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SWOT ANALYSIS OF THE FUNCTIONS OF CHINESE UNIVERSITIES

Guo Chen.¹ and Kusayanagi Shunji.²

1. College of Economics and Management, Harbin University of Science and Technology, China
2. Infrastructure Systems Engineering, Kochi University of Technology, Japan

ABSTRACT: People's Republic of China has been in the transitions stage from planned economy to market economy since 1978 when the government started economic reforms. Human resource developed by educational organizations is the essential condition for a country and its development. In the past, a university was required to have the function of providing higher education to their students and the academic research function was required as the second one. In recent years, university shall be required to have the third function, which is the contribution to society like a form of university-run enterprises. Special attention will be given to the way that these university-run enterprises are created, their industrial distribution, their contribution to the development of indigenous high-tech industries. This function has provided strong incentives and promoting economic development with the modern economic knowledge. The functions of university in economic development of China need policy support of promotion, macro planning, guide and harmonization from local and central governments. The further economic development by using the functions of university shall be required the mutual collaboration among university, industry, research institute, government and other organizations in the local area. The core of this task is that fulfilling close integration of education, science & technology, economy and politics.

KEYWORDS: Functions of Higher Education, SWOT Analysis, Chinese Universities

Chapter 1 Introduction

Shortly after the founding of People's Republic of China, the government took education as a matter of primary importance, and made enhancing the cultural quality of the people the basis of the construction of the nation. Before 1949, China had a population of nearly 500 million, of whom 80% were illiterate. Proceeding from reforming the educational system, the Chinese government made an overall plan and adjusted its educational policies, with the result that the number of students increased rapidly. Currently, 91% of the country has instituted compulsory primary education, nearly 99% of school-age children are enrolled in schools, the dropout rate has decreased and the illiteracy rate of young and middle-aged people has declined to less than 7%. Since the initiation of the reform and opening policies in 1978, marked by the restoration of the higher-education examination system, China's education got on the road to accelerated development. As one of the priorities of China's economic and social development, education is a matter of great concern to the government. The cross-century period is an important phase in China's economic and social development. Giving priority to the development of education is the basis of the two major national strategies of improving the quality of people and rejuvenating the nation by relying on science and education and realizing sustained development. As

human society enters the knowledge and information age, education is expected to play an increasingly important role.

Chapter 2 University-run Enterprise

Nowadays nearly all of the universities in China have affiliated enterprises or firms, they shall be called "University-run enterprises". Those enterprises or firms are established by the universities with their own funds and universities are managing them as the largest shareholders, there are some other cases not only 100% owned by the universities but also joint operation, joint venture and consortiums etc. As shown in Table 2.1, until the end of 2000, 5,451 university-run enterprises have been established in China. 40 of them are already listed on the stock markets.

University-run enterprises came into being since 1950s. Particularly those, which have engineering and science-bases have had university-affiliated factories, which are mainly used for students to get short-term internship or apprenticeship in a real production environment. Also under the "self-sufficient organizational system" for enterprises, universities, and other social institutions in China after the founding of the People's Republic of China, many universities had their own service providers, such as print shops, publishers, guesthouses, and so forth. The real development of university-run

enterprises occurred from the early 1980s to 1990s. During this period, China began to implement reforms and the open door policy, which included encouraging the educational institutions to engage in the economic and social development. Faced with the commercial opportunities in the society and their internal financial needs, the traditional university affiliated service providers began to open up to the general society, while many new services were also created. Most of these operations were focused on technology transfer and development, technology consulting and services ^[1].

Universities have several management resources, such as technologies, brand, human resource, and networks. They have to choose whether to internalize the resources by starting university-run enterprises or externalize them by transferring the resources to the manufacturing firms. Given this situation, the Chinese universities have decided to start their own firms because they were highly motivated to make money through the reforms of Science & Technology scheme that began in 1985 when the government drastically cut fiscal support for academic institutions. The universities also felt they were more competent in industrializing knowledge than the outside manufacturing firms. Therefore, the comparative advantages of mother universities with strong engineering research and talented faculty and students were thought to be an important source of strength for the university-run enterprises. Academic strengths and reputation are another important contributor to the strong growth of university-run enterprises.

