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The Dynamic Influencing Factors of Collaborative Innovation of the Knowledge Economy Circle

Yucong Zhang
School of Public Affairs & Law, Southwest Jiaotong University, Chengdu, China

***Corresponding Authors:**
Yucong Zhang
Email: ronghefan@163.com

Abstract: In the era of globalization and knowledge economy, innovation has become the decisive factor of economic development and international competition [1]. Through the world, building innovation community has become an important way to enhance the core competitiveness of the country. In the context of innovation driven development strategy, The local government tries to connect the Collaborative innovation subjects to form a community, and implement the innovative development strategy to improve the local innovation ability." innovative city "," innovative city circle " and other emerging innovative subjects gradually rise. This paper summarizes the influence factors of collaborative innovation of the knowledge economy circle, which will help the various stakeholders to construct the dynamic mechanism of collaborative innovation, promote the linkage of innovation subjects, and achieve the purpose of innovation behavior coupling and innovation benefit diffusion.
Keywords: dynamic factors; collaborative innovation; the knowledge economy circle.

The statement of problems

At present, the collaborative innovation of "the knowledge economy circle" in colleges and universities is mainly the “University-Local government co-operation” the government through the agreement with the university, and they combine in the form of university-industry cooperation or industrial agglomeration [2-4]. The main manifestation at home and abroad is “valley” and “industry alliance science and technology”, “Work Park”, such as “silicon valley” “Wuhan Optical Valley. Its essence is that the innovation main body in "the knowledge economy circle" using the advantage of location advantage and the knowledge spillover effect of university to cooperate and innovate.

Take Chengdu as an example, the main practice is using science and technology innovation as the core engine of urban development, combining with the "mass entrepreneurship and innovation", Integrating the resources of the universities and scientific research institutes, innovating the cooperation mode of " University- local government co-operation " . Through the construction of "the knowledge economy circle" of colleges and universities, the open cooperation of the whole area is promoted in depth, and the innovative development of new technology, new industry and new format is promoted.

In the actual operation process of "the knowledge economy circle" It involves the policy of the circle, scientific research institutions, science and technology industry group, innovation and entrepreneurship subject, intermediary service institutions and other collaborative innovation subjects The comprehensive understanding of the factors influencing the willingness to cooperate can only solve the different demands of the main body of collaborative innovation, and ensure the wide participation of various stakeholders in the collaborative innovation process of complex networks.

Research of the influencing factors of collaborative innovation

The view of Regional Innovation System theory is that the power of system evolution may come from the internal and external of the system, the cooperation, competition, contradiction, and the number, scale and strength of the behavior subject, which will lead to the change of the interrelated ways. Changes in the external environment such as the environment and changes in the way they interact with the system may directly lead to changes in the system.

At present, scholars at home and abroad use the methods and principles of system theory, management science and histology to analyze the dynamic of regional collaborative innovation.

From the perspective of external economy, location factors and national model returns, scholars point out that the development power of industrial

clusters is technology diffusion, large accumulation and increasing returns. Some regional collaborative innovation scholar, argues that the driving force of industrial cluster development is based on external economic effects, labor division of labor, technology diffusion and cooperation efficiency. Among them, the motivation of regional innovation is divided into: endogenous power and exogenous power; Fundamental motive force and auxiliary power; Direct power, indirect power; Leading power, auxiliary power.

The dynamic influencing factors of collaborative innovation of the knowledge economy circle

Based on the principle of system dynamics and the development characteristics of the knowledge economic circle, this paper divides the influence factors of enterprises and dynamics into two kinds: Inner dynamics influencing factors and External dynamic influencing factors [5].

Inner dynamics influencing factors

Inner dynamics influencing factors refers to the pursuit of potential profit by the collaborative innovation of the knowledge economic circle, hoping to internalize the market transaction cost through the collaborative innovation platform, realize their profit target through the reduction of transaction cost and the gain of scale benefit, and keep the competitive advantage[6]. The internal impetus of collaborative innovation of knowledge economic circle mainly comes from the internal demand of reducing innovation cost, sharing the risk of sharing innovation and improving innovation efficiency. The intrinsic motivation is to promote long-term cooperative driving factors. Through the analysis of the existing literature, the internal power is divided into the following categories.

Benefit driven factors

The pursuit of the intrinsic demand of economic profit is the fundamental driving force to promote the independent innovation of the knowledge economy circle, the sustainable development of the interest acquisition and innovation activities, and the induction of other subjects at the same time. The interest driving factor is the key to achieve collaborative innovation, and reasonable benefit allocation is the premise to ensure long term collaborative innovation [7].

Internal encouragement and strategic objectives encouragement factors

The main body of internal collaborative innovation carries on the top-level design for the long-term development of collaborative innovation organization, to ensure that each partner can find their own position, reasonable role positioning, clear division of labor, and realize the seamless docking of cooperation boundary .At the same time Collaborative innovation behavior is mainly implemented by the internal members of the organization, internal incentive means can attract excellent talents, fully mobilize the enthusiasm of personnel to promote innovation efficiency[8]. In order to promote collaborative innovation, we must establish a set of incentive mechanism that can play the innovative enthusiasm of all kinds of personnel, and stimulate their potential to participate in collaborative innovation.

Influencing factors of cluster culture

The influence of cluster culture includes: innovation values, innovative attitude, innovative norms, which is the motivation of the nature of encouragement, which is formed in the long-term competition, and closely related to the innovation practice. The influence of cluster culture is the power source of independent innovation. This kind of internal consciousness, sense of responsibility and sense of mission impel the cooperation subject of the knowledge economy circle with a high enthusiasm, to overcome all unfavorable factors and to seek self-development of the resources.

