

An Analysis of the R&D Investment of High-Tech Industry in Jiangxi Province

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ABSTRACT

R&D investment is an important part of technological progress and social development. Based on the vertical comparison of Jiangxi Province’s R&D investment since 2014, this article puts emphasis on the current status of Jiangxi’s high-tech industry R&D investment. At the same time, it compares horizontally with neighboring provinces. Issues such as unbalanced development of different industries, low technology penetration, and insufficient input of human factors, and proposed corresponding countermeasures to further promote the development of high-tech industries in Jiangxi Province.

Keywords: High-tech industries, R&D investment, Problem Solution

1. INTRODUCTION

Since entering the 21st century, the rapid development of science and technology has become a symbol of this era. R&D innovation is crucial to the development of high-tech enterprises. In recent years, China has been in a transitional period facing downward economic pressure, and innovation has played a vital role. General Secretary Xi pointed out in the “19th National Congress”; Innovation is the primary productive force. As an underdeveloped region, Jiangxi Province must pay more attention to the development of technological innovation.

2.44 times from 2.81 billion yuan in 2014 to 6.86 billion yuan in 2018, at the same time, the growth rate also increased by 52.4 percentage points during the five-year period.

Table 1 R&D expenditures internal expen

Project	Year				
	2014	2015	2016	2017	2018
High-tech enterprise R&D expenditures internal expen	28.1	31.2	30.1	42.0	68.6

Data source: China Science and Technology Statistical Yearbook

2. ANALYSIS ON THE STATUS QUO OF R&D INVESTMENT IN HIGH-TECH INDUSTRIES IN JIANGXI PROVINCE

2.1 The internal expenditures of high-tech industry R&D expenditure continue to increase

The internal expenditure of R&D expenditure refers to the actual expenditure that the research institution spends within the institution during the year. As our province has continuously increased its emphasis on high-tech industries in recent years, its internal expenditures for research and development have also increased. From Table 1, the internal expenditure of high-tech industry R&D expenditure has increased by

2.2 The investment in R&D human factors in high-tech industry continues to increase

In recent years, the Jiangxi Provincial Party Committee and the Provincial Government, in accordance with the decisions and deployment of the Central Committee of the Communist Party of China, have placed innovation on an important focus of talent development. Therefore, the training of high-tech industry R&D personnel in Jiangxi Province has achieved remarkable results. From Table 2, the number of high-tech industry R&D institutions and the full-time equivalent of R&D personnel in Jiangxi Province from 2014 to 2018 has increased year by year. The number of institutions has increased from 177 in 2014 to 589 in 2018, achieving a 3.33 fold

increase; at the same time; the full-time equivalent of R&D personnel has also increased by 11,813 during the five-year period, a growth rate of 134%.

Table 2 Input of human resources in R&D of high-tech industry

Project \ Year	2014	2015	2016	2017	2018
Number of R&D institutions (a)	177	203	282	406	589
Full-time equivalent of R&D personnel (person-year)	8760	10094	8807	12608	20573

Data source: China Science and Technology Statistical Yearbook

2.3 The popularity of science and technology is getting higher and higher

It can be seen from Table 3 that from 2014 to 2018 that the number of participants in the Science and Technology Museum and the annual science popularization funding have generally increased. In 2014, the number of participants in the Science and Technology Museum in Jiangxi Province was only 539,000. The total growth in the number of participants in the Science and Technology Museum in 2016 was the highest, an increase of 250,000 people compared to the same period last year. Only in 2017 the number of participants decreased slightly. The total investment of annual science popularization funds in 2014 was 230 million yuan, which increased to 316 million yuan in 2018, a total increase of 86 million yuan. Therefore, the emphasis on the popularization of science and technology in Jiangxi Province has made the popularization increasingly higher.

Table 3 Indicators related to the popularization of science and technology

Year \ Project	2014	2015	2016	2017	2018
Number of participants in the Science and Technology Museum that year (ten thousand people)	53.9	54	79	70	79
Annual science popularization expenditure (100 million yuan)	2.3	2.77	2.75	2.96	3.16

Data source: China Science and Technology Statistical Yearbook

3. PROBLEMS IN R&D INVESTMENT OF HIGH-TECH INDUSTRIES IN JIANGXI PROVINCE

3.1 The level of awareness of the importance of high-tech industry R&D is not high

R&D work is the main factor for companies in high-tech industries to obtain core competitiveness and sustainable development. Although Jiangxi Province's internal expenditures for high-tech industry R&D expenditures on the whole are increasing, there is still a big gap compared with neighboring provinces. According to the China Science and Technology Statistical Yearbook, Guangdong Province has the highest internal expenditure on R&D expenditure, totaling 112.47 billion yuan. The internal expenditure on R&D expenditure in our province is much lower than that of Guangdong Province, which is 16.4 times less than the same period last year to only 6.86 billion yuan. In other surrounding provinces, our province's internal R&D expenditure is still at the lowest level. In summary, compared with neighboring provinces, especially those with more developed economies, Jiangxi Province still has a low level of awareness of the importance of high-tech industry R&D.

