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# *Comparative Analysis of Academic Research and Scientific Research Management in Chinese and Australian Universities*

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***Abstract:*** The academic research and scientific research management play a key role in the scientific research direction, project application, transformation of scientific research achievements and academic exchanges of universities. In Australia, which is powerful in education, the industrialization of education with eight Australian schools as the core is becoming more and more complete, and its scientific research and talent cultivation mechanisms are becoming more scientific and efficient. The core of scientific research management in Australian universities is people-oriented, paying more attention to the cultivation of talents, and having a relatively complete scientific research platform management mechanism independent of universities. Concisely, in China, due to its large number of students, the Chinese universities often focus on basic teaching and curriculum settings. The number of scientific researchers in universities is scarce and there is a lack of a favourable scientific research environment. In recent years, with the gradual implementation of the construction of "double first-class" colleges and universities, the academic research and scientific research management of our country's universities have also been continuously developed. Taking the universities in Jilin Province as an example, this paper compares the academic research and scientific research management of universities in China and Australia, points out their advantages and disadvantages and puts forward some suggestions.

## 1. The Current Situation of Academic Research and Scientific Research Management in Australian Universities

### 1.1. Research advantages of Australian universities

#### 1.1.1. Research Advantages of Australian Universities

It is mainly reflected in the independence of scientific research platforms, with relatively independent guarantee mechanisms for personnel and professional titles. Taking the University of Technology Sydney as an example, the outstanding performance is that the design of the personnel system of the research center is scientific, and it has strong competitiveness in salaries that attract first-class talents. The implementation of the Australian research quality framework for many years further shifted teachers' attention from teaching to scientific research. The promotion of university teachers depends on the output of scientific research, so that they are unwilling to devote too much time to teaching activities [1]. Generally speaking, researchers on research platforms in Australian universities invest relatively little in teaching and they have relatively long research time.

### 1.1.2. Advantages of the Construction of Master's and Doctoral Programs

Schools recognized as universities generally have doctoral authorization points, and the number of doctoral students enrolled on each platform is not limited by the quota, but it is restricted by the funding of scientific research platforms. This way has more growth advantages for a platform with a good development trend. It is mainly reflected in the independence of scientific research platforms, with relatively independent guarantee mechanisms for personnel and professional titles. Taking the University of Technology Sydney as an example, the outstanding performance is that the design of the personnel system of the research center is scientific, and it has strong competitiveness in salaries that attract first-class talents. Generally speaking, researchers on research platforms in Australian universities invest relatively little in teaching and they have relatively long research time.

### 1.1.3. Innovation of Doctoral Tutor Mechanism

A doctoral tutor is a qualification. Assistant professors, lecturers, associate professors, and professors have doctoral tutor qualifications, which is a great benefit for young teachers in their 40s. Due to the opportunity of doctoral guidance, the growth rate of young teachers will be greatly accelerated, so that they have the opportunity to occupy the academic highland earlier.

### 1.1.4. Innovation of Growth Mechanism for Undergraduates, Masters, and Doctors

Different from domestic universities, undergraduates from Australian universities can skip the postgraduate stage and go directly to the doctoral level after completing their undergraduate honours. This policy allows students to get in touch with academic frontiers earlier and allows young students to grow rapidly. The age of studying for a doctoral degree in Australian universities is generally 2-3 years earlier than that in China, which is conducive to engaging in academic research at a more golden age and avoiding the invisible pressure caused by marriage and employment.

### 1.1.5. The Internationalization of Scientific Research Teams Is Remarkable

Various domestic and international cooperation methods are an important support in Australia's higher education internationalization policy [2]. In terms of the construction of a scientific research team, Australian teachers are internationally recruited and come from all over the world, which is very conducive to the international formation of teacher research teams. Researchers attach great importance to cross-border cooperation in team building. On the one hand, it is good for the joint application of scientific research projects, and on the other hand, it is instrumental in the output of scientific research achievements brought about by the diversity of academic research.

### 1.1.6. The Establishment of Standards for Academic Journals Is Reasonable

In the recognition of academic journals, it is different from the domestic SSCI, SCI, CSSCI, and other search classifications. Instead, the national academic committees of various disciplines are established to recognize the major related journals of the discipline A, B, and C. The academic recognition of journals is evaluated by the academic committees of each discipline, which reduces the interference of factors such as whether to search or retrieve partitions. Some authoritative journals in the industry are recognized, which is helpful for scientific researchers to have a correct understanding of the journals of the discipline.

