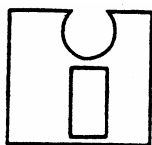


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INVENTIVEACTIVITIES INTHEFRAMEWORKOF UNIVERSITIESANDSM ALL
ANDMEDIUM -SIZEDENTERPRISES(S MES)

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INTRODUCTION

1. As pointed out by Mr. Deng Xiaoping, science and technology are the first productive forces; this was further strengthened by President Jiang Zemin's remark that "innovation is the eternal soul of national progress and the everlasting driving force of national prosperity." In order to meet the challenges that followed entry into WTO and economic globalization, the Chinese Government implemented the strategy of helping the country prosper with science and technology" to further promote scientific innovation and invention. Universities and enterprises, especially small and medium enterprises, have a key role to play in this area, so I would like to take this opportunity to give you an introduction to the position of universities and small and medium enterprises in terms of inventions and innovations.

I. INVENTIONS AND INNOVATIONS AT UNIVERSITY

2. Universities are the bases for the training of human talent, and also the source from which new knowledge, new thinking and new inventions are disseminated. At present there are more than 1,200 universities with more than 12 million registered students and over 530,000 full-time teachers. It is proved that universities are active, key forces in invention and innovation, and they have a significant role in the national invention and innovation system. China has adopted the following approaches in the promotion of the inventive activity:

1. Training students in innovation and entrepreneurship

3. A key issue in the traditional Chinese education system has been the fact that more attention is paid to the provision of knowledge and less to the training of innovative abilities. Following the turn of the new century, rapid changes have taken place, in government and in society as a whole, in thinking and educational methods. At present, universities have turned their attention to training in innovation and practical skills. In response to this requirement they are starting to reform the education and teaching system, to redesign the student evaluation system and to improve the courses and teaching methods. Working on the principle of teaching on the basis of the materials available, universities are focusing on individual education and encouraging their students to participate in scientific studies and inventive activity; they also help students volunteer to attend various science and technology associations. Many universities have set up special innovation courses with a view to training students' creative thinking and creative capacity. In order to encourage the students' innovative efforts, a "Challenge Cup" is awarded in a science and technology competition, among university students, with students from all the various universities taking part. The competition is held every two years, and there have been seven to date. It has had a very favorable impact in the universities; indeed competition activities of this kind have played a very active role in guiding university students towards invention and innovation and meeting challenges, apart from which it helps to train the human talents further. In addition, some universities even allow students to create their own companies to exploit their inventions, taking absence from school for the purpose. In this way they have to market their inventions, which is good in terms of the training of innovative talent and entrepreneurship.

2. Establishment of university science parks to encourage invention and innovation among the students and teachers and to set up high-tech enterprises

4. Universities are the source of talent, technology, information, research laboratories and a cultural atmosphere, and because of that they have great strength in terms of invention and innovation. In addition to the training of students, there is much discussion of how universities can better serve the economy and society.

5. Taking into account the actual practice and experience of certain other countries, China has set up science parks within its universities. At present there are 48 such parks. According to statistics from 22 science parks in the year 2001, 17.065 billion RMB was invested, of which 13 billion was from society, 4 billion from the universities and local government, and 15 million was from central government. In the 22 science parks there were nearly 3,000 enterprises, and 459 are due to move out on completing their incubation and grow into big enterprises. It has been proved that multiple sources of investment, including venture capital and policy guidance and assistance, will make it possible to set up the science parks near the universities so that they can engage in technological innovation and enterprise incubation. This will further help promote the potential of the universities, create some technological innovation bases, incubation bases for high-tech enterprises and bases for technological innovators, and encourage high-technology expansion.

3. Encouraging the combination of industry, universities and research; strengthening the relationship between universities and enterprises

6. In the past, Chinese universities only focused on academic research and the publication of papers, and they paid no attention to the commercialization of inventions. In China many enterprises, especially the small and medium enterprises, are weak on research and development, as a result of which the products are old, with little added value and less market competitiveness. Now we are encouraging universities to cooperate with enterprises and transfer their inventions to the corporate sector. Universities will be entrusted with the research and development, or they will jointly work with the enterprises. University teachers and students can devote part of their time to the enterprises as consultants. They are working closely with the enterprises to commercialize university research and inventions. This helps both to solve the shortage of technology of the enterprises and to train the students in innovation and entrepreneurship. This practice of combination is now widely recognized throughout China, and it is becoming rare for universities and enterprises not to work together. In addition, Chinese universities have set up technology transfer offices to promote university technology licensing, holding or technology stocks. As for patent applications, universities did not concern themselves with this until recently. They are starting to strengthen intellectual property protection, and there has been an increase in patent applications: in 2001 they numbered more than 3,000.

