaborative development of production–study–research .So far, many scholars in China have put forward some representative opinions and suggestions on the construction of production–study–research collaborative path (John and Zapata Roblyer, 2017; John et al., 2017). Chen Zhuowei believes that universities should always adhere to the purpose of establishing the majors around the industry, and building good majors to promote industry, find the ecological niche of production–study–research integration development, penetrate into the enterprise actively to help enterprise solve practical problems. Zhan and Sun think that university–enterprise cooperation is an important form of collaborative development of production–study–research and also an important measure for China to build an innovative country and an important driving force for its own development. Shi Guizhou thinks that in the process of production–study–research collaborative development, through the collaboration of innovation subject, realize benefit sharing, risk-sharing and research cooperation, produce synergistic effect, which greatly promote university scientific research innovation and knowledge innovation, reform the way of talent cultivation in colleges and universities. These research views play an important role in cooperative path building of production–study–research in the universities of China (Krause and Lopez, 2017; Flaherty et al., 2017).

METHODS

The Method of Documentary

Through the method of documentary, this paper makes a search and collation of relevant literatures on the collaborative development of production–study–research in universities. Through literature analysis and research, the paper expounds the present basic situation of production–study–research collaborative development, and use representative and constructive points in the literature for reference, find a suitable cooperative path of production–study–research for the popularization of higher education development (Tao and Zhu, 2017; Wang, 2014).

Field Interview

Field interview refers to the researchers carrying out investigation in the definite range, and make face-to-face interview to research object, namely, school leader of higher education, in order to understand the respondents’ information and behavior, etc. This study, through interviewing with relevant leaders, is to know the ultimate goal of establishing the collaborative path of production–study–research in universities (Yan, 2014).

RESULTS

In the process of research and exploration in this paper, first of all, the existing material on collaborative development of production–study–research in universities should be conducted collection and sorting out, in order to know the basic situation on collaborative path construction. The feasible research conclusion and research points

can be used for reference, exploring suitable collaborative path of production–study–research in universities for China’s higher education development (Gabel and Dreyfus, 2017; LaChausse, 2017).

Create a Soft and Hard Environment for Collaborative Development through Building Material Foundation

Material is the precondition of all things run, and the coordinated development of production–study–research in universities is no exception. Improving material basis not only expand tangible material resources, but also bring invisible material resources into the material base, thus providing good soft environment and hard environment for coordinated development of production–study–research in universities (Lawson et al., 2017).

Physical or material resources can be observed by the naked eye is sharing network platform of production–study–research information, university, enterprise, scientific research institution and functional departments of government, with the application of network technology, jointly establish resource sharing and exchange platform which meets the requirements of talent supply, technology supporting, technology training and counseling service involving production–study–research participants. During this period, resource sharing and complementary advantages as the premise, we should work together to carry out scientific and technological innovation activities so as to realize the overall synergistic effect and form synergy of innovation and development. As a new organizational paradigm of production–study–research cooperation and scientific and technological innovation, the participating subjects should be managed jointly, in order to ensure the information symmetrical of participating subjects. However, intangible material resources mainly include the improvement of the incentive mechanism and the establishment of technology Incubation Park in university. The former can encourage the innovation of all participating subjects in production–study–research, while the latter helps the coordinated development of production–study–research go into a deeper level. As is known to all, the key of production–study–research coordinated development lies in the transformation of teaching and research achievements, universities as the major participant, the reward system needs to be improved, promote achievements with awards can ensure teaching research continuously make new achievements. Scientific research institutions should also improve the reward system to ensure that the research level continuously deepen to provide the prerequisites for the transformation of research results. In the aspect of technology incubation park construction, government, enterprise, university and research institutions should make concerted efforts, government provide the necessary financing and policy support, enterprise provide the corresponding technical guidance and facilities, while the university undertake training and teaching work, scientific research institutions, aiming at the most concerned and needed project by the government, enterprises and social, carry out research, so as to ensure the normal operation of the coordinated development and build a good soft and hard environment for coordinated development (Shilova and Sibgatullina, 2017; Goren and Yemini, 2017).