#### 1.1.7. The Scholar Evaluation Mechanism Is Scientific

The evolution of research quality evaluation system in Australian has gone through two main stages. Before 2003, Australian Research Council unified the scientific research and education distribution system, and carried out performance evaluation based on the Research Quantum [3] and Composite Index [4]. Although the share of publication output in Australia is growing at a higher rate than many countries, the citation influence is lagging behind in the world [5]. After 2004, in order to pursue high-quality scientific research, the Australian government designed new evaluation systems based on subject classification, including the Research Quality Framework (RQF) [6] and Excellence in Research for Australia (ERA) [7]. In 2005, Australia officially announced the use of the RQF evaluation system [8]. In 2010, the Australian government used the ERA evaluation system to officially launch the first round of evaluation for all disciplines in Australian universities. The evaluation of scholars is mainly based on the academic journal papers they published, usually neglecting the project funds they receive. It pays more attention to the academic recognition of scholars and reduces unreasonable judgments from non-academic aspects.

### 1.2. Insufficient Scientific Research in Australian Universities

#### 1.2.1. Australian Non-Top-Eight Universities Lack Intellectual Support

In addition to the top-eight universities in Australia, other Australian universities such as the University of Western Sydney, Charles Sturt University, and other universities are less attractive to international students in terms of enrolment because of their low international rankings. At the postgraduate and doctoral level, the source of students in Australian universities mainly comes from China, India, Iran, and other countries. The non-top-eight universities find it is difficult to attract these international students, and they generally lack intellectual support in the cultivation of high-level talents.

#### 1.2.2. Insufficient Attractiveness of Non-Immigrant Professionals (Disciplines)

Some immigration majors, such as accounting and nursing majors, have advantages in enrolling undergraduates, postgraduates, and doctoral students, while other non-immigrant majors are seriously unattractive in enrolling international students. In particular, computer science requires students to have a certain foundation in mathematics, while Australian local students generally lack mathematics talents. It is difficult for them to conduct in-depth research in such majors, and thus it is difficult to achieve breakthrough research results. This kind of enrolment phenomenon is particularly serious in Australian non-top-eight universities.

#### 1.2.3. Insufficient Funding for Scientific Research Projects

Through visits and investigations to the University of Sydney, University of Technology Sydney, University of New South Wales, University of Western Sydney, and other universities, we found

that the Australian Ministry of Education provides fewer vertical topics. It is difficult for most teachers to apply for vertical topics, and obtain enough funding, which supports scientific research projects. As a result, some teachers from domestic colleges and universities are generally willing to cooperate with teachers from domestic colleges and universities to apply for joint projects.

#### 1.2.4. The Quality of Talent Training Caused by the Industrialization of Education is Not High

Taking doctoral training as an example, the Australian non-top-eight universities have no specific requirements for graduation defence or low requirements for doctoral talents. In the evaluation of graduation thesis, there is a phenomenon of acquaintance evaluation, which makes it relatively easy to obtain a doctorate. The graduation threshold is low, which seriously affects the quality of doctoral personnel training. The outstanding performance is that the vast majority of doctoral students can get a doctorate within a limited time. However, the conditions for doctoral graduation in China are extremely strict, and there is a growing trend, which guarantees the quality of the doctorate to a large extent.

## 2. The Current Situation of Academic Research and Scientific Research Management Jilin Province Universities

### 2.1. Scientific Research Advantages of Provincial Universities in Jilin Province

#### 2.1.1. Authorized Universities Have Advantages in Enrolment of Doctoral Degree and Master Degree

Compared with Australian universities, provincial universities have certain advantages in graduate enrolment indicators, but the quality of student sources tends to be inferior to similar provincial universities in the south. The construction of the scientific research team, with a certain number of doctoral and master students, has certain advantages in intellectual support.

#### 2.1.2. Leading Advantages of High-Quality and Characteristic Disciplines

Throughout the provincial colleges and universities in Jilin Province, all colleges and universities have a leading advantage in a certain discipline or several disciplines. For example, Jilin University of Finance and Economics has a relatively leading advantage in economics and management. If more attention is paid to specific superior disciplines, talents are widely recruited, and scientific research teams are built, it will be conducive to strengthening discipline advantages.

#### 2.1.3. Population and Market Advantages in the Transformation of Scientific Research Achievements

Although the GDP of Jilin Province is only 20% of Australia's, the population is roughly the same. From the perspective of transforming scientific research results into local services, it can serve the development of related industries in the province. Also, the main scientific research service objects of Australian top-eight universities are oriented to the Chinese market, and Jilin Province is located in the middle of the northeast, close to major northern cities such as Beijing and Tianjin, so we have a natural advantage geographically.

#### 2.1.4. The Scientific Research of Provincial Universities Has the Potential for Rapid Growth

Australia has eight world-class universities, the University of Technology Sydney and the

University of Western Sydney, which are ranked relatively high in the world. Compared with Jilin Province, which has a similar population, only Jilin University, Northeast Normal University, and Yanbian University are three universities with 985, 211 universities. Other high-quality colleges and universities still have a lot of room for development. From the perspective of the talent training market and the industrial development of Jilin Province, it is possible to build 3-5 universities with the strength of impact 211 universities.