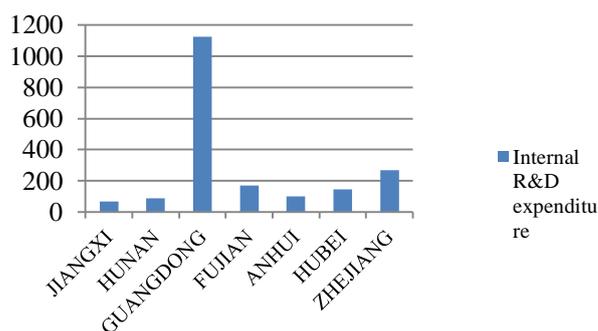


figure 1: Comparison of internal expenditures of high-tech industry R&D expenditures and expenditures of new product development expenditures

Data source: China Science and Technology Statistical Yearbook

3.2 Unbalanced development of sub-sectors in high-tech industries

There are large development differences in the sub-sectors of high-tech industries, and the electronic communication and equipment manufacturing industry presents a phenomenon that the industry is dominant. As can be seen from the percentages of each sub-industry in the China Science and Technology Statistical Yearbook, the R&D expenditures of electronic information and communication technology and equipment manufacturing are the largest, accounting for 68.95%. The second is the pharmaceutical manufacturing

industry, accounting for 24.09%, but the total internal R&D expenditure is less than one-third of the electronic communication and equipment manufacturing industry; the other three sub-sectors together account for only 6.95%. It is much lower than the other two sub-sectors. It can be seen that Jiangxi Province has an unbalanced development of sub-sectors in high-tech industries.

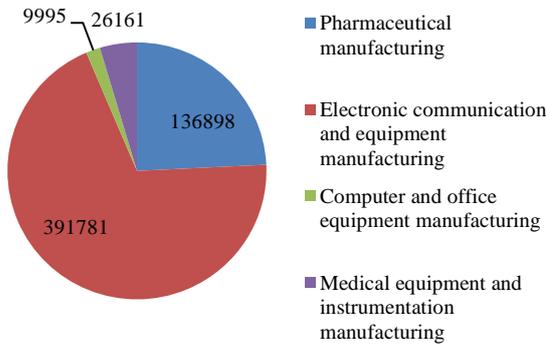


Figure 2 The proportion of internal R&D expenditures of high-tech industries by industry
Data source: China Science and Technology Statistical Yearbook

3.3 The popularity of science and technology is not high

In the process of establishing innovative provinces, outstanding scientific and technological innovation achievements are a necessary factor. There is a big gap between the popularization of science and technology in Jiangxi Province and neighboring provinces. According to data from the China Science and Technology Statistical Yearbook, the three indicators of the number of participants in the Science and Technology Museum, annual science popularization funding and the number of participants in scientific and technological activities are lower than those of neighboring provinces. For the number of participants in the Science and Technology Museum that year, it is lower than one-seventh of Guangdong. Only 790,000 person-times; and Zhejiang Province has the largest annual science popularization fund, which is three times higher than Jiangxi Province; the number of participants in scientific and technological activities is much lower than Guangdong Province. Therefore, the popularization of science and technology in Jiangxi Province is not comprehensive enough, and the degree of popularization is not high.

