Managing innovation is one of the key strategic tasks facing organizations. The question is not whether or not to innovate, but rather how to do so successfully. Low-cost labour countries joining the competition demand ever-higher standards of quality, speed, and responsiveness, and innovativeness has become a critical factor for a company's competitive advantage. China has been known as the largest manufacturer in the world but the technological capabilities of Chinese enterprises are generally not yet considered high. Are Chinese firms ready for the innovation competition after some 30 years of high economic growth?

A recent study looked into whether there are innovation mechanisms in place in Chinese enterprises, and investigated their influence, and that of government policy, on innovation performance.

The study examined different types of ownership, and focused on innovation in the Chinese firms as a whole. This is because the non-state-owned sector already produces two-thirds of China's gross domestic product, and the number of state-owned enterprises (SOEs) is shrinking rapidly. Since 1997, the government has focused on the development of new ownership structures as a key component in the reform of public sector enterprises.

Drivers

The high percentage of responses that cited that “the customer asks for it (i.e. innovation) and it matches the development of the enterprise” indicates that market power drives the Chinese enterprises to carry out technological innovation. According to the Chinese managers, the increasingly open market and the customers' demands make an enterprise innovate.

The contribution of technological innovation towards opening a new market or expanding old market share is considered very high.

According to the respondents, the new ideas for innovation are mainly coming from three sources:

1. the end-user
2. the organization itself
3. the competitor

Suppliers, purchased technologies, and research institutions are less important sources of new ideas.

Product and process innovation

Chinese enterprises predominantly product innovate. A few enterprises said that their companies were active in both product innovation and process innovation.
Technology acquisition

Historically, Chinese enterprises imported technology from abroad. This trend persists.

However, over two thirds of the investigated enterprises said that they had technology cooperative agreements signed with other firms, universities, or scientific institutions, and half had the option of technology acquisition. However, the responded enterprises believed that independent innovation was the first source of technology for them, followed by imitation and assimilation, then improvement, and importation from abroad.

Innovated technology is mostly developed in-house, followed by collaborative R&D, and imported technology. Half of the enterprises do not have dedicated R&D.

Human/financial resource

Technological innovation demands capital input. The investigated Chinese enterprises were the main sponsors in financing technological innovation in the company itself.

Innovation mechanisms

In terms of innovation mechanisms, big gaps exist between the SOEs and non-SOEs. Usage of management and design tools in the product development process differs, as does whether there are mechanisms in place to ensure early involvement of all departments in developing new products/processes. To a certain extent, there are innovation mechanisms in place in the Chinese firms, but there is room for improvement.

Innovation strategy

Almost 80 per cent of the respondents replied that their company’s innovation strategy was that of the market follower or imitator, rather than being market leaders.

Market share

Firms innovate in response to environmental demands or opportunistically to shape the environment, thus the market factors and technical possibilities are commonplace in stimulating innovation. The market factor definitely triggers the Chinese companies to carry out innovation. This results in introducing new products to existing markets, with the major market still in China and Asia. All of the sample companies produce for the Chinese market, and almost half of them export to other parts of Asia. However, a new market, either in different regions of China or Asia, or even in Europe and in the USA, is quite attractive to the Chinese companies.

Globalization of the market is becoming another trigger for the Chinese enterprises. Many have exported to the Asian market already with a certain market share. Very few already have a market share in Europe or in the USA, but many want to enter these new international markets in the near future.

To meet the market demands, more than 95 per cent of the responded enterprises have planning for the next generation of product, in which 50 per cent have even long-term planning for more than two generations of products. Only 5 per cent of the participants believe that their enterprises have no product innovation planning.

All managers participated in this survey think that their enterprises have conducted innovation activities in one way or another. In regard to the level of product/process innovation (i.e. the “newness”), “New to the industry” have been generally considered
by the Chinese managers (71.4 percent). “New to the world” or world-class mentality is hardly found in the firms.