## 2.2. Insufficient Scientific Research in Provincial Universities in Jilin Province

### 2.2.1. The Operating Mechanism of the Provincial Scientific Research Platform is Not Completed

Major provincial colleges and universities have scientific research platforms built by the Provincial Development and Reform Commission, the Provincial Department of Science and Technology, and the Provincial Department of Education, but these scientific research platforms are difficult to maximize their effectiveness. On the one hand, the scientific research platform lacks full-time researchers. The existing researchers are mostly front-line teachers of teaching, mainly from various college entities, and are part-time researchers on the scientific research platform. On the other hand, the supporting facilities for doctoral and master's programs on scientific research platforms are not perfect, and there is a phenomenon that it is difficult for teachers on some scientific research platforms to obtain graduate students and above. The non-completed operating mechanism makes it difficult for the scientific research platform to operate independently and lacks the vitality of scientific research and talent cultivation.

### 2.2.2. Lack of Effective Measures for Doctoral Incubation

Most provincial universities are non-doctoral construction units and generally do not have the qualifications to train doctoral students. This makes it difficult for scientific researchers to form an effective scientific research team, and it is difficult to form a system for the construction of a scientific research team led by teachers alone. Taking Jilin University and Northeast Normal University as examples, they lack the incubation mechanism for the establishment of doctoral programs in provincial 985 and 211 universities. For example, there is a lack of experimental sites for joint training of doctorates with advantages disciplines of provincial universities, as well as platform construction plans such as doctoral supervisor workstations and post-doctoral workstations for advantageous disciplines of provincial universities.

### 2.2.3. The System of Talent Attraction is Not Perfect

Provincial universities don't have an advantage in terms of talent attraction and salaries, due to the lack of a platform for doctoral programs. At present, provincial colleges and universities generally lack effective policies for teachers to purchase houses and children’s enrolment. Compared with other developed provinces, they are not attractive to young doctors with growth potential, which has caused a large number of outstanding young doctors from Jilin Province to flow out of the province and work outside.

### 2.2.4. Lack of Scientific Research Service Talents in the Transformation of Scientific Research Results

The transformation of scientific research results is different from academic research, and the provincial scientific research platforms are guided by academic research. In the transformation of

scientific research results, it is difficult to translate theories into actual output, and it is difficult to implement research results. There is a lack of relevant scientific research service talents and a lack of appeal and influence.

## 3. Comparing the Academic Research and Scientific Research Management of Chinese and Australian Universities and its Enlightenment to China

### 3.1. With Scientific Research Serving the Local Economy as the Main Theme, Improve the Pilot Innovation of the Management Mechanism of the Scientific Research Platform of Provincial Universities

Take each university as a platform pilot, each university chooses 1-2 superior platforms, each platform is responsible by a dedicated person, and there are 10-20 scientific researchers, and each scientific researcher is equipped with 1-3 graduate students and doctoral students every year, to build a complete scientific research team. Establish a provincial scientific research platform and related leading enterprises in the province to establish a joint construction system and build a cadre rotation system, that is, enterprise technical or management cadres enter the school, and scientific research personnel enters the enterprise for rotation exchanges, to form the virtuous circle of finding and solving problems, improving mechanisms and serving the local economy.

### 3.2. People-Oriented, In the Introduction of Talents, To Ensure That the Children of Talents are Enrolled in School.

Australia offers various preferential conditions to attract world-class talents, and Jilin Province is no exception. Children's enrolment education is an important magic weapon for the two universities of Jilin University and Northeast Normal University to attract talents. To avoid the phenomenon of "difficult to introduce and easy to drain talents" in provincial universities, it is recommended that the Provincial Department of Education can study the enrolment of teachers' children in provincial universities, referring to the experience of learning from Dalian. No matter which university teachers, it can guarantee that their children have access to good elementary and junior high school entrance qualifications. Only by living in peace can work happily, and by removing the worries of scientific researchers, can truly retain elite talents.

### 3.3. To Build a One-to-One Incubation Mechanism Guided By the Construction of Doctoral Programs

Construct a model of assistance and incubation for universities in the province, referring to the model of Tsinghua University's aid to Xinjiang University. Taking Jilin University of Finance and Economics as an example, it is recommended that the Provincial Department of Education establish Jilin University to fully support the doctoral incubation agreement of Jilin University of Finance and Economics and Management. Well-known teachers from the School of Economics, Business School, and Management School of Jilin University can set up scientific research workstations and doctoral tutor workstations at Jilin University of Finance and Economics. And they can establish a joint training mechanism for masters in economics and management with Jilin University to improve the scientific research level of the University of Finance and Economics and establish the incubation doctoral programs.

## 4. Conclusions

The improvement and stable development of academic research and scientific research management in universities not only affects the training of talents and the output of scientific research results in colleges and universities, but also affects the progress of local scientific research and stimulates the local economy. By analysing the differences between Chinese and Australian universities, we will absorb the successful and feasible experience of Australian universities and apply them to our country's university scientific research management. Only by implementing the reforms can we truly promote the construction of provincial universities in our country, and further enhance the country's scientific research capabilities.

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