Through the construction of material base, a good soft and hard environment for the development of production–study–research system can be created, the main task, duties and obligations of each party have been further cleared, interest demand of participant will show clearly. In this case, the participants can keep the information open and transparent in aspects such as talent demand, technical requirements and cultivation, degree of information symmetry will be significantly improved, cooperation depth and breadth between partners can be further cleared, solving the collaborative development cost rising problem caused by information asymmetry (Zhan and Sun, 2016; Yi and Li, 2014).

Strengthen the Sincerity Basis to Realize the Connection of the Collaborative Subjects

As for collaborative path construction of production–study–research in universities, the acquisition of interests is the fundamental purpose, and one of the key issues to promote the collaborative development is to deal with the distribution of interests. However, the generation of interests lies in whether the cooperative relationship and depth can be steady and strengthen. Cooperating with honesty and sincerity naturally becomes the invisible basis of cooperation between collaborative subjects, which also concerns long-term and deepen cooperation between each other. Many universities in China all explore the coordinated development path of production–study–research, but they ignore the interests’ pursuit between collaborative subjects, and universities, interests as the center, impose on the cooperation between enterprise and research institutions, thus universities become the subject of supervision and administration in coordinated development of production–study–research, while enterprises and research institutions become subjects of receiving management. Under such situation, the latter two cannot achieve their wishes, the stability of the coordinated development is influenced seriously, so the coordinated development of production–study–research lack of sincerity basis. How to strengthen the sincerity basis between collaborative subjects is the key to solve unstable cooperation caused by uneven distribution of interests (Taggart, 2017; Sit and Brudzinski, 2017).

Collaborative subjects should start from the following three aspects to strength sincerity basis among them. Firstly, a scientific communication mechanism should be established between the collaborative subjects, the establishment of communication mechanism is mainly around the contents, frequency of communication and solving method after divergence, ensure smooth flow of communication, meanwhile solve the existing problems in the communication as soon as possible, thus the communication and exchange between subjects can be programmed, and it is conducive to enhancing the mutual trust between collaborative subjects. Secondly, the collaborative subjects shall establish the fund for default liability. Establishing the fund for default liability is a sign of mutual commitment, the collaborative subjects, according to certain proportion, deposit a sum of money in advance, which is used for paying for breach of the liability clause. This not only can avoid using judicial process when not reaching an agreement, but also improve the trust basis between the parties and do good faith cooperation. When building the fund for default liability, each party should determine default behavior through consultations, and clear the corresponding default terms, so collaborative subjects make mutual promises, benefiting for enhancing cooperation relationship and strengthening cooperation basis. Thirdly, strengthen the maintenance of the obtained trust results. In this aspect, sincerity and morality must be strengthened as fundamental principles, not only make unremitting efforts to establish sincere cooperation relations, but also strengthen conscious behavior in establishing partnership, restraining the generation of default behaviors. In the period of cooperation, collaborative subjects shall realize what it means a breach of contract, meanwhile notice if there is default behavior out of human control, and how to deal with it, and take measures to make up for in the shortest time. In addition, we should realize that sincere cooperation can produce the benefit in collaborative development, and what kinds of benefit can be obtained. In this way, the virtuous circle of the collaborative development of production-study-research in university can be achieved, and the value added effect can be brought about, promoting the interconnection between collaborative subjects (Singh-Pillay and Sotsaka, 2017).

Coordinate the Property Rights of Each Subject to Ensure Fair Distribution of Intellectual Property Rights

The key link of collaborative development of production-study-research in university is the sharing of the core technology, generic technology and cutting-edge technology. Many universities at present still not pay attention to this important link, leading to the isolation among production, teaching and scientific research, and technological monopoly phenomenon is extremely common. The reason is that intellectual property has the characteristic of invisibility, while law can only make mandatory provisions in time and space authority, aiming at the ownership of intellectual property rights, but there is a lot of uncertainty about rights protection, thus making the monopoly on intellectual property (Kwon and Block, 2017).

