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Fostering Innovation to Bolster Economic Growth: Opportunities and Challenges for China's Economic Policy

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Abstract- **Fostering Innovation to cater to the needs of rapid economic growth has been a challenge for Chinese policy makers. Universities have been relied on to incorporate a culture of innovation in their education and research programs but many challenges remain.**

Keywords- **PRC; Innovation, Economic Growth, Higher Education.**

I. Introduction

China' role in the global economy has increased over the past decade. Due to the global recession which started in the latter part of the last decade, and economic uncertainties which followed, China's economic growth attracted even more attention of governments, businesses and academicians. This was due to the belief that China could play a major role in reviving and stabilizing the global economy. However, insufficient domestic innovation and product development has obstructed China's rapid economic growth.

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Historically, innovation has played a major role in economic development. The high rate of innovation and product development in the U.S. played a key role in the American economic development during the 20th century. Since only a very small percent of the new products copyrighted in the U.S. were put into production by American companies, many American innovators went initially to Japanese companies and then to other foreign investors. This fact played a critical role in economic developments of Japan, other Asian countries and ultimately the global economy. Many have claimed that this trend also played a major role in downgrading American Economy, in conjunction with reduction is government spending on education and R&D, reemphasizing the importance of innovation in economic growth (*Economist* 2011, August 1; *Economist* 2011, August 9).

To accommodate economic growth and to address the problem of insufficient domestic innovation and product development, Chinese government has launched a program aimed at increasing domestic innovation. Universities have been chosen to play a major role in implementing this program. The program plans to reduce China's dependence on foreign innovation by increasing domestic creativity and product development.

The purpose of this paper is to study PRCs attempts to foster domestic innovation needed for its economic growth and the role assigned to the higher education in accomplishing this goal.

II. China's Economic Growth, Innovation and Role of Higher Education

During the post WWII era, the United States witnessed the passage of several legislations making the universities the major vehicle for expansion of research as well as training of the workforce for industry. Government funding for the scientific research and other programs led to an explosion of the American universities capabilities, which consequently produced the strongest engineering and business programs in the world. The purpose of this strategy was to feed industry research outcomes and trained personnel, as well as, to help it build its own innovative capacity in long run (Mowery and Rosenberg 1993). Although the initial beneficiaries of these government legislations and initiatives were large businesses, universities later served the function of helping small businesses develop their innovative and structural capacities. During 1980s, Bayh/Dole University and Small Business Patent Act and Stevenson/Wydler Technology Innovation Act reaffirmed this role for higher education institutions.

Other government followed the American entrepreneurial model for their economic development although they still relied heavily on importing both technology and education from the United States (Baraddock 2003). In China, given the closer relation between the government and industry, this role was more emphatically passed to the public universities. Historically, Chinese higher education has played a major role in the country's economic development; however, this role has varied in intensity and direction over time.

Between 1949 and 1979, China followed a centrally planned system of research, production and distribution in its economy. This Soviet style of economic development assigned research, production and distribution of products to separate ministries. Ministry of Science and Technology handled non-defense research and innovation with Chinese Academy of Science playing a key role in promoting and coordinating R&D activities. The main vehicle used for R&D was state universities. Ministry of Education was in charge of higher education and vocational training. Also Ministries for specific industries interacted and supervised university research in their related industries. Given the centralized characteristic of the government, this multidirectional supervision created confusion and lack of cooperation among university programs and activities. Central government attempted to solve this problem by dividing universities into specialized categories such as comprehensive, normal, medical, polytechnic and other universities. This move stifled cross-disciplinary works and contacts and further divided universities into teaching and research institutions.

For past several decades China adopted an American model for its economic development. Starting 1980s the rate of change from a centralized, Soviet-style, economy to a decentralized approach has accelerated. This change called for a dramatic reform and restructuring of government and higher education institutions and emergence of the private sector as the engine of economic growth. To conduct needed research and to establish programs to foster innovation, a close cooperation among universities, research institutes and business enterprises has been encouraged. In recent years, government spending on R&D as a percentage of Growth Domestic Product has dramatically increased. This ration is now between 1.5 to 2 percent, compared to an average of less than 1 percent for developing economies (Zhao 2012). China also has encouraged private financing of university research. In a speech in 2011 in the 100 anniversary conference for Tsinghua University, President Hu Jianto announced that China would encourage universities, research institutes and enterprises to join to promote collaborative innovation (Zhao, 2012). This announcement was followed by two four-year plans, Plan 2011, by Ministry of Education and Ministry of Finance. This plan makes universities the major vehicle to attract scientific research. Chinese universities, partnered with American institutes of higher education and other international universities, have launched seminars, degree program and other cooperative efforts aimed at promoting innovation (*Information Management Newsletter*, 2012; *Global Digital Economy*, 2012; *Wisconsin China Initiative*, 2012; USF 2012). The plan has attracted attention of both supporters and critics (*Economis*t, September 6, 2011).

