

Analysis about Introducing Competition Mechanism into Industry-University-Research Institute Alliance Model

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Abstract: Industry-University-Research (IUR) institute alliance increasingly attracted the attention of academia and business community. People explore the long-term mechanism of the Industry-University-Research institute alliance from many perspectives and a variety of levels, but do not reach a broad consensus. This paper discusses the obstacles of the Industry-University-Research institute alliance and the relationships among the main parts, and introduces competition mechanism into Industry-University-Research Institute Alliances' mode.

Keywords: Industry-University-Research institute, Competition mechanism, Long-term cooperation mechanism

I. Introduction

At present, the Industry-University-Research institute alliance highlights the growing importance. The Industry-University-Research institute alliance can achieve the optimal combination of resources and give full play to its effectiveness, which can achieve business, universities and research institutes Win-win situation (LIU Yan-hong, and Bao-Xiang Cao, 2008)^[1]. But with deepening of the Industry-University-Research institute alliance, a number of non-traditional input-based growth models of innovation are often overlooked, and there has been "efficiency paradox" of high-input high-yield but low efficiency in technological innovation process. This should remind us that in the Industry-University-Research institute alliance attention should be paid from the "input-oriented" to "efficiency-oriented" in the path of research and innovation. Therefore, this article provides a solution on how to improve the efficiency of the Industry-University-Research institute alliance and put forward a model: to introduce competition mechanism in "efficiency-oriented" Industry-University-Research institute alliance.

II. Main Problems of Industry-University-Research Institute Alliance

At present, the modes of the Industry-University-Research institute alliance are mainly school-enterprise union model, business guidance or targeted alliances model, enterprise training mode and the establishment of R&D training center mode. These models have achieved some success in the

early time; however, it still stays in the lower level of cooperation, such as the transfer of technology, commission development, and so on. Thus with the constant deepening of the alliances, the problem of these models in practice encountered emerged, which are as follows:

Market-oriented Operational Issues

There are different views on who should input mostly among the alliances, the general view is to look at the stage of the alliances: In the initial stage, the Government as the main input has its important significance, through the government's investment could lead the businesses and universities to be the alliance; while in the medium term, as companies benefit from the party they should be as the main input, which the academic and industrial circles are recognized as a point of view. However, as the alliances become mature, whether the companies should continue to act as the main body of input is worth further exploration. From the current view of practice, some Industry-University-Research institute alliances have begun trying the market-oriented operation, that is to say, the various stakeholders in the market become the main inputs, using market-oriented approach to promote the alliance. This kind of market-oriented mechanism is conducive to upgrade the efficiency of the union.

Failed to Form a Long-term Mechanism

This is mainly reflected in two aspects: First, the Industry-University-Research institute alliance mechanisms are to be innovation and breakthroughs. The projects act mainly as a link in the original alliances mechanism, in which businesses look for universities, or universities to find businesses, or government pulls strings in the middle to form the unions. It is possible in the early time, but because these methods are often short-term, or in a certain extent, will bring a personal touch, which are not conducive to long-term alliance with the league side of the building. The second is the long-term interests of the mechanism of production and research alliance side needs to be strengthened. At present, one of the main conflicts between production and research is reflected in the outcome of attribution, since the main results of the various methods on the use and disposal are different, leading to some kind of alliance could not form a continuous alliance relationships. So we need to explore the market-oriented operation and the long-term mechanism of the alliances.

