

ROLE OF FINANCE IN THE COMPETITIVENESS OF INDIGENOUS CONTRACTORS – THE CASE OF HONG KONG

Theresa Y. M. Chan and Y.H. Chiang

Department of Building and Real Estate, The Hong Kong Polytechnic University, Hong Kong

ABSTRACT

This paper examines the competitiveness of indigenous contractors of Hong Kong focusing on the accessibility and availability of finance. By glancing the market performance of the contractors in various sectors of the construction industry, their competitiveness seems to be undermined by financial and technological inferiors. Their positions in the markets are further retarded by market domination and industry fragmentation, multiple layers of sub-contracting and labour-intensive construction. Hong Kong is a world-class financial centre and has one of the largest representations of international banks in the world (HKMA, 2002). Yet findings indicate there is a mismatch of supply and demand of construction finance in Hong Kong. Indigenous contractors have found no easy access to finances. This study reviews sources of finance in Hong Kong and concludes how finance in associate with key elements for competitive advantages, technology and human resources could help boosting the competitiveness of indigenous contractors and thus productivity of the construction industry.

KEYWORDS

Competitiveness, Indigenous Contractors, Finance, Technology, Hong Kong

1. INTRODUCTION

The competitiveness in this paper refers to the extent that indigenous contractors could compete against foreign contractors in the civil engineering sector, well established local leading contractors and developers in the building domain at the company level classified by Enright (1996). Generally, there are three levels of competitiveness, company, industry and the nation. For the company, competitiveness is the ability to provide products and services as or more effectively and efficiently than competitors. While competitiveness at industry level refers to the ability to match or beat the world's best firms in cost and quality of goods or services, competitiveness at national level means the ability of nation's citizens to achieve a high and rising standard of living in terms of productivity and the output of the economy per unit of labour and or capital employed. The boost of competitiveness at company level would push up that at industry and thus national level gradually. Thereby it is believed that the enhancement of indigenous contractors' competitiveness would help improving the productivity of the construction industry in Hong Kong.

Toh & Tan (1998) incorporated the concepts of value-adding and sustainability to the definition of competitiveness by Porter (1986). Instead of “the degree to which a nation can produce goods and services that meet the test of international markets while maintaining or expanding the real incomes of its citizens”, they interpreted competitiveness as “the ability of a business, group of business, or indeed a country's economy as a whole, to sustain future growth”. Provision of value-adding services or products is of principal importance to sustainability, the continuous possession of competitive advantages among rivals.

Chiang *et al* (2001) suggested that building contractors in Hong Kong generally compete on basis of cost cutting and could not develop sustainable competitive advantages. The development of indigenous contractors is hindered by industry fragmentation, multiple-layers of subcontracting and market concentration in most of the sectors. Without a sound source of finance at reasonable cost, the technology and thus competitiveness of indigenous contractors would be deteriorated. This paper reviews the sources of finance available to indigenous contractors of Hong Kong. Bank lending seems to be the most suitable source to small-scale business operation, yet there is a mismatch of supply from banks and indigenous contractors' demand. This paper attempts to conclude constructive means to enhance the competitiveness of indigenous contractors by examining the roles and functions along with conditions and developments in Hong Kong of technology and human resources, the vital determinants for competitive advantages.

2. INDIGENOUS CONTRACTORS OF HONG KONG

2.1 Characteristics

Indigenous contractors are usually home-grow, small to medium sized. Under the definition of the Hong Kong Special Administrative Region, a small to medium enterprise (SME) refers to a manufacturing business with 100 employees or less; or a non-manufacturing business with 50 employees or less. Given the small scale of business operation, most indigenous contractors are sub-contractors. More than 90% of the main contractor's works were actually executed by them (Lai, 1987). There are generally two types of sub-contractors in Hong Kong, namely Labour-only and Fee sub-contractors. The former act to supply labour for the works of main contractors and the latter are responsible to complete the whole work assigned up to the satisfaction of main contractors.

Small to medium sized contractors are foundation of sound development of construction industry (Ryoju, 2000) and of the entire economy as well. The construction industry contributed 5.8% to the GDP in 1999. And for SMEs in Hong Kong, it comprises over 98% of business establishments and employs approximately 60% of the total working population. According to CSD (2002) construction site manual workers comprised 3.5% of the total labour force in 2000. The figure would be much higher if professionals and specialists involved in construction projects, architects, contractors, engineers and quantity surveyors for instance, were taken into account.

Most indigenous contractors participate in construction projects of small value. Table 1 indicates that an average of 68% of construction establishments participated in projects with gross value below HK1 million dollars. Since indigenous contractors are not able to carry out sophisticated and technologically demanding projects in the civil engineering domain in light of their limited resources in technology, workforce and management, the number of building construction firms suggested would be higher because the figure included both contractors from building and civil and engineering sectors.

Table 1: Classification of Construction Establishments in Gross Value of Construction Work Performed

Gross Value of Construction Work Performed (HK\$'000) / No. of Establishment	1992	1993	1994	1995	1996	1997	1998	1999
< 500	9,906	6,404	7,114	5,260	4,849	5,228	5,647	6,302
500 - 1,999	2,000	5,875	6,492	7,355	7,496	6,817	6,698	7,132
2,000 - 4,999	1,540	2,259	2,698	3,398	2,751	3,860	3,290	3,043
5,000 - 9,999	880	1,070	1,171	933	1,212	1,426	1,582	1,514
10,000 - 19,999	381	658	577	747	1,099	940	910	925
20,000 - 49,999	271	396	410	618	580	798	713	762
50,000 - 99,999	100	133	217	252	208	250	216	231
> 100,000	117	248	258	281	314	331	349	324

Source: CSD (1992-99)