How to coordinate the property rights of each subject to ensure the fair distribution of intellectual property rights? It can be start from the following three aspects. Firstly, in the initial stage of coordinated development, we should establish a reasonable and fair scientific research approval system and supervisory mechanism. Secondly, in the management process of collaborative development, various systems must be perfected. Thirdly, in the post-management phase of coordinated development, the proportion of intellectual property rights should be determined according to the contribution value. The coordinated development of production-study-research in university is a long-term cooperation projects, and the invisible benefits that can be generated by each collaborative subject will be different. Therefore, in the process of coordinating the relationship of property rights, the contribution of each collaborative subject needs to be conducted detailed evaluation and statistics, computing the corresponding contribution rate, and based on it, the proportion of intellectual property rights can be judged.

Improve the Mechanism of University-Enterprise-Research Cooperation and Meanwhile Establish a Mechanism of Integrating Production- Teaching- Research

The establishment of university-enterprise cooperation mechanism has been valued by many universities, while in the preconditions of running mechanism of university-enterprise-research cooperation, enterprise productions, university teaching and the research work should be integrated together, establishing a long-term effective mechanism, in this way, the running effect of mechanism of university-enterprise-research cooperation can be ensured. Undoubtedly, the collaborative development of production-study-research is an inevitable choice to improve the innovation ability of universities and realize connotative development, so the construction of these two mechanisms plays an important role. In the establishment of university-enterprise-research cooperation and production- teaching- research integration mechanisms, firstly, a complete legal system and operational mechanism should be established. The national local government should enact a series of laws and regulations and rules to increase support of universities, enterprise and research institutions from the perspective of responsibility, rights and profits, of which, it shall include funds supporting policy and tax system, providing a powerful force for coordinated development of production-study-research in university (Hershkovzt and Forkosh-Baruch, 2017).

Secondly, a new talent training mode should be established. Enterprises, school and scientific research institutions need to study the trends of industry development and market development situation, then the three parties work together for major settings, thus it can meet the needs of the market environment. With the rapid development of society, the trend of local economy development in China has also changed, industrial upgrading and the transformation of industry development are imminent, industry and talent demand are also constantly changing, and talent training in universities servicing the economy development needs many parties to make unremitting efforts. Enterprises, within the industries, can timely know the major changes of industrial development, and the scientific research institutions, based on the basic situation of industrial development, carry out a series of scientific and technological research, providing knowledge and skill capital for colleges and universities. Therefore through three parties working together, the following aspects should be achieved including the balances of professional setting and market demand and industrial development, talents cultivation and position, talent training objective and enterprise standard of employing people to the great extent. In this way, the coordinated development of production-study-research in university can aim at the same goal.

DISCUSSION

As for the collaborative path establishment of production-study-research in university, the core lies in how the enterprise, school and scientific research institution maintain harmonious cooperative relationship. In the previous literature research, the perspective mainly centered on the related elaboration of the collaborative innovation mode, and the distribution of benefits was not involved in the ideas. While in the research of this paper, from the perspective of three parties pursuing profits, achieve the purpose of tripartite win-win situation based on the realization of each profit, set up cooperative relations and meanwhile increase the depth of cooperation, and provide more important and basic condition for the coordinated development of production-study-research in university.

CONCLUSION

The purpose of production-study-research coordinated development in university is to maximize the benefit of the collaborative subjects, while cooperation is only a form, collaborative development is just indulge in empty talk without profits existing. As for the collaborative development path establishment of production-study-research in university, we should explore this point of view more deeply, based on satisfying the interests of the collaborative subject, close the gap between university, enterprise, scientific research institution and the government, ensure closer relationship between the collaborative subjects and satisfy the profits pursuing.

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