III. The Necessity of Introducing a Competitive Mechanism into the Industry-University-Research Institute Alliance

Before studying the changes occurred in the introduction of competition, the relationship between the alliances mode should be analyze clearly. In the main Industry-University-Research institute alliance the enterprises with an open R & D strategy is more willing to consider an alliance with the University (Laursen & Salter, 2003) ^[2]. By the alliance research of enterprises, universities and research institutes, the development and commercialization of new technologies can be bring about (Santoro & Chakrabart, 2002) ^[3]. However, in the practice of alliance, due to the disjoint of education and skills, the conflict between industry secrets and the traditional academic public, the obvious differences in industry inputs funds to different universities which result in low efficiency in the alliances (Hall & Link, 2000) ^[4]. In addition, a number of institutional issues, communication and lack of coordination, as well as the rule of law behind the uneven distribution of benefits also contributed to problems in Industry-University-Research institute alliance as the major reasons (Zhang Jing-Qiang, 2006) ^[5]. Thus, with the continuous deepening of Industry-University-Research institute alliance, only emphasizes the alliance between the main bodies, and adopt the "input-output" model and the "behavioral outcomes" indicators ^[6] are not suitable. The construction of the evaluation system mechanisms in the current environment needs to re-examine. Under the conditions of modern market economy a new competitive concept is created - cooperative and competitive concept, and the new form of competition - cooperative competition is emerged. on the basis of the term of competing (Coo-petition) which is put forward by Barry-J-Nale-buff who is from Yale University School of Management, and Adam Brandenburger who is from Harvard Business School in the mid-1990s, Li Jian and Zhan-Ming Jin analysis, cooperative and competitive is the a brand new mode of thinking and the scientific concept of development which refers that in the process of operation business is always in an atmosphere of competition and alliance, while the concept refers to the enterprises only. But this is only made between competitors for the business ^[7]. We will apply this view on the Industry-University-Research institute alliance. In the development of the league competition and cooperation are not antagonistic to the relationship between the two sides. In fact it is the unification of contradictions. A combination of the both helps each other to enhance the efficiency of the main body. Previous theory and research is generally carried out for the competition or cooperation, respectively. Very few studies suggest that both can be benefit from cooperation and competition, and should also give attention to two aspects. Or attach importance to cooperation but unconsciously neglect the competition, and thus ignore the competition for

strengthening the alliance and the ability to improve performance. In fact, the most favorable relationship is cooperative and competitive. That is to say, both competition and cooperation is among the coalition: cooperation can complement each other to strengthen the productive capacity of alliances and innovation capacity; competition to make innovations efficiently and enhance the sense of crisis and improve research efficiency and reality of the alliances.

Thus, introduction of competition mechanism in alliance will enable universities, research institutes and enterprises to participate at the same time in order to achieve "Win-Win" results. And this mechanism to the ultimate goal of production and research alliance is efficiency-oriented, starting with the beginning of the main house and the best selection of suitable firms or universities, thus elected to further categories of priority are eliminated, of which the winning combination of the formation of a competing business and universities body, the final selection by the co-operation between the competing body, or to compete. Thus, it is a relationship which competes promotes union.

IV. Study on the Operation of Industry-University-Research Institute Alliance Which Introduces Competition Mechanism

In the Industry-University-Research institute alliance, the introduction of a competitive mechanism is not only the enterprise, universities and research institutes to form an innovative and efficient R&D community, but also to achieve the optimal allocation of resources which achieves maximum efficiency in the view of "input - output " to meet the needs of all parties in the process. In this regard enterprises, universities and research institutes would be formed coalition values. The overall Union's level of innovation will bring about positive changes, which fundamentally enhance the overall performance of Industry-University-Research institute alliance. In the other hand, because the entire Alliances in the process of "input - R&D - output" is to master the same information resources, each individual exist competing relationship between each other; the output can be made more responsive to the changes in market, which will achieve the anticipated benefits of economic union. The mode of operation in production, learning alliance which introduce of competition mechanism is shown in Figure 1. It has the following characteristics:

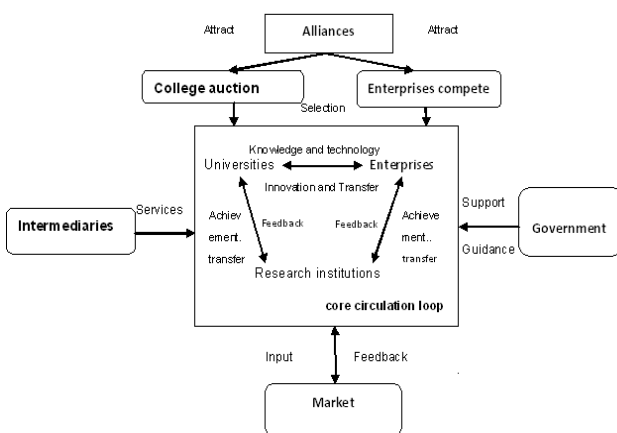


Figure 1 The Model of Introducing Competition Mechanism into Industry-University-Research Institute Alliance

