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Pan Pacific Conference Proceedings

THE SINGAPORE EDGE IN INDIA'S SILICON VALLEY: NEW INSIGHTS?

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ABSTRACT

Singapore's regionalization stratagem has led to the establishment of industrial, business and technology parks in Asian countries. The IT-focused International Technology Park Limited (ITPL) in Bangalore was the prototype of Singapore's strategic initiative in India. Ten years on, the ITPL experiment has had some 'measured' success. Our study will revisit the ITPL experience, and present new evidence drawn from on-site surveys and interviews in ITPL and a competitor park, Electronics City. We will explore the propositions that this flagship project is sufficiently well-positioned to maintain its commercial competitiveness, and that this 'business' model can be replicated in other Indian cities.

INTRODUCTION

Singapore's regionalization stratagem led to the establishment of industrial parks in Asia as she moves towards growth by utilizing its core competencies – efficient infrastructural development and corrupt-free administration – in regional markets which offers complementary comparative advantages. Singapore lends her core competencies in setting up "Singapore-styled" environment in emerging Asian economies [6] so as to encourage Singapore-based multi-nationals and local companies to set up their operations there. This strategy has proved successful that it extended its success model to setting up technology parks in Asian cities.

India, conversely, wanted to hone her knowledge intensive workforce so as to achieve the aim of making India a global information technology power as well as one of the largest generator and exporter of software in the world. To achieve the aim, Indian government set up the Software Technology Parks of India (STPI) in 1991. Six years later, the Karnataka state first announced an IT policy which acted as a catalyst for the growth of IT industry in the state [5].

This paper examines Singapore's technology park project in Bangalore, India, viz-a-viz other IT parks that have developed in the city. To provide the context for this discussion, the theoretical considerations underpinning the experiment in Bangalore are sketched, followed with a deeper understanding of the Bangalore case-study parks, International Technology Park Limited (ITPL) and its competitor park, Electronics City. The analyses are reinforced by on site survey results gathered and in-depth case studies.

THEORETICAL CONSIDERATION

The motivation behind Singapore's regionalization strategy is being illustrated by Dunning's Investment Development Path. The model suggests that that countries advance through five stages of development which relate to different level of net outward investment [1]. Countries in the more advanced stages of development will have to increase their outward FDI in order to achieve greater economic growth. In the case of Singapore, the internationalization stratagem was encapsulated through the development of industrial and technology parks abroad.

Porter emphasizes the prominence of location in competitive advantage in an increasingly complex, knowledge-based, and dynamic economy, as evidenced by the prevalence of clusters [3]. Although changes in technology have diminished many traditional roles of location (i.e. natural factor endowments and access to inputs), location remains crucial because of agglomeration and cluster benefits. These include important linkages and complementarities, knowledge spillovers, efficient infrastructure and specialized labor [2] [4].

THE SILICON VALLEY OF THE EAST

Bangalore is well known for its high tech industries. About 20,000 to 30,000 software engineers reportedly graduate from Indian universities every year, and Bangalore has often been something of a hunting ground for companies and MNCs seeking low-cost IT specialists. The concentration of IT professionals makes this city a land of opportunity for technology companies to flourish. Technology parks such as ITPL and EC become important for these companies.

International Technology Park Limited (ITPL)

ITPL, located 18 km away from Bangalore, was positioned as a forerunner for a new generation of Singapore-developed IT parks in India. The park was mooted, in 1992, by the then Singapore Prime Minister Goh Chok Tong and Indian Premier, P.V. Narasimha Rao. Construction commenced in 1994 and the park was officially inaugurated in 2000. ITPL's development adopts the Singapore-styled, integrated 'work, live and play' concept. More distinctively, ITPL guarantees uninterrupted telecommunication facilities and power-supply, immediate-occupancy business incubator space, and the formulaic 'one-stop' service; features designed to boost the park's

attractiveness to potential tenants in the targeted IT and high-tech industries. To-date, ITPL houses 106 companies employing around 12,000 people. More than half these tenants are represented by wholly foreign-owned firms, including several major global players such as AOL, and Infineon. More than 70 percent of ITPL's tenants are involved in software development, integrated circuit design, research and development and precision technology.