Presently, it is estimated that PRC is the second among nations, after the U.S., in terms of investment in R&D as well as number of researchers. Consequentially, it is estimated that between 1995 to 2006, the number of patents granted as the result of university research increased by 10 percent (MOST, 2007). The role of the universities has gone through major changes by consolidating public universities,

establishing private universities and emphasizing three Cs (commercialization, competition and cooperation) and three Ds (decentralization, depoliticization and diversity). These changes encouraged closer relation between the universities and the industry, which has led to restructuring of university curricula and introduction of new courses to serve industrial needs (Xue 2006). The restructured programs have aimed at development of curricula and courses which emphasized innovation and research.

China claims that it has overtaken America again by its patent office receiving more applications than any other country's in 2011 (*Economist* January 3. 2013). However, China's rapid economic growth continues and its need for domestic innovation is far from satisfied. This is partially due to the fact that universities have not reached their potentials in promoting research since they are trapped in their traditional role of providing education.

III. The Circle of Innovation

The solution to the problem of innovation for Chinese industry is nothing unique. During its peak, the American auto industry continually struggled with looking for innovation. The decline of this industry has been historically attributed to the loss of innovation. Increasing oil prices in 1970s led to increased demand for smaller, more gas-efficient, automobiles. American car manufacturers were no able to respond to the customer demand in time, mainly due to their lack of access to the needed technology- a fact caused by the loss of management foresight to invest in innovation

A. Peters' Model

Tom Peters, the management guru of this industry and the advisor to the GM president, has argued that innovation is the only survival strategy for business (Peters 2000). In his *Circle of Innovation*, drawn from a quote from Lew Patt, chairman of the Hewlett-Packard (Sheridan 1994), he argues that whatever made business success in the past will not work in the future. He emphasizes that creating a culture of innovation is not only needed to keep competitive edge but in fact necessary to secure a survival strategy. Developing such a culture requires several understandings and changes. It requires the realization that incrementalism is innovation's worse enemy. Instead of cost cutting, focus should be on augmenting the top line (quality). Destruction is necessary for constructing a more competitive business and should be welcomed. Forgetting the past (traditions and rules) is the way to embrace the future. Transforming jobholders into full-fledged businesspersons is needed. This requires turning jobs into businesses and empowering employees to make critical decisions.

Peters also suggests that a white-collar revolution is necessary. Instead of loyalty to the company and praising its accomplishments, staff should be encouraged to criticize and look for better ways to do things. Turning staff units into vital centers of intellectual capital accumulation enhances creativity and competitiveness. Utilizing networking and making sure its transparency is secured. Peters believes the days of large organizations are over and subcontracting is the name of the game. This new approach takes advantage of capitalism and stays away from large and bureaucratic organizations that top management loves. Organizations without employees are the form of the future organizations which goes and one step beyond "flat" organizations.

Expanding on networking, he suggests development of a holistic system beyond nuts and bolts based on old-fashioned engineering concepts. Culture of innovation requires creating waves of lust for products company produces and services it sells. He believes emphasizing quality is not enough, a lust for innovating new product s and customer service should be built. Creating and emphasizing branding is needed even is small companies which think they are not large enough to get public attention.

In developing brands and product features, companies should understand that women are the buyers. Focus on women needs as purchases of society has hardly been utilized and an advantage companies can capitalize on. Design should be continuously emphasized. Paying attention to details, such as color, form, etc., is the key to branding and beating competition. However, the companies should stay away serving a specific market. Looking into the whole market reduces the risk of losing market niche in an ever-changing market and takes advantage of market segments ignored by

competition.
In hiring, Peters suggests, companies should look for employees who have revolutionary and renewing mindsets. This can be done by emphasizing diversity in hiring and creating renewal programs based on talents the company has hired. Leaders, he recommends, should emphasize a sharp (laser-like) focus, be transformational and tell the truth. They need to live on a fringe (Peters 2000).

American car manufacturers were guilty of ignoring almost all of these recommendations. They also had a domestic view of production and market. A need for a global, instead of a local, perspective would capitalize on learning from other cultures, and fostering innovation.

B. Chinese Challenges

The need for creating a global culture of innovation is hardly debated today; the global structure of business witnesses a move in this direction. Factors such as transferability of talent, cross-country flow of new products and patents and, instant flow of information made possible by internet technology, have pushed business in this direction. Although China's economic growth has nurtured on global market and global business knowhow and talent, its efforts in embracing a global culture of innovation is debatable. Despite China's attempts to foster innovation, China's tradition of business practices has created many obstacles in adopting attributes suggested for the Circle of Innovation.

Lower costs have been the main force than has drawn global companies to China. Cheap cost of labor has been the main factor which has given Chinese business its competitive advantage. Chinese businesses are mostly at the early stages of setting up their operations; therefore, standardization, not focus on quality, is the major concern. However, low-quality image associated with many Chinese products is a major obstacle in reaching global market. Chinese businesses which have acquired some experience with global customers have found out that improving quality is a must in establishing a long-term relationship with customers.