Chapter 3 SWOT Analysis of University-run Enterprise

SWOT (strengths, weaknesses, opportunities, and threats) analysis is one of the most effective tools to assess the strategic situation and identify strategic options for organizations or firms. A strength is a resource that the organization can use effectively to achieve its objectives. A weakness is a limitation, fault, or defect in the organization that will keep it from achieving its objectives. An opportunity is any favorable situation in the organization's environment. A threat is any unfavorable situation in the organization's environment that is potentially damaging to its strategy. Thus, the strategy of further development for Chinese university-run enterprises must be based on such analysis (Fig. 3.1).

1. Strengths Analysis

Universities have resources, such as, technologies, brand, human capital, and networks. They have to choose whether to internalize the resources by starting university-run enterprises or externalize them by transferring the resources to the manufacturing firms. Given this situation, the Chinese universities have decided to start their own firms because they were highly motivated to make money through the reforms of Science & Technology (S&T) that began in 1985 when the government drastically cut fiscal support for academic institutions. The universities also felt they were more competent in industrializing knowledge than the outside manufacturing firms. Therefore, the comparative advantages of parent universities with strong engineering research and talented faculty and students were thought to be an important source of strength for the university-run enterprises. Academic strengths and reputation were another important contributor to the strong growth of university-run enterprises.

The main obstacles for transferring technology to outside manufacturing firms were: (1) weak absorptive capacity of manufacturing firms, and (2) under development of the related institutions, such as, information service agency, patent licensing office, intellectual property right protection. In other words, the universities' confidence in their own internal resources results from the high cost of start-up for private enterprises. This cost disadvantage is mainly due to the weak absorptive capacity and underdeveloped business processes. Conversely, the Universities have associated and unique assets which outside firms did not have.

In addition, convenient transportation and cheap real estate are important conditions for starting and running a business. The relatively advanced physical infrastructure universities provide to their affiliated enterprises, preferential policies, financing, and tax exemptions and reductions are offered university-run enterprises by Chinese government^[2].

2. Weaknesses Analysis

Although university-run enterprises have an abundant educated workforce, creative personnel are lacking in certain fields for two reasons: on the one hand, the educational system in China does not emphasize creative thinking and problem-solving skills and mechanisms for innovation are imperfect. For example, share options, a much-discussed factor for universities, industries, and governments, is difficult to apply properly because there is no legal framework for the formation of stock option plans. In addition seasoned professionals with in-depth entrepreneurial, management, financial and investment experience are also in short supply.

The distribution of global high technology now looks like a pyramid. For the IT industry, the U.S. is in the global leading position with most advanced technologies, especially systems software and special chip design. Japan and EU follow closely, having taken over most of the key component markets. Lower down the value chain, Taiwan, South Korea and Singapore are now assuming the role of prominent hardware manufactures. At the bottom of the global production network stands China, which is targeted for redeployment by first-tier, second-tier, and third-tier PC firms. Chinese IT manufacturers in university-run enterprises and science parks are taking the role of assemblers, which makes their profit margin is small. China almost totally relies on the US in the areas of fundamental software and operating systems. Thus, Chinese firms mainly provide Chinese platforms for US products. Only in some areas, such as, Chinese-language word processing, desktop publishing and some application software, have Chinese companies taken a leading development role.

Although Chinese venture capital is burgeoning, especially the large share government funds, both venture capital and venture capitalists are still a scarce. This shortage reflects the fact that there are few worthwhile projects in which to invest. Available projects currently reflect a low level of technological innovations, without abundance of such new and high level technologies, venture capital will not be available. Also equally important is the imperfect financial and legal system. A Venture Capital Law and Investment Law are still lacking in this regard. A lesser obstacle is a shortage of venture capitalists, but these two should be remedied by the first two reasons^[3].