Electronic City (EC)

Electronics City is an industrial park spread over 330 acres, exclusively meant for electronics and the IT industries. It was mooted by Software Technology Parks India (STPI) in 1991, but was only promoted as software and IT hub in 1994. Presently, it houses more than 100 companies including IT industry leaders such as Infosys, and Siemens. The area is maintained by Keonics, a government-linked management company, which provides the entire necessary infrastructure. STPI is also headquartered in Electronics City to be in close proximity with the movements of the industry. The key difference in ITPL and Electronics City is that Electronics City is a hub city that houses different IT and electronics companies in their own private buildings. Smaller companies cluster together in state-owned buildings for very low rental rates and basic facilities.

EMPIRICAL FINDINGS

In order to assess the impact of the various pull factors and constraints faces, as a measure of ITPL's success, surveys of the tenants of ITPL and Electronic City were administered in December 2004. 40 door-to-door survey questionnaires were completed – 14 from ITPL and 26 from EC. 3 of the ITPL and 19 of the EC firms are wholly-Indian owned, while the rest are either joint venture or foreign. 7 surveyed ITPL firms and 18 surveyed EC firms each employs less than 100 people.

From the result of the binary logistic regression, we seek to ascertain whether firms choosing one particular factor in the question will be more likely to be from ITPL or EC, *ceteris paribus*. When the coefficient of the estimates is positive, firms picking the factors are more likely to be from ITPL and when the coefficient is negative, they are more likely to be from EC.

Factors affecting tenants' choice to locate

Investment incentive is the factor selected by more tenants from EC, compared to those from ITPL. This is also supported by the negative and statistically significant α_2 . These incentives appeal to the EC's target market, the start-ups and SMEs, which find every incentive important in helping them to increase their survival rate. ITPL, on the other hand targets more of the established companies, which may not require the incentives.

In addition, we also see that agglomeration plays a significant role in EC's attractiveness to investors.

Presence of major buyers and competitors affected many EC tenants when they decided to locate there, evident from negative α_4 and α_5 . Clearly, EC caters mostly to electronic companies which value being close to their buyers and competitors.

The positive and statistically significant α_3 (=2.543) suggests that reliable infrastructure facilities are more important factors for ITPL tenants compared to EC tenants when they decide to locate in the parks. This is not surprising, as ITPL has successfully made a link between its Singapore connection and Singapore's edge in its reliable infrastructure. Investors who recognized this are likely to favor ITPL.

TABLE 1 Result of Logistic Regression

Variable	ITPL f	EC f	Binary logistic estimates	
			α_i	p-value
Support from local authority	6	15	-0.662	0.470
Investment incentives	4	15	-2.122	0.045 ^(5%)
Reliable infrastructure	9	11	2.543	0.023 ^(5%)
Presence of major buyer	2	9	-2.632	0.029 ^(5%)
Presence of major competitors	1	7	-2.399	0.075 ^(10%)
Constant	N.A	N.A	0.299	0.732

Case Study

To provide a holistic picture of the parks, four case studies (2 from each park) are presented.

ITPL - Company A – Large

Company A serves as low-cost software development and customer service centre of a US interactive services company. The company employs over 1,000 employees in ITPL to service 35 million global online subscribers. Its 110,000 square feet facility is well equipped to effectively and professionally handle services. The one-stop center concept and modern infrastructure are consistent with the international image of the company. Furthermore, the company enjoys significant cost savings as the costs of the infrastructure are shared by all of the companies in ITPL and not just solely company A. The presence of like-minded individuals in the software cluster offers an excellent breeding ground for the exchange of ideas as well as to remain competitive in retaining the best brains. Nevertheless, the company do face high labor turnover as the demand for IT professionals heightens.

