

Comparative analysis on the transformation policies of scientific and technological achievements in universities between China and Thailand

Xiaodan Qin

Department of Education, Guangxi Normal University, Guilin Guangxi 541006

Abstract: Under the background of the deepening of the global innovation-driven development strategy, universities have become the core position of scientific and technological innovation and the highland of talent training. Due to the fluctuation of political environment, insufficient policy stability, unbalanced distribution of regional resources and other factors, the transformation of achievements in universities in Thailand is still facing the problem of achievement implementation. It is worth noting that Thailand's exploration in the autonomous management of universities, the binding of interests between universities and enterprises, and the flow of talents in ASEAN region provide differentiated research samples for China, which is also a developing country. This paper takes the management policy of the transformation of scientific and technological achievements of universities in China and Thailand as the research object, combines the policy evolution process of the two countries and the typical case of science and technology incubation of famous universities in Thailand, and makes a comparative analysis from five dimensions: policy framework, policy stability and continuity, talent cultivation, import and export of scientific and technological products, and benefit distribution.

Keywords: Universities; Transformation of Scientific and Technological Achievements; Comparison between China and Thailand; Policy comparison

DOI:10.12417/3029-2328.26.06.007

1. Evolution of the policy on the transformation of scientific and technological achievements in Chinese and Thai universities

1.1 Literature survey

Using the China National Knowledge Infrastructure (CNKI) as the search database, more than 3116 academic journals and 209 degree theses (including 15 doctoral theses and 194 master theses) were retrieved with the theme of "transformation of scientific and technological achievements in colleges and universities". The research on the transformation of scientific and technological achievements in colleges and universities in China has achieved rich results and harvest, with a certain research depth.

In SCOPUS, GOOGLE Scholar, WEB OF SCIENCE and other foreign language databases, the English translation of "transformation of scientific and technological achievements in colleges and universities" has not been found. Through multi-level search of keywords, It is found that most of the research related to the transformation of scientific and technological achievements in Thailand includes "transferring technology to commercialization^[1]". "technology transfer strategy", "technology transfer" and other keywords, so the relevant articles in Thailand were retrieved through the above keywords.

1.2 Evolution of scientific and technological achievements transformation policy in Chinese universities

On December 30, 2025, the Information Office of the Ministry of Education and the National Language Resources Monitoring and Research Center jointly launched the "2025 Top Ten hot words for Education Reform", including "transformation of scientific and technological achievements in universities". According to the Law of the People's Republic of China on Promoting the Transformation of Scientific and Technological Achievements revised by the Ministry of Science and Technology in 2015, the transformation of scientific and technological achievements refers to the follow-up test, development, application and promotion of scientific and technological achievements until the formation of new technologies, new processes, new materials, new products and the development of new industries in order to improve productivity^[2]. The main ways of transformation include: self-investment to implement transformation; Transferring the scientific and technological achievements to others; To license others to

use the scientific and technological achievements; Use the scientific and technological achievements as a condition of cooperation to implement the transformation together with others; Investment based on scientific and technological achievements, conversion of shares or proportion of capital contribution, etc^[3].

The "scientific and technological achievements" referred to in China is a concept with obvious "Chinese characteristics". For example, when discussing various issues related to the scientific and technological achievements of universities, Foreign policy and research scholars generally use specialized phrases such as technology transfer or transferring technology to commercialization instead of "transformation of scientific and technological achievements". The reason is that from the beginning of reform and opening up until now, In China's scientific research activities, especially in universities and public research institutions, the government is the main funder of scientific research activities, and at the same time, most universities, research institutions and state-owned enterprises are the sponsors, funders and managers. So because of this, the context of China's public policy's "achievements", has a market economy under the conditions of both the government and investors in a scientific research project principal, research project undertaker, funds user contractual obligations between the relationship, also has the government as the relevant institutions, this kind of achievements in scientific research by the sponsor (s) of intangible assets property ownership ^[4].

Throughout the development of reform and opening up policy in 1978, China's science and technology achievements transformation policy evolution can be clearly divided into five interconnected, progressive transformation of phases:

1.2.1 Initial development period (1978-1985)

The core of this stage was to establish the economic value of science and technology. By establishing a technology achievement management system, vigorously developing and cultivating the technology market, and introducing preferential tax and incentive policies related to technology transfer, researchers are encouraged to bring their technological achievements into production through part-time jobs or "going to the sea" to set up enterprises.

