

# Research Frontiers on the Influencing Factors of University Science and Technology Transfer in Western Developed Countries——Based on the Literature Analysis of Relevant International Authoritative Journals

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**Abstract:** We should give full play to the main role of universities in technology transfer, establish special technology transfer institutions; promote innovation and entrepreneurship education in universities, cultivate students' awareness and ability to participate in scientific research and results transfer; optimize the sharing mechanism of production, teaching and research resources, and broaden the channels of technology transfer in universities; optimize the management mechanism of technology transfer in universities and increase the incentives for talents.

**Key words:** University; Transfer of Science and Technology Marketization

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## Introduction

Many international scholars have made great efforts to study the influencing factors of the rapid increase of university technology transfer activities. In order to review, summarize and study these research results in a broader scope, this study selects the research literature on the main factors affecting the practice of science and technology transfer of universities in western developed countries in recent years and comprehensively summarizes and analyzes them, trying to study: 1. What topics have been included in the research on the influencing factors of science and technology transfer of universities in western developed countries in international authoritative journals in recent years? 2. What is the inspiration for the future university science and technology transfer activities? By exploring these problems, we hope to have certain reference value for the clarity and comprehensiveness of technology transfer practice in Universities

## 1. Source documents and research orientation

From the perspective of research methods, about 9% of the studies used qualitative case study methods, about 41% of the studies used quantitative research methods, and 50% of the studies used case and quantitative research methods. The number of quantitative research is four times higher than that of qualitative research, and the proportion of research combining cases and quantitative research is the largest, nearly half of the total. The research combining qualitative and quantitative methods has become a typical scientific paradigm in the research of technology transfer in universities today.

## 2. Research theme

### 2.1 The leading role of technology transfer organizations within Universities

The organization of technology transfer activities within the university mainly includes technology transfer office, proof of concept center, University R & D center, etc. Among these organizations, the technology transfer office plays a leading role. The university technology transfer office is the "intermediary" between the University and the stakeholders who have the potential to commercialize technology, such as entrepreneurs and investors. It is established to more effectively manage the university technology transfer process and promote the commercial knowledge transfer from the university to the market

or industry.

## **2.2 The pioneer role of teacher inventors in the process of technology transfer**

It can be seen from this that universities should formulate sufficient incentive measures to improve teachers' attitude towards technology transfer, encourage teachers to further cooperate with schools and enterprises, disclose their inventions, effectively convey technical details to licensees who will produce and sell technical products, and promote the technology to the market. However, some studies have found that some universities have insufficient incentives for teachers, resulting in teachers holding a negative attitude towards university technology transfer activities and failing to disclose their inventions to universities.

## **2.3 The key role of enterprises in university technology transfer**

In order to maximize their own vital interests, enterprises and universities should enhance mutual understanding and build a good social environment in cultural exchanges; In terms of technical operation, universities should reasonably evaluate the commercial value and marketability of their own technologies, accurately judge the commercialization potential of technical knowledge, and enterprises should have strategic vision, select the most competitive technological achievements among various university technologies, strengthen cooperation with university scientists, and realize the maximum commercialization of technological achievements.

## **3. Revelation**

By systematically combing the academic research literature on the influencing factors of University Science and technology transfer activities in international authoritative journals in recent years, it can be seen that university science and technology transfer activities in western developed countries have achieved good results. Based on their development experience, in view of the difficult problems such as the relatively slow process of university technology transfer and the imperfect technology marketization support system in China at the present stage, This study draws the following enlightenment to promote the transfer of science and technology in Chinese Universities:

### **3.1 Give full play to the main role of universities in technology transfer and establish special technology transfer institutions**

In view of the current severe situation, colleges and universities must first give full play to their main role in the transfer and transformation of scientific and technological achievements, give full play to their autonomy in running schools, strengthen top-level design, coordinate internal resources according to their own characteristics, formulate appropriate technology transfer strategies, and cultivate compound technology transfer professionals; Set up a special technology transfer office within the university campus, from technology evaluation, intellectual property protection, to determining the transfer scheme, market promotion, and then to cooperative negotiation, so as to obtain benefits and establish an efficient scientific and technological achievements transformation mechanism suitable for their own development. At the same time, we should also give play to the university cluster effect, build university science and technology parks, establish innovation and entrepreneurship alliances and technology transfer platforms, attract and gather high-tech research institutions, provide professional services for mature enterprises while incubating start-ups, and accelerate the process of technology commercialization.

### **3.2 Promote innovation and entrepreneurship education and cultivate students' awareness and ability to participate in scientific research and**

## **achievement transfer**

The national practice standard of entrepreneurship education issued by the American Alliance for entrepreneurship education in 2004 proposes to change the concept of entrepreneurship, build a lifelong education system, and cultivate the spirit and ability of entrepreneurship education through the lifelong learning process from primary school, middle school, University to adults. Innovation and entrepreneurship education is an inevitable requirement of a strong country in higher education, and higher education itself is an important driving force to drive the development of the world economy and the main source of cultural inheritance and innovation. Therefore, we should pay attention to the value of innovation and entrepreneurship education and the profound significance of University Science and technology spillover effect.

### **3.3 Optimize the sharing mechanism of industry university research**

#### **resources and broaden the channels of technology transfer in Universities**

Universities and enterprises should create innovative resource sharing platforms, such as scientific research equipment sharing, technical data and literature sharing, to provide entrepreneurial groups or individuals with information related to scientific research results. The third scientific and technological revolution has brought mankind into an information society. The Internet has become an information platform for all kinds of information sharing and data sharing around the world, which has created a collaborative environment for industry, University and research and helped spread resources. In view of this, whether it is to promote industrial transformation and upgrading or release the power of technological innovation, we should pay attention to the role of industry, University and research in the practice of technology transfer, accelerate the pace of new technology application, optimize the allocation of market resources, promote technology creation and dissemination, better promote knowledge and technology transfer, and benefit the society.

### **3.4 Optimize the management mechanism of technology transfer in Colleges and universities, and increase the incentive of talents**

Increasing policy incentives, such as increasing the proportion of income derived from technology transfer or implementing personal income tax preferences for cash income derived from technology transfer, is likely to stimulate teachers and inventors to actively participate in scientific and technological research and development and disclose inventions, and encourage university technology licensing professionals to spend more time formulating technology licensing tactics and putting inventions into the market, thus deriving new enterprises. Therefore, in order to attract and retain more top researchers and technology licensing professionals to participate in technology transfer activities, universities should pay attention to income distribution, protect the rights and interests of stakeholders involved in the transfer and transformation of scientific and technological achievements, and reward participants according to the income distribution policy of scientific and technological achievements; As mentioned above, the promotion system can also be incorporated into the incentive mechanism to fully mobilize the enthusiasm of technology transfer participants, stimulate creativity and improve competitiveness to a greater extent.

## **5. Conclusion**

Through the analysis of the literature on the influencing factors of university technology transfer practice in western developed countries in international authoritative journals in recent years, this study finds that international researchers pay attention to universities, university teachers, inventors, enterprises, national policies, and technology transfer methods. This study deeply considers the transfer of science and technology in Universities from the perspectives of the main role of universities, innovation and entrepreneurship education, and resource sharing. But there are still some omissions. In the future, researchers can also carry out multi-level and multi-dimensional comparative research from different perspectives, using case analysis, empirical research and other methods. Here, I would like to express my gratitude to all scholars who are

committed to international academic research on university technology transfer activities.

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