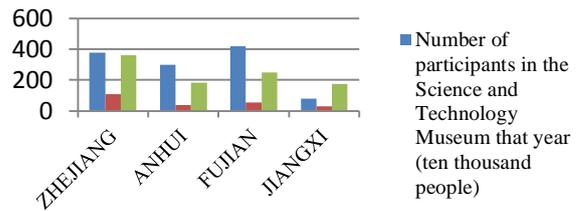


Figure 3 Comparison of indicators related to the popularization of science and technology
Data source: China Science and Technology Statistical Yearbook

3.4 Lack of R&D personnel in high-tech industry

The current focus of competition has shifted to talent competition. High-quality and high-quality talents are the resources that every region is striving for, and talents are the core of development. In recent years, our province has continued to introduce various talent introduction policies, focusing on the concept of a province with talents. However, the number of high-tech talents in Jiangxi Province is still at a low level. The number of high-tech R&D institutions and the full-time equivalent of R&D personnel in Jiangxi Province is only slightly higher than that of Hunan Province. Compared with the developed Guangdong Province, the number of both indicators is more than 10 times lower than that of Zhejiang Province, Fujian Province, Anhui and Hubei. There are few comparisons among neighboring province

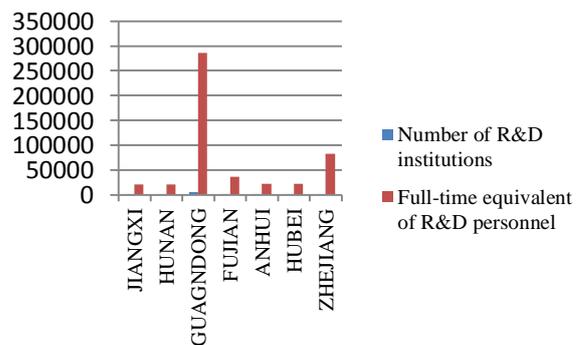


Figure 4: Comparison of the number of R&D institutions and the full-time equivalent of R&D personnel in the high-tech industry
Data source: China Science and Technology Statistical Yearbook

4. SOLUTIONS TO THE PROBLEMS OF JIANGXI'S HIGH-TECH INDUSTRY R&D INVESTMENT

The "National Innovation-Driven Development Strategy" issued by the Central Committee of the

Communist Party of China and the State Council proposes a "three-step" goal. Innovation has now been included in the national plan. In order to respond to national policies, our province must also actively build an innovative province. Emphasizing the development of high-tech industries has become a crucial link. You can consider improving the company's Innovation capacity.

4.1 Strengthen the awareness of technological innovation of enterprises in high-tech industries

Since the 18th National Congress of the Communist Party of my country put forward the new normal for economic development, the industrial structure has been continuously optimized. At this time, technological innovation can provide new development opportunities for the development of high-tech industries. For the government, it will give full play to the role of guidance and regulation and vigorously promote the importance and necessity of technological innovation. For enterprises, if they want to achieve core competitiveness and sustainable development, they must raise technological innovation to the level of corporate strategy and continuously strengthen their awareness of technological innovation.

4.2 Strengthen the collaborative innovation effect among enterprises in high-tech industries

Relevant governments and organizations should play their role in the development of industrial common technologies, cutting-edge scientific and technological information and other major research technologies, continue to promote internal cooperation between enterprises, and strengthen the promotion and promotion of new materials, technologies and scientific research and development methods. Popularize work and strengthen collaborative innovation among enterprises. By learning from each other, enterprises can improve R&D capabilities and efficiency, so that they can develop collaboratively and jointly promote the development of high-tech industries.

4.3 Strengthen the popularization of science and technology

General Secretary Xi Jinping pointed out at the National Science and Technology Innovation Conference: "Science and technology innovation and technology popularization are the two wings of

realizing innovation and development, and science popularization and technology innovation must be placed at the same important position." Firstly, opening an online science and technology popularization platform to promote the informatization construction of science and technology popularization; secondly, increasing and enriching offline activities to create a good atmosphere for scientific and technological innovation, which can stimulate people's love for science and technology. Finally, the government and enterprises need to increase funding, and only sufficient funding can provide a solid economic guarantee for the smooth development of science popularization.

4.4 Implement talent strategy and accelerate the construction of innovative talent team

Talent is the foundation and driving force for the development of a country, region and even an enterprise, especially for high-tech industries. In 2017, the Jiangxi Provincial Party Committee and the Provincial Government put forward reform measures on all aspects of talent introduction. These measures have provided a strong momentum for the creation of a highland of talent gathering and the development of science and technology in the province. In addition to the need for the government to strengthen the introduction of talents, colleges and universities in our province should not only consider the learning of students' professional knowledge in the school curriculum, but also cultivate students' innovative awareness and improve students' innovative ability, and cultivate outstanding talents with professional qualities.

5. CONCLUSION

From the above analysis, it can be seen that although the investment in R&D of high-tech industries in Jiangxi Province has improved compared with the past, it has gradually become a key focus area, but there is still a certain gap compared with surrounding provinces. This shows that the research and development capabilities of Jiangxi's high-tech industries need to be further improved and developed.

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