1.2.2 Deepening Development period (1985-1995)

At this stage, the focus of China's reform turned to the fundamental reform of the management system of scientific research institutions. In 1985, the central government issued the Decision on the Reform of the Science and Technology System, which marked the expansion of the reform from the achievements themselves to the institutions and environment. Although the policies of this period were few in number, they went straight to the heart of the matter, aiming to really open up the connection between scientific research and production.

1.2.3 Comprehensive promotion period (1995-2005)

As the 15th National Congress of the Communist Party of China promoted "rejuvenating the country through science and education" as a national strategy, the policy tools for the transformation of scientific and technological achievements began to be systematized. With the promulgating of the Law of the People's Republic of China on Promoting the Transformation of Scientific and Technological Achievements in 1996 as a milestone, China established the basic institutional framework for promoting the transformation of scientific and technological achievements at the national legal level for the first time.

1.2.4 Key breakthrough period (2006-2015)

Marked by the Outline of the National Medium - and Long-term Plan for Scientific and Technological Development (2006-2020) released in 2006, policies related to the transformation of scientific and technological achievements have entered the stage of emphasizing comprehensive support and key breakthroughs. The core is to solve the problem of the break between the capital chain and the policy chain that restricts the transformation of scientific and technological achievements.

1.2.5 Deepening reform period (2015 to present)

Nowadays, the transformation policy of scientific and technological achievements is characterized by comprehensively deepening reform and precise policy implementation. The 2015 revision of the Law on Promoting the Transformation of Scientific and Technological Achievements has established the central role of the transformation of scientific and technological achievements in innovation-driven development, with a particular focus on "loosening ties" and empowering researchers.

At present, many relevant domestic studies have pointed out that many scientific research achievements in China are disconnected from the market demand, which cannot meet the needs of national economic development. Moreover, the funds needed in the process of achievement transformation are difficult to be fully supported, and the financing channel has not been completely opened up, which makes a large number of "semi-finished products" in universities and research institutes difficult to be transformed^[5].

2.The evolution of scientific and technological achievements transformation policy in Thai universities

After the 1997 Asian financial crisis, Thailand has paid more and more attention to revitalizing the economy by promoting entrepreneurial development and supporting new business creation. The Thai government in the 21st century has put pressure on universities to find alternative sources of funding that can replace government funds and to commercialize R&D results ^[6].

At first, the university-industry cooperation in Thailand mainly focused on solving related technical problems in the field of engineering and the industry-university cooperative education model. In 1992, the Thai government, relying on the Ministry of Science and Technology (MOST), set up the Industrial Technical Assistance Program (iTAP) to provide professional technical guidance to the industry through technical consulting and R&D services, so as to solve the actual technical problems faced by enterprises. In 1993, Surat Ratanak University of Technology (SUT) took the lead in proposing and implementing the concept of industry-university cooperation education between universities and enterprises. Ten years later, the Higher Education Commission (OHEC) under the Ministry of Education (MOE) officially established this education concept and promoted the implementation of all universities in the country. In 2004, the Higher Education Commission (OHEC) further issued policies to encourage universities to set up technology licensing offices (TLOs) and university business incubators (UBIs), on the one hand, to promote the transformation of university scientific and technological achievements to the industry, on the other hand, to provide supporting services related to intellectual property for university researchers.

Thailand's higher education research related scholars such as Jarunee Wonglimpiyarat professor pointed out that "incubator" is a general, refers to a technology transfer mechanism, so as to promote the innovation and the growth of the business^[7]. University business incubators (UBI) refer to technology incubators set up by universities that provide office space, equipment, mentoring services, and other administrative support to assist in the formation of new businesses. Thailand transformation of scientific and technological achievements of relevant research results show that the current universities to process the commercialisation of academic research in Thailand, also is the process of transformation of scientific and technological achievements in colleges and universities is not successful, most of the research at the university of burgeoning, unable to enter the market, while money is tight, frequent changes in government policy is a major cause of lead to this result.

3.Comparison of policies on the transformation of scientific and technological achievements between Chinese and Thai universities

3.1 Comparison of policy frameworks for the transformation of scientific and technological achievements

China's policy system for the transformation of scientific and technological achievements is relatively complete. The core of China's policy for the transformation of scientific and technological achievements is the Law of the People's Republic of China on Promoting the Transformation of Scientific and Technological Achievements, which

has outstanding institutional support capacity.