The pursuit of greater cooperation surplus factors

The good relations within the knowledge economy circle under the cooperation of school local government provide the conditions for the collaborative innovation, and the cooperation surplus of the cluster innovation activities, the benefit is the basis motivation of the continuous innovation of the cluster enterprises.

Resource conformity factors

The internal logic of the development of knowledge economic circle in cooperation with innovation is to realize the effective integration and configuration of resources [8]. Collaborative innovation emphasizes the collaboration among multiple subjects, and the sharing of knowledge and expertise. The essence is to break the barriers and boundaries between human, wealth, material, information, organization, so that each participant can operate harmoniously for a common goal, and produces a synergy effect of 1 + 1 > 2.

Internal incentive influencing factors

Internal incentive system is the key to realize collaborative innovation in the knowledge economic circle, which plays an important role in attracting talents and evaluating innovative talents. The system normative organization behavior can promote the enthusiasm of the organization member cooperation, and guarantee the cooperation organization member goal consistent. Internal performance incentive mechanism has become an important driving force for promoting cooperation and cooperation among different innovation subjects and among different members of the same innovation body.

Through the analysis of the external dynamic factors, we can see that the maximization of the interests is the fundamental driving force of the collaborative innovation of the knowledge economic circle, and also the leading force of all the collaborative innovation dynamics. Because of the driving of interests, the parties reach a consensus on the strategic objectives, the same goal of strategic synergy, resource integration and internal incentives to ensure the effective implementation and implementation of collaborative innovation activities.

External dynamic influencing factors:

The knowledge economy circle is bound to be in a certain technology, economy, resources and policy environment, is induced by various kinds of environment refers to the supply and demand situation of the market and government policy, external environment, etc .External dynamic influencing factors refers to the supply and demand situation of the market and government policy, external environment, etc [7,9].

Government support factors

Government departments play the role of policy making, coordination and supervision in the collaborative innovation system of knowledge economic circle, including the construction of infrastructure, the formulation and implementation of policies, protect the legitimate rights and interests of market parties, reduce the friction in the process of collaborative cooperation, and reduce the innovation risk of innovative subjects. In addition, the government encourages enterprise innovation through tax reduction, interest rate reduction, subsidies, and the provision of public products, which can also, promotes innovative development.

Market demand factors

Market demand is the starting point and successful guarantee of innovation activities. Demand pull becomes an important driving force of continuous innovation [8]. The purpose of innovation is to meet the continuous development of social demand, the continuous change of demand will provide opportunities for enterprises to innovate, and the success of innovation may lead to new market demand. The effective transmission of market signals can improve the efficiency of scientific research resources and improve the correspondence degree of scientific research and industrial transformation. Market demand and innovative activities form a virtuous "Demand-innovation-new demand-re-innovation" recycling process; this process becomes the motivation of continuous innovation [9].

Science and technology driving factors

The progress of science and technology directly promotes the development of innovation, and innovation in turn drives the progress of science and technology, and the development of frontier technology is changing with each passing day. For researchers and scientific research organizations, the continuous integration of disciplines development is both power and challenge. In order to promote the development , we must break the organizational boundaries, focus on the advantages of intellectual resources, Tracking and even surpassing, leading the world's leading science and technology development trend, advancing the new theory, new methods and new technologies of the discipline.

Market competition pressure factors

Competition is the general rule under the condition of market economy [9]. In the environment of economic and technological development, the existence of a large number of competitors in the same industry or similar industries makes the competition more intense in the knowledge economy circle, the similarity and geographical proximity of technology make the innovation results easier to be replicated, and the enterprises are facing the pressure of continuous innovation.

Innovation diffusion driven factors

Innovation diffusion driven refers to the process of dissemination, popularization and application of innovation results in a certain way with time in the members of the knowledge economic circle. Innovation diffusion in essence is the flow of innovation knowledge and information, collaborative innovation subject to the industry related, geographical proximity, specialization division of labor and cooperation frequently, make communication opportunities and channels greatly increase. The innovation subject improves and innovates the technology according to its own situation, and continuously promotes the innovation ability.

Continuous improvement of the social support system

The social support system includes the science and technology intermediary organizations and financial institutions, etc. The development of the knowledge economic circle needs the social support system to provide information and internal and external resources [10]. The social support system is primarily responsible for the collection of scientific and technical data and information; financial institutions provide financial support for cooperative projects, which enables organizations to collaborate with innovative subjects to secure R & D funding.

Through the analysis of the external dynamic factors, we can see that the demand pull power is the main basic power, the market competition pressure is

the external stimulation power, the technical impetus provides the impetus for the development, and the government support and the social support system are mainly the service power. The external power overall effect on the induction of the main body of collaborative innovation, and affect the development direction, speed and scale of collaborative innovation cooperation

CONCLUSION

The “knowledge economy circle" is not only the agglomeration of collaborative innovation resources in the regional scope, but also the divergence of regional innovation resources. The study of the dynamic impact factors can help the policy makers to clarify the causes of the power generation, the impact factors of dynamic change, and solve the “forced marriage" type of resources aggregation in collaborative innovation. At the same time, if the different subjects in the regional scope can unify the understanding, the assimilation concept, rationalize their relationship, in the institutional mechanism and resource policy, and achieve efficient collaborative innovation, it will also provide reference for the collaborative innovation development of " knowledge economy circle" of universities and colleges under the background of " mass innovation and pioneering work ".

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