Firstly, the Industry-University-Research institute alliance bodies which are selected will become the core of the entire cycle. From the introduction of competition mechanism in the production and research alliance model, competing for the relationship in the status, it can be divided into two situations: First, a non-competition by the business objectives of the Alliance side has proposed the model, the enterprise is all competitive strength of the ruling party and the result, while the colleges and universities formed between an actual competition, the enterprise side given competing R&D projects or select Union. An effective form of which is the current bid, such a mechanism would be between the various universities and colleges and universities advantages and disadvantages of resource reorganization, redistribution of the relationship between alliance and competition, allowing colleges and universities are actively looking for a strong alliance, or the efforts to improve their competitiveness in order to obtain better opportunities for Industry-University-Research institute alliance. From the macro level, in raising the overall level of college competition, also increased Industry-University-Research institute alliance intangible overall level of performance. However, tender is sometimes slightly inadequate. Throughout the bidding process, if not a supervisor, and prone to both sides to their respective interests appear in private alliances or black-box operation situation; Second, the resources in colleges and universities occupy a favorable situation, when enterprises as R&D alliance project that competition the emergence of a combination of Industry-University-Research institute alliance in the search for optimal allocation of the case is bound to encourage enterprises to compete with each other. The competition between two enterprises for the production and research output of Union can not have a direct effect of increased competition in the blind sometimes also lead to excessive waste of resources and inefficiency. Of course, the colleges and universities may produce adverse selection, which could not form a rational league.

Secondly, Industry-University-Research institute alliance has a contract basis which regulates its daily operation. The equal status of Industry-University-Research institute alliance bodies, without which is absolutely dominant, but in close alliance with each other, and strictly on the contract as a basis for alliance. Through the role of contractual ties, standardized mechanism for the daily operation of production and research alliance to jointly engage in technological innovation activities, the risk-sharing alliances, sharing coalition gains^[8], which can solve the problem of long-term production and research alliance unilateral act or the distribution of benefits.

Thirdly, "market" becomes the main input as well as oriented in Industry-University-Research institute alliance. Industry-University-Research institute alliance's basic premise is that to comply with the requirements of the law of the market economy, market-oriented, the technology, capital, talent and resources such as restructuring of production factors to achieve optimal combination of resources and give full play to its effectiveness in order to achieve business, universities and Research Institute of the multi-win-win situation. Therefore, the market-oriented operation has become a trend. This also means that the market is not only the production and research Union's "compass" but also become the main body of their inputs.

Fourthly, intermediaries and other service organizations will provide services for the entire Industry-University-Research institute alliance. Service Broker is to provide various links in the production and research are closely related with all the services, including production and research results of the identification and assessment, consulting services, innovative R&D financial intermediary services, taxation and legal intermediary services. It is generated as new economic service activities in development of Industry-University-Research institute alliance, acting as an important part of Industry-University-Research institute alliance and plays an irreplaceable key role.

Fifthly, government provides a great platform and policy support for Industry-University-Research institute alliance. The existing Triple Helix model theory of government-industry-universities re-defines the mission of the government in the innovation system^[9]. Enterprises (including some research institutes)'s mission focused on technical innovation, knowledge innovation, technology transfer and knowledge application, at the same time diffusion of knowledge; universities (including some research institutes) to the dissemination of knowledge, focus on cultivating high-quality talent, at the same time knowledge innovation and knowledge transfer; government functions, from the current direct the activities of organizational innovation will shift to the macro-control, creating a good environment and conditions, to provide policy guidance and services to promote the various components of interregional and international exchanges and alliances the majority (Xu etc., 2007)^[10]. Based on this definition, the Government has run throughout the

competition, when the overall macro-control plays a role, an active background in terms of policy support and supervision to a large extent, be able to meet the market competition mechanism, the role of the allocation of resources, making the competition. The results are more conducive to the fundamental purpose of effective innovation and research and development. The main stages in the competition, the Government is mainly supervisory role, is his deputy; late in the competition and R&D Government has gradually come to play a part in policy-oriented role, to guide the products put in the market rationally and effectively.

V. Conclusion

Industry-University-Research institute alliance innovation helps to internalize market transactions, lower transaction costs, and access to strategic technical resources to promote the enterprise's technology or product upgrades, which maximizes the potential pursuit of profit. The competition can make this innovation achieve maximum efficiency and practicality. Therefore, the introduction of competition mechanism is a important link between high-tech production R&D and market value conversion. This paper analyzes the main relationship between the alliances after the introduction of competition mechanism, and explores a w mode of production and research organizations - the introduction of competition mechanism mode in Industry-University-Research institute alliance, making the overall functioning mechanism of production and research alliance more organic and rational. Finally, according to the current practice of production and research cooperation which emerges market-oriented operation and lack of long-term alliance mechanisms and other issues, this article analyze the market, intermediaries and government and other stakeholders should play which role in the production and research League. In future, how to establish an effective performance evaluation system for this new model, and the factors which affecting the alliances etc. are worth to be further explored. In addition, the introduction of competition mechanism for the establishment of a long-term mechanism-oriented Industry-University-Research institute alliance as well as its operating mechanism should also be further explored.

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