3. Opportunities Analysis

Stable economic growth and a large population make China a prominent and potentially lucrative global market. The large domestic market has played a key role in supporting high-tech industries. Yet, compared to leading economies of the world, the China's technological level is still falls behind. However, by developing technologies that fit in with the demands of domestic market, the Chinese high-tech industries have survived and are growing. Over the past several years, university-run enterprises have maintained their growth momentum in terms of sales and profits, thus contributing significant and tax revenues. Of the 5,451 university enterprises, 2,097 were classified as S & T enterprises. While the number of university-run S&T enterprises was less than half of the total, these enterprises accounted for over three quarters of the total sales in 2000. Also the growth rate of sales, profits, and tax paid for S&T

enterprises were higher than non-university enterprises, and as a result are the backbone of the university-run enterprise system..

4. Threats Analysis

There are two management systems that are used to separate corporate management and the university's main function, that is, education and research. These are the Peking University style and Tsinghua University style. Most of Chinese university-run enterprises belong to Peking University style, Under this style there is an "internal control system" with the University's Department of Management single-handedly taking charge of the management of university-run enterprises. In contrast, Tsinghua University has opted for an "indirect management system" by founding Tsinghua University Enterprises Group as a holding company. In terms of firewall verification, the Tsinghua University style provides greater clarity of responsibility and accountability, and it is better to compete with other industries under such system^[4].

Chapter 4 Functions of Chinese University

Beginning in 1978, along with the dismantling of the planned economy system and the deepening of the reform of the economic system, commodity, capital, labor service and technology markets have appeared one after the other in China. Now China has transformed its planned economy system into an initial socialist market economy system. As a result, the regulatory function of the market has been strengthened tremendously. At the same time, China has carried out a strategy of rejuvenating the nation by relying on science and education. As China has made education a strategic priority development, it has restored use of the higher-education examination system. With more than 20 years' development, China has attained considerable achievements attracting worldwide attention in education and now has walking on the road to accelerated development. A multi-level and multi-format education system comprising all disciplines has taken its initial shape by fitting in with national economic and social development strategies. It basically made 9 years compulsory primary education. The reform in education management Has allowed Universities to grow at an unprecedented rate. With the continuous deepening of the reforms the scale of ordinary institutions of higher education has been greatly developed, and the benefits remarkably enhanced^[5].

The process of transition of Chinese Economy from centrally planned economy to a dynamic socialist economy has led to a series of profound socioeconomic changes and had a strong impact on

the Chinese universities. For example, some universities incubators have been established for promoting an active university-industry interaction and nurturing innovative personnel. Tsinghua University holds a “Pioneer Contest” every year to select innovation achievements that will be incubated in Tsinghua Pioneer Park. This action inspires creative personnel and achievements in the university^[6].

Economic globalization, market forces, administrative decentralization, and information technology have extended the autonomy of social organizations, including educational institutions. New challenges have developed at every level of the education system. In the past, a university had only the primary task of higher education. Academic research became another important function later. In recent years, university has its third function of contribution to society in forms of university-run enterprises. This function has provided strong incentives and promoting economic development with the advent of modern economic knowledge. S&T knowledge from university research to industry can be accomplished through alternative governance forms including: technology exchange markets, patent licensing, cooperative research and development between universities and industry, cooperative research center on or off campus, University Science Park and so on^[7].

University-run enterprises can be likened to a market-like form of knowledge industrialization adopted by highly entrepreneurial academic institutions. Thus technology sales or patent licensing are a hierarchical form of knowledge industrialization adopted by highly entrepreneurial academic institutions.