Although China has gone through major changes in past decades, to many newly established businesses, destruction is unthinkable. Destruction involves costs for retooling, changing marketing programs, restructuring the formal structure, etc. Some Chinese companies have used modern technology and production techniques but these had to be catered to the traditional culture and management of their businesses. Many Chinese companies lack the experience and knowledge on how to use the modern technology and knowhow they have imported. There is also resistance inside the company and pressure from outside to conform to traditional ways of conducting business. Forgetting the past, traditions and rules, is easier said than done in China.

Transforming jobholders into businesspersons with empowered authority to made decentralized decisions is not welcomed in Chinese tradition. Although Chinese have a long history of business, their management culture has been centralized, leadership authoritative and proper role of employee to follow orders. The root of this culture is in traditional family values and roles which are reinforced through schools and structured into the business organizations. Moving to a more democratic and decentralized culture would take time and requires commitment and strenuous efforts by teachers as well as business owner and managers.

Company loyalty and praise of its accomplishments has long been promoted in Chinese organizations. This expectation was rooted in Chinese tradition and was reinforced after the communist revolution. Formalization, centralization and bureaucratic attributes of government organizations required predictability and stability, which was ensured by following orders and loyalty to the organization. Encouraging criticism to reinforce creativity contradicts management practices and faces major obstacles from many sources. Management and employee training programs can promote change and creative thinking. Universities can play a major role here by rearranging their curricula to embrace a more entrepreneurial approach and change the teaching in classroom from a traditional lecture-based method to case studies, outcome-based reports and projects and, group decision making.

Subcontracting and use of networking is practiced by Chinese business. However, the idea of organization without employees is inconsistent with the needs of Chinese society and a major reason behind the country's economic development. As the cost of labor increases in China, this issue may become a concern for Chinese companies, however.

Moving away from an engineering concept of an organizational system to a more holistic one is new to China. Historically government-run organizations were built on engineering concepts and attention to details was emphasized. A holistic approach is often seen as chaotic and is difficult to understand by Chinese. The authoritative and definitive mentality promoted by both broader and specific business cultures negates the importance of this approach. Again education and training is the key to understanding and developing the capacity for the holistic system of running a business. This is a necessity for Chinese economy to evolve in order to ensure its continued growth.

Chinese culture is male dominated and women play only a subservient role. Although women's rights and positions in society and workplace have been increasing due to the Western influence, and prior to that by the communist revolution, there has been a resistance from the traditional culture to these changes. Since 1970s some traditional values have reemerged despite influences of Western values which promote equality of women. The role of the woman as the purchaser can hardly be discounted. Chinese business can benefit from Peters' advice.

Emphasis on design and branding is more of a future concern for Chinese companies. The main obstacle to this development is the low-quality image of Chinese products. Dealing with this distracting image requires business commitment and governmental efforts to enforce quality-control programs. Staying away from developing a niche at this stage of development is not practical for Chinese businesses. Taking advantage of the "whole" also requires substantial financial resources which many small-scale Chinese businesses do not have access to. However, Chinese management should be aware of the changes in its niche and customer base in an ever-changing environment. Too much dependence on a small market or a specific group of customers poses a risk for small Chinese companies with limited resources.

Lack of diversity in hiring is a problem in Chinese businesses. Chinese government imposes pressure on domestic companies to create jobs and employ domestic workforce. Additionally, many companies cannot afford higher pay of importing workforce from industrial nations, who can provide the talent they need. Some even do not see any benefit from hiring from other countries while cheaper domestic employees are abundant. However, the cultural uniformity of Chinese and an educational system which promotes conformity are major obstacles to diversity to promote creativity. In short run, China is left with no choice but to import needed skills from other industrial countries. Meanwhile it should gear up its educational institutes and provide government support to promote innovation and creative thinking to meet its long-term needs.

Honesty and transparency in responding to market, particularly to global customers, is a new perspective that Chinese business needs to develop. Chinese business education again can play an important role in promoting this understanding by providing course in business ethics, integrating ethical issues in various college courses and training programs for both teachers and students. This is a change which also requires business owners and managers to develop an understanding of importance of honest and transparence conducts in global business.

IV. Conclusion

Need for innovation has been a major obstacle to the booming Chinese economic growth. Chinese government has relied heavily on domestic universities to respond to this need. Although the need for innovation has been addressed in governmental plans for higher education and consequently universities have attempted to revise their programs and courses, presently existing programs and course fall short of the needs of the economic system. Joint programs with foreign universities and other institutes have helped China but the effort needs to be expanded. American and European business schools provide valuable resources due to their experience in entrepreneurship and research programs.

Further study of programs and courses in Chinese institutes of higher education is needed to throw a clearer light into the status of these programs. Proper study should be longitudinal and consider the ever-changing environment of China.

References

Available upon Request.