However, Thailand does not have a unified special law on the transformation of scientific and technological achievements, but all relevant departments issue relevant policies and regulations according to the overall development plan of the country. For example, after the 21st century, Thailand entered the stage of "upgrading from labor-intensive to capital-technology-intensive. Encourage public colleges and universities to realize education autonomy after further policies, encourage universities to set up the technology licensing office (TLOs) and the university of business incubators (UBIs), thus shaping the current transformation of scientific and technological achievements in Thailand policy characteristic of multiple drives, social coordination.

3.2 Comparison of the stability and continuity of the transformation policies of scientific and technological achievements in colleges and universities

Compared with Thailand, China has relatively perfect, continuous, abundant and mandatory policies and management methods related to the transformation of university science and technology, which is determined by China's unique socialist system with Chinese characteristics and national governance system, and also reflects our institutional advantages from the perspective of policy. Taking Guangdong Province as an example, in 2024, Guangdong Province issued the Implementation Plan of Deepening the Management Reform of job-based Scientific and Technological Achievements in Guangdong Province (2024-2027), which increased the proportion of rewards for scientific research personnel from the original no less than 60% to no less than 70%^[8]. Institutes of higher learning in Guangdong after policy implementation achievements the number, to income, empowerment of all achieve doubled growth, scientific research personnel motivation significantly increased - in 2024, the province 51 universities 4324 approved by the national natural science fund projects, approved amount is 2.44 billion yuan; They won 8 national Science and technology Awards and 141 provincial science and technology Awards^[9].

In Thailand, due to the turbulent political environment and frequently changing government policies, the policy of the transformation of scientific and technological achievements in colleges and universities is fragmented and trapped in the transformation dilemma. Although the University Business Incubator program (UBIs) has been developed in many well-known universities to promote the transformation of scientific and technological achievements in colleges and universities (such as Maheelong University mentioned above), due to the lack of long-term stable support mechanism for this project, Because of the lack of long-term stable support mechanism, its stability is difficult to guarantee.

3.3 Comparison of policies for training scientific and technological personnel

First, the two countries have different talent training strategies. Both countries attach great importance to talent cultivation and the development of higher education, but their strategies for cultivating scientific and technological personnel are different. China's talent policy takes talent power as the core strategy, positioning itself as a leading development, facing the world pattern, and serving the needs of self-reliance and global competition in science and technology.

As Thailand is a typical newly industrialized country with its economic structure centered on manufacturing, tourism and agriculture, and has been in the middle and low end of the global industrial chain for a long time, the core of its talent policy is to solve the structural contradictions in the local labor market and transform Thailand from a traditional agricultural and industrial economy to an intelligent economy centered on innovation and high-tech industries. Therefore, in the transformation of scientific and technological achievements, it is highly dependent on foreign enterprises, international university cooperation and overseas talent return.

3.4 Comparison of import and export policies of science and technology products

Both countries have issued duty-free policies for the import and export of sci-tech products at the national level, but the import and export products are different. Thailand implements the policy of tariff free import of technologically innovative means of production directly into the production process, and encourages domestic

enterprises to export technology-based goods, both of which have a direct and rapid effect on technological innovation. China's Ministry of Finance and other 11 departments issued the measures for the management of import tax policies for supporting scientific and technological innovation during the 14th Five-Year Plan period in 2021, pointing out that import tariffs, value-added tax and consumption tax will be exempted for imported books and materials used for scientific research and teaching ^[10]. It can be seen that most of the import tax exemption related to scientific and technological innovation in China is for scientific research equipment commodities. The tax exemption of such commodities can indeed reduce the scientific research funds of enterprises, scientific research institutions and universities, which is conducive to the transformation of scientific and technological achievements in China. However, this impact is far-reaching but the effect is slow.

3.5 Comparison of benefit distribution in the transformation of scientific and technological achievements in colleges and universities

Close cooperation between universities and enterprises is an important way to realize the transformation of scientific and technological achievements in universities. In terms of the cooperation between universities and enterprises to promote the transformation of scientific and technological achievements, Thailand encourages the combination of the interests of university research and development and the development of enterprises, and the researchers have a greater say. In China, researchers and enterprises are more like independent but related individuals. The government and enterprises pay more attention to talent training and improve the level of innovation, but there is no obvious embodiment of school-enterprise cooperation in policy, and researchers benefit relatively little.

