

# Locational Factors and the Development of High-Tech Start-ups in China

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## Introduction

Geography, institutions and business services shape the development of current knowledge-based economies. Geography matters because knowledge doesn't move frictionless among economic actors (Von Hippel 1994; Asheim 1994; Storper 1997). Important parts of knowledge are tacit, and embedded in the routines of individuals and organizations in different places. Institutions matter because they shape the environment for the production and employment of new knowledge. Business services matter since they support sustained learning and knowledge transfer between different actors in an innovation system (Saxenian 1994; Mytelka & Farinelli 2000), especially for developing countries (Dornberger 2000; Li 2003).

This paper discussed the influence of the location for the development of high-tech enterprises in China. By using original firm-level data, the article examines the determinants of location choice, measured by geographic factors, institutional factors and business services performance, for Chinese technology-based start-up firms.

## The Empirical Study

The field study was conducted in the Nanshan district of Shenzhen, one of the top high-tech cities in China. Only firms that were enrolled as new business ventures in five business incubators in Nanshan district were analysed. Among the 74 investigated enterprises, about 28% are working in the IT industry, around 22% are related to biotechnology, 14% from the electronic industry and 12% are software firms. Most of them had been established for 2-5 years (65.8%). The investigated start-ups are small in general. The R&D intensity is very high for most of the sample companies. About 54% of the investigated start-ups invested more than 10% of their turnover in R&D.

The field study focuses on the correlation between enterprise development and various locational factors. The development of new business ventures were measured based on current turnover and the growth potential of high-tech start-ups (measured by the overall development tendency, percentage of investment in R&D to total turnover and the number of new products and innovations in the past 3 years).

Three sets of locational factors are employed from current new economy geography, new institutionalism and innovation literatures. They are labeled as geographic factors, local institutional quality and business service performance (see table 1).

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**Table 1: Selected Locational Factors for the Empirical Study**

<b>Classification</b>	<b>Main Factors</b>
<b>Geography</b>	Transport cost; Proximity to supplier and customer
<b>Local Institution Quality</b>	Government effectiveness; Rule of law; Institutional support
<b>Business Service Performance</b>	BS demand; BS supply; BS linkage

The data collected from the field research were analysed by the SPSS version 12.0. The Spearman correlation coefficient was applied for correlation analysis.

## **Results**

Findings from the empirical study show that proximity to suppliers and customers, implying by frequent information exchange, and access to qualified human work force are essential for the development of high-tech start-ups in China. The correlation between high-tech ventures development and local institution quality are not significant. It indicates that the government efficiency, rule of law and the support from various local institutions are not essential for the performance of start-ups. The performance of local business services shows a weak influence on the development of high-tech start-ups in Shenzhen. Neither does the quality of local business services play a significant role in start-up's location choice.

The answers to the question: "why the start-ups decided to establish in Shenzhen" gives a further footnote to the results of the correlation analysis. This question has listed fifteen locational factors to investigate in which degree they are applying to the situation of the enterprises' location decision. Factors like "The prosperity of the industry", "Sufficient suppliers for production materials and services", "The mentality here is very open" and "Company founder is a native here/has many personal contacts" are the major reasons that attract the start-ups to locate in Shenzhen. Similarly as demonstrated in the correlation analysis, institutional factors and business service performance are less essential for firms to come to Shenzhen. It is also important to note that the classical "low wage" and "labour pool" argument doesn't apply to the case of Shenzhen. Many enterprises decided to go to Shenzhen not because that the labour cost is low there. Start-ups are also aware that there are not sufficient skilled workers in Shenzhen.

Apart from the questions concerning locational factors, the investigated firms were asked about the main difficulties for further development. Many start-ups express their worry in finding qualified personal in the future. Increasing competition from other cities, the high living costs and the resident registration system in Shenzhen has slow down the movement of skilled workers to Shenzhen. Given the relative uncompetitive wages in comparison with large companies, qualified human capital shines to be the bottleneck of development for most of the high-tech start-ups.

## Discussion

Globalization and the opening-up policy has made Shenzhen one of first special economic zones and the production base for international export in China. Both the central and local government (in this case the municipal government of Shenzhen) have made much endeavour to encourage the participation of local industries in the global economy and provided better institutional support to develop endogenous technological firms. However, the effect of such endeavour on firms' development seems to be limited. The empirical study shows that, the correlation between the high-tech venture development and local institution quality is not significant. The location decision of high-tech start-ups in Shenzhen has based more on their local social contacts and the market forces (industry development, proximity to suppliers etc.), than on the development of local institutions (support from local government, functional financial markets, strong R&D backup, professional intermediaries etc.).

One reason for this situation in Shenzhen could be the privileged role of large and state-owned enterprises in the institutional support system in China. As Li (2003) already pointed out, large enterprises have generally direct channels of cooperation with state institutions. Therefore the importance of institutional factors to enterprise development differs by the development stage and/or status of the enterprise. Young high-tech companies are not in the focus of the institutional support system in China which still prefers large state-owned companies or foreign co-operations.

The performance of local business services shows a weak influence on the development of high-tech start-ups in Shenzhen. Neither does the quality of local business services play a significant role in start-up's location choice. The reason lies fundamentally in the low services quality of private BS providers. Traditionally, the development of the service sector is strictly regulated from the government in China. The state-initiated "technology market", "high-tech industrial zone" and "innovation centre" still dominate the supply trigger in the high-tech zones in China. Private companies have difficulties to provide high quality business service at reasonable prices. The limited competition between service providers leads to the low quality of BS provision. Young high-tech firms would rather solve their complex problem alone instead of using external services.

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