Chapter 5 University-Government-Industry in China

The transformation in the functions of university, industry, and government is taking place as each institution can increasingly assume the role of the other. The ‘university-government-industry relations’ holds that knowledge infrastructure can be explained in terms of these changing relationships. Arrangements and networks among the three institutional spheres provide input and sustain to science-based innovation processes. In this new configuration, academia can play a role as a source of firm-formation, technological, and regional development, in addition to its traditional role as a provider of trained persons and basic knowledge. The changes in the position of the university in a

knowledge-based regime require an ongoing process of rethinking their functions at the strategic level in terms of evolving university-run enterprise. They can count on government support in order to solve problems at the interfaces between the economic forces of the market, legislation, and knowledge input. The Chinese government has chosen the role of making the political system supportive of the introduction of a market economy and a knowledge-based society. University-run enterprises are taking on the task of students’ study practice as well as promoting economic development, which becomes one of the essential parts of education system. It is beneficial for improving students’ ability of applying book theory into practice, reform of subjects, and enrichment of teaching contents because there is increasing demand in society for qualified college graduate students who are not only good at book theory, but also good in practical field. Under such circumstances, industry can take the role of the university in developing training and research^[8].

University science parks are most productively organized as a cooperative venture among one or more universities, a local government authority, and a consortium of financial institutions interested in enhancing the local innovation environment. Under certain circumstances, the university can take the role of industry, helping to form new firms in incubator facilities. Government can take the role of industry, helping to support these new developments through funding programs and regulations. Industry can take the role of the university in developing training and research, often at the same high level. The network relationships are changing the participating institutions into relatively autonomous yet interdependent spheres. The initial conditions are different in various countries. In the United States, university, industry, and government are becoming less isolated from each other. In many Latin American countries, industries and universities, formerly under strict governmental control, are gaining relative autonomy from the state. In Europe, the unification process paradoxically leads to enhancement of the regional and transnational levels of governance simultaneously, with different effects in the various member states.

Chapter 6 Conclusions

Knowledge is the basic form of capital. Economic growth is driven by the accumulation of knowledge. Technology can raise the return on investment, which explains why developed countries can sustain growth and why developing countries, even those with cheaper labor can not attain growth. Investment can

make technology more valuable and vice versa. It is important in providing an incentive for companies to invest in R&D for technological innovation. In order to make investments in technology, a country must have sufficient human resource. Human resource is the formal education, training and on-the-job learning embodied in the workforce. There are different kinds of knowledge. “Tacit knowledge” is knowledge gained from experience, rather than that installed by formal education and training. In the knowledge economy tacit knowledge is as important as formal, structured and explicit knowledge. According to New Growth economics a country’s capacity to take advantage of the knowledge economy depends on how quickly it can become a “learning economy”. Learning means not only using new technologies to access global knowledge, it also means using them to communicate with other people about innovation. In the “learning economy”, individuals, firms, and countries will be able to create wealth in proportion to their capacity to learn and share innovation. To become knowledge driven, companies must learn how to recognize changes in intellectual capital in the worth of their business. A firm’s intellectual capital include employees’ knowledge, know-how, and processes, as well as their ability to continuously improve those processes, these are sources of competitive advantage.

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**Table 2.1 General Statistics of University-run Enterprises in China
(Year: 2000)**

Category Items		Ratio (%)	Income (RMB\Billion)	Profit (RMB\Billion)	Tax Paying (RMB\Billion)
Type of Business	Manufacture	36.6	28.61	2.66	1.54
	Trade & Related Service	15.6	4.35	0.24	0.16
	Others	47.8	15.50	1.66	0.85
Type of Ownership	University-owned	87.9	32.18	2.51	1.61
	Joint Ventures with Domestic Partners	10.2	14.37	1.81	0.83
	Joint Ventures with Foreign Partners	1.9	1.90	0.24	0.11
Type of Management Control	Belong to University	77.4	45.53	4.38	2.41
	Belong to School, Department or Institute	22.6	2.93	0.18	0.13

(Source: “Science & Technology Development Center, Ministry of Education, China”)

Fig. 3.1 SWOT Analysis of Chinese University-run Enterprises