**Innovation performance measures**

The enterprises investigated indicate that their development resources are mainly allocated to breakthroughs/new products. The platform or core development projects, which typically have a design life of several years and establish the basic architecture for a set of follow-on derivative projects, receive low development resources.

**Market factors drive the Chinese enterprises to innovate**

It is not the technological possibilities, government projects or financing, or the accumulation of managerial experience that stimulates the desire to innovate, but the drive to satisfy customers and for a new, bigger market share. The companies have become more and more market-oriented in this sense.

However, government innovation policies significantly affect a company’s innovation performance. The more support from the government, the better the performance.

**R&D input is high**

Technological innovation, at least the awareness of innovation, has been on the Chinese enterprise management agenda for some years, and is an important corporate strategy. This is a marked difference from earlier research.

Enterprises with a rapid product upgrade pay more attention to R&D. For example, enterprises in telecommunication and bio-medical technology put much more into R&D in terms of staffing and budget.

However, most of the Chinese enterprises are not motivated to be the market leader in terms of R&D. Low technological capability could be one reason for this, and the high expense and risks associated with being a pioneer could be another. Given time, the Chinese companies could move on from choosing to be the (early) market follower, or adopting a me-too strategy, to becoming market pioneers.

**Start-up SMEs have a head start in technological innovation**

During the research, the team visited a number of start-up SMEs, and found that those SME managers have good professional and educational backgrounds. A few of them even worked as technology engineers for large multinational companies before they started up their own company. Their unique working experience let them quickly find the market niche. They could provide the customers with lower cost but quality on a par with the foreign companies. These managers were always seeking for innovative products, ready for service innovation and accepting managerial innovation.

China's entry into the world trade organization provides not only the SOEs but also the SMEs with an international view on good practices and benchmarks. Their learning spirit and flexibility, the innovation environment and government-financed projects make for successful firms. These SMEs are adopting the technology strategy of imitation, assimilation, and improvement.

**Weak product portfolios**

Only 19 per cent of the studied projects were focusing on platform or next generation product/process development. This indicates a lack of strong R&D, and thus lack of technology core competency.
The production principles (namely, design-to-order, engineer-to-order, manufacture-to-order, assembly-to-order, and produce-to-stock) led us to believe that the enterprises have to get in tune with the customers’ demands. Design-to-order and manufacture-to-order were prevalent. It may mean that the technology of the enterprises is not strong enough to lead the customers’ needs, and the balanced portfolio of development projects. Perhaps the Chinese enterprises do not yet have the capability to shape the environment as they desire. They seem to throw new products onto the market one after another – a bad thing for the sustainable development of the company and the national economy.

**Enterprises are now the major innovation entities**

In the past, it was non-stop for projects in the SOEs because the government allocated their key projects and capital. Rich in capital, strong in R&D and production capability, with the orders coming from the government, this kept the SOEs’ market share stable and the businesses successively profitable. In the past decade, the enterprise financing system has changed. The survey showed that nearly 90 per cent of the enterprises used their own profits for technological innovation. The percentage of government capital for innovation is decreasing, but it is still playing an important role. More than half of the enterprises regard the government’s privileged loan policies and tax deduction policy as being very important to them.

China is moving towards a market economy, and the SMEs are becoming the main players. This phenomenon is becoming more and more obvious in China, which makes the Chinese government pay greater attention to SME development and financing. Banks are lowering the financing entry for SMEs, and the Ministry of Science and Technology (MOST) has special funds earmarked for SME technological innovation. The sources of financing for SMEs have become broader.

Whilst innovation mechanisms and the government’s innovation policies significantly influence the innovation performance of the Chinese enterprises, the government's role is no longer to sponsor firms’ R&D. However, the relevant policies create the innovation environment nation-wide, and push the Chinese enterprises towards increased R&D and commercialization. Conversely, because of the bottleneck effect of some core technology competences, the Chinese industries are using access to the market in exchange for increased technological capacity. In China, market factor means not only customer satisfaction and market competition, but also the new technology penetration of the multinationals.

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