II. INNOVATION AND INVENTION IN SMALL AND MEDIUM ENTERPRISES

7. Following the reform and opening-up policy, there has been a rapid growth in small and medium enterprises in China, and they now number more than eight million, accounting for 99 per cent of all enterprises, 60 percent of all industrial value and 73 per cent of total employment in China. Clearly small and medium enterprises have played a very positive role in the development of Chinese economy and society. Entry into WTO has brought not only good opportunities but also serious challenges where previously there

had been the protection of high tariffs. The Chinese Government fully understands the weakness of the supporting system and the barriers, and is taking measures to encourage and assist in invention and innovation in order to create a better environment for the development of small and medium enterprises.

1. Establishment of favorable policies and regulations for the development of small and medium enterprises

8. The Chinese Patent Law, which has been implemented for only 17 years, protects inventions, utility models and industrial designs. It is important to encourage invention and innovation of the small and medium enterprises. The “Small and Medium Enterprise Law,” which has been implemented since June of the current year, uses capital, policy and tax revenue to encourage the development of new technologies and products by small and medium enterprises. At present 65 percent of all patents are for utility models and industrial designs, with a large amount of the business coming from small and medium enterprises. There is also clear policy whereby inventions and innovations by employees are encouraged by means of awards and technology stocks, and they are also encouraged to create their own enterprises and exploit their own inventions. This helps commercialize the inventions and create employment opportunities. The practice is therefore widely accepted by Government and society as a whole.

9. In order to encourage innovation within small and medium enterprises, the Chinese Government also issued “Policies and Opinions on Encouragement and Promotion of the Development of Small and Medium Enterprises,” which provides that all governments at all levels should take the necessary measures, such as the use of venture capital, to provide efficient support for technology-based small and medium enterprises to improve their technological innovation and promote the commercialization of inventions. Other measures include the streamlining of the SMEs’ technological innovation and commercialization base, with inventors being encouraged to create SMEs, to market their technologies, which can make use of 35 percent of the registered capital. All these measures have played a key role in encouraging invention and innovation in SMEs and promoting SME development. In addition, workers’ unions in all enterprises, especially SMEs, are doing a lot to promote technological invention and innovation, and many inventions have resulted from production activities. This is also important in the development of SMEs. In China, owing to the fierce competition, SMEs are particularly active in invention and innovation work.

2. Establishment of the SMEs Technological Innovation Fund

10. In June 1999 the Ministry of Finance set up the SMEs Technological Innovation Fund with 1 billion RMB of Government funds being used to support technology-based SMEs working on innovation. The Fund provides loans and sponsorships to support technology-based SMEs in their initial industrialization when they have high technology, and a promising market, but great risks and no commercial capital, making Government funding urgently necessary. This will help the industrialization and the introduction of commercial capital, and support the technology transfer and innovation with which technology-based SMEs can grow.

11. Based on an investment in 1,089 items in 1999, it is estimated that 32.89 billion RMB will be added on the completion of the items, with tax of 7.66 billion RMB, 1.23 billion in foreign exchange and 139,400 employment opportunities.

12. The Fund is widely accepted by SMEs for its role in innovation, improvement and scale.

III. ROLE OF THE CHINA ASSOCIATION OF INVENTIONS IN PROMOTING INNOVATION AND INVENTIONS IN UNIVERSITIES AND SMEs

13. The following are some of the major tasks of the Association:

(a) establishing Creation and Education Branches in academic institutions to popularize innovation activities and encourage student inventions;

(b) organizing invention exhibitions to display the inventions of universities and research institutions and attract enterprises, especially SMEs, to choose the technology; once a year there is a national exhibition for inventions, with an international exhibition every four years; all of this plays a positive role in the industrialization of inventions and in promoting cooperation between universities and enterprises;

(c) presenting high-quality inventions so that society can understand them and support their commercialization;

(d) selecting the high-quality inventions and inventors to encourage innovation and motivate inventors.

14. This is just a brief introduction to the subject of innovations by Chinese academic institutions and enterprises. We understand there is more to learn from the world, and I believe that this Symposium provides a good opportunity for the exchange of views and ideas.

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