ITPL – Company B - Small

Company B is involved is software development for its US parent company, which is a premiere provider for wireless and enterprise networks. When it was first set up in 2002, it found ITPL to be the best location choice as there were no close competitors. Many advantages offered by ITPL affected Company B's choice of location. ITPL allowed built-to-suit facilities for the company and provided full services for all its tenants – from shuttle bus services to travel services. It was also away from the hustle of the city. A key issue

faced is the employment and retention of labor. As the demand for IT professional propels further, this is going to be a major problem especially for smaller companies.

Electronics City – Company C - Large

Company C is a subsidiary of a German company. It handles 60-70% of its global software development. Its core business area in Bangalore is developing customized healthcare software for its clients. The company employs 1100 employees in Bangalore alone. According to the company, the presence of the government IT body, STPI in Electronics City is an advantage. They provide the basic necessities such as satellite communications and the infrastructure. The clustering of the big companies in EC gives these companies a high influential power over STPI to bring about change or to make favorable decisions to their advantage. When ITPL was set up in 1994, the company would very much prefer to stay where they are, where they have their own building with space for expansion. Two key factors that will keep Company C in EC are the low land costs and logistical advantages of keeping the company's departments together to ensure efficiency and synergy. One major issue faced by the workforce is the city traffic problems. Productivity may be compromised as workers rush to beat the evening traffic. Moreover, given an opportunity to work in the city, many employees will easily switch over.

Electronics City – Company D - Small

Company D is a public limited company with only 15 employees. It is a fast emerging and quality oriented software development unit in embedded systems. The company main client is the government; it is located in the same building as the STPI headquarters. The company started 8 years ago and has the aim of being one of the forerunners in embedded systems within the next 10 years. It chose to locate itself in EC due to the good facilities provided such as satellite communications and mainly to remain in close proximity to its main client, STPI. A small company such as Company D also gathers strong support from the government. The government is also more flexible in dealing with late rental payments. Its main constraint is the traffic problems for its workers. Workers have to deal with traffic jams followed by a long walk in to the company vicinity – being a small company, transportation is not provided for its workers.

DISCUSSION

The numerical analysis and the case studies have alluded to the concept of clusters. Linkages, complementarities, spill-over are being enjoyed by agglomeration of companies in the clusters. While there are problems associated with clustering, e.g. high labor turnover and congestions, this concept can be too costly for companies, which are deciding where to locate, to ignore. ITPL has to maintain or even catch up in this area in order to remain competitive.

The unique point that ITPL has over its competitor would be Singapore's political commitment to the park, demonstrated by the many bilateral agreements between Singapore's GLCs and India, and/or politically linked business conglomerates, and a host of investment incentives, to attract transnational corporations to these 'privileged' enclaves. While this strategy has worked, as the impetus for firms to settle in ITPL have been exceptional infrastructural facilities and the efficient Singapore-styled management, this advantage can be easily eroded as other parks gain momentum in upgrading its infrastructure. However, in secondary cities where infrastructure facilities are unreliable, this Singapore edge can be the key in maintaining competitive edge.

ITPL advantage in providing one-stop and sometime extra service to its tenants can be the key in attracting and retaining companies. The anecdotal examples highlighted above substantiate this point. The need to maintain this edge is further even more critical when STPI presence in Electronic City threaten the political support from the Indian state and local government.

CONCLUSION

This Singapore flagship project in India has some measured edge in term of reliable infrastructure facilities and one-stop service. However, Singapore edge in Bangalore has slowly been eroded with the mushrooming of private technology parks. The management of the park has anticipated the commercial competitiveness of the park and is looking at ways to create other advantages. We contend that future Singapore linked projects in secondary Indian cities can replicate this 'business' model, however there is serious need for Singapore projects in more developed cities to innovate this 'business' model to suit the rapid competition.

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