4. Conclusions and implications

4.1 The Chinese government should continue to optimize the service chain

Policy of our country's colleges and universities of science and technology achievements transformation under the unified leadership of the party central committee of the concrete, the system has a distinct advantage, but if the rigid management, will be difficult to pursue science and technology development process, reduce the efficiency of transformation of scientific and technological achievements, so the government in the overall grasp the transformation of scientific and technological achievements at the same time, should further perfect the policy service chain, improve its service ability, Closely follow the needs of stakeholders for policies, improve the pertinence of policy making, use limited resources to complete the interest coordination among the governing bodies, and promote the implementation of policies.

4.2 Chinese universities should improve the management system of the transformation of scientific and technological achievements

At present, although our country has passed the "promote the conversion of scientific and technological achievements" and other laws and regulations has been clear about the income distribution rights and interests of researchers around the university also improves the achievements reward ratio generally, but in actual management operation, there are still achievement evaluation process trivial, definition of property right is not clear, returns to cash cycle is longer, transformation mechanism of risk bearing problems such as imperfect^[11], Therefore, colleges and universities should embed the protection and incentive of the interests of scientific research personnel into each link of the management system, so that the scientific research personnel in colleges and universities can truly feel that the interests can be distributed and the patents are guaranteed. At the same time, it is necessary to simplify various tedious transformation processes, so that the scientific research personnel are willing to transform and easy to transform.

4.3 In Chinese universities and enterprises should bear responsibility with in-depth cooperation, optimize science and technology achievements transformation process

In order to improve the transformation efficiency of scientific and technological achievements in colleges and universities, it is necessary to improve the enthusiasm of enterprises to absorb scientific and technological

achievements in colleges and universities. First of all, colleges and universities should set up special departments for the transformation of scientific and technological achievements, such as scientific and technological achievements transfer center, entrepreneurial industrial park, achievement incubation base, etc., to expand the cooperation channels with enterprises, establish long-term cooperative relations, and provide guarantee for the transformation of scientific and technological achievements in colleges and universities. Secondly, enterprises can invite scientific research teams to settle in enterprise R&D centers or university-enterprise joint incubation bases, equip them with industrial engineers and production technicians, and assist scientific research personnel to transform laboratory technologies into product technologies that meet enterprise production standards and market demand. To learn from the University Business Incubator mechanism (UBI) of Thai universities to solve the problem of "the last mile of technology landing".

References:

- [1] Wonglimpiyarat J(2014),"Incubator policy to support entrepreneurship development,technology transfer and commercialization".World Journal of Entrepreneurship,Management and Sustainable Development,Vol.10,No.4 pp.334-351.
- [2] Law of the People's Republic of China on Promoting the Transformation of Scientific and Technological Achievements[N].People's Daily,2015-12-25(021).
- [3] Xinhuanet.Express!2025 Top ten hot words of educational reform released[EB/OL].(2025-12-30)[2026-01-03].
- [4] China.org.cn.Review and Reflection on the Policy of transformation of Scientific and technological Achievements in China in the past 40 years[EB/OL].(2019-10-30)[2026-01-20].
- [5] Kang Xudong,Gu Li,Ding Kun.[Kang X D,Ku L,Ding K.On the construction of management system for the transformation of scientific and technological achievements in universities:Based on the positioning of universities in the national innovation system[J].Research and development management,2021(5):175-182.
- [6] Wong K P.Academic Entrepreneurship in Asia:The Role and Impact of Universities in National Innovation Systems[M].Edward Elgar Publishing.
- [7] Wonglimpiyarat J.The innovation incubator,university business incubator and technology transfer strategy:The case of Thailand[J].Technology in Society,2016,4618-27.
- [8] Central People's Government of the PRC.Guangdong will further loosen the shackles and enable the reward for the transformation of scientific research achievements,and the proportion of the completion of achievements shall not be less than 70%[EB/OL].(2024-10-19)[2026-01-26].
- [9] Guangdong Provincial Department of Education.Accelerate the implementation of achievement transformation!Provincial Department of Education introduces the measures of high level science and technology self-reliance and self-improvement in colleges and universities during the"14th Five-Year Plan"[EB/OL].(2025-12-08)[2026-01-20].
- [10] Ministry of Finance,PRC.Circular of the General Administration of Customs and Taxation of the Ministry of Finance on the Policy of Supporting Import Tax of Scientific and Technological Innovation during the"14th Five-Year Plan"[EB/OL].(2021-04-20)[2026-01-03].
- [11] [Liu J,Fan J W.Theoretical logic and implementation path of university post science and technology achievement empowerment incentive[J].Journal of Hubei University of Economics,2024,22(2):110-117.