2.2 Positioning in the Market

Studies (Chiang *et al* 2001, HKCC 1996, and Chan 1997) on market structure and performance suggested there is high market concentration in the construction industry of Hong Kong. The top five contractors dominated 31% to 94% market shares in building and civil engineering sub-sectors during 1992 to 1997. Being financial and technological ascendancies over indigenous contractors, foreign contractors are able to outbid especially in projects with complex and sophisticated temperament. According to a survey conducted in 1996 by HKCC, the top seven developers were supplying more than 70% of residential buildings in the private housing domain. Together with their subsidiary contractors, major developers dominate both the property and construction markets. The public building sector showed a similar picture. Chan (1997) reviewed the market share distribution and found over 55% of the projects were awarded to the top five contractors between 1992 and 1996. In short, it is concluded that international contractors in the civil engineering domain, developer-contractors and local leading contractors in the private and public building sectors respectively have dominated the construction industry in Hong Kong.

Indigenous contractors are thus confined to the remaining niche in the private building sector. By scanning through the registration requirements imposed by the Hong Kong Housing Authority (HKHA) on potential public building works contractors and the general tender requirements of the majority of projects in Hong Kong, it is clear that technological and financial capabilities are basic and elemental criteria for contractors to bid. The very basic requirements on capital employment, company structure and organizational supports appear to be barriers for indigenous contractors entering the public building sector.

2.3 Surviving in the Market

A large number of indigenous contractors strive for survival in the small market segment remaining in the private building sector. Among the lowest layers of the fierce sub-contracting chain, indigenous contractors could only make a thin profit, if not nil. Hence they bid projects at unreasonably low tender price in an attempt to establish business relationship with main contractors. Such cut-throat price competition is neither sustainable nor indubitable. As Table 2 below shows, the building cost index rises much more than tender price one, there are more and more competition along the way. Indigenous contractors seem surviving at the expense of building quality. Construction scandals in associated with substandard building material, alarming site accident rate together with inferior or unskillful workmanship have brought forth a downward spiral of fierce competition in the building sector in Hong Kong.

Table 2: Tender Price and Building Cost Indices

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Tender Price Index	348	380	409	513	550	578	572	529	540	615	725	830	976	1064	1017	916
Building Cost Index	481	510	600	734	845	926	1000	1075	1207	1286	1358	1446	1580	1698	1721	1738

Source: ASD (1985 – 2000)

3. SOURCES OF FINANCE

Hong Kong is a world-class financial hub. It is the second largest stock market in Asia (Sheng, 1998). In 1998, the market is ranked the world's ninth largest in market capitalization and eighth in total turnover. Montes (1999) categorized the nature of a financial center into three echelons, bank lending, bond finance and equity finance.

Given the indigenous contractors of Hong Kong are competing at unreasonably low tender price, it is assumed that the retained earnings in the business is not sufficient or reliable to be a sound source of finance. Therefore, external sources of finance appear to be crucial to survival of indigenous contractors. Sources of finance are broadly divided into internal and external. Personal savings or retained earnings in business are internal sources of finance (Potts, 1995). Equity capital, bond issuance, bank lending or public grants are some forms of external sources.

3.1 Bank Lending

Hong Kong has one of the highest concentrations of banking institutions in the world (HKMA, 2002). According to Chesterton & Ghose (1998), the bank market is indeed dominating the debt financing market. However, indigenous contractors in Hong Kong have no easy access to bank loans. Studies (Levy 1993, Eyiah 2001, Chiang & Chan 2001) concluded difficulties in accessing bank loans at reasonable costs are major constraints on the development of SMEs and indigenous contractors.

Chan (2001) found there is a mismatch of construction finance between the demand from indigenous contractors and supply of bank loans in Hong Kong. Eyiah (2001) suggested that lack of information, risk of transaction, enforcement difficulties and cost of transaction are main factors contributing to banks' reluctance to lending to SMEs. According to a survey conducted by the HKMA (1999), poor financial and managerial standard of SMEs are key constraints in the bank loan assessment process. Fake information or poor business records would make banks cautious in approving loan applications from SMEs. Although banks maintained that the availability of collateral was just one of the determinants in loan assessment, however, it is difficult if not impossible for SMEs to obtain unsecured loans (SMEC, 2001).

Indigenous contractors interviewed by Chan (2001) claimed the interest rate charged by banks was high and not affordable whereas the reception and assistance from banks were poor. HSBC (2002) suggests the cost of financing is an indicator of the degree of risk the capital provider associates with the business of loan applicants, it can be concluded that banks in Hong Kong generally consider lending to indigenous contractors to be risky. Godley and Ross (1996) argued it is difficult to reduce the associated risk of a lending with higher interest rate charged. It may even worsen the financial status and thus fasten the insolvency of the firm. The lender's heavy reliance on collateral and guarantees could be a liquidation trap (Strischek, 1996). Financial package should be made cost-effective with the purpose to eliminate refinancing risk (Smith, 1999). It is not the charging of higher interest rate nor the availability of collateral but the understanding on operation and thus credit risk of the applicant that could secure a loan.

3.2 Bond and Equity Financing

The bond market in Hong Kong is almost insignificant in comparison with stock market in terms of capitalization (Chesterton & Ghose, 1998). There is not only a lack of demand from investors in the bond market but also on the supply side. The issuance of shares and lending from banks seem to be more preferable to local enterprises in Hong Kong especially to SMEs. The issue of bonds is a means by which many established entities, such as the Government and large enterprises raise capital (HKEx, 2000). Bank lending is the most accessible sources of finance available to indigenous contractors with regards to costs and scale of borrowing. Moreover the financial and managerial standards of most indigenous contractors are not sound enough for them to consider issuing bonds. Contractors prefer to stay with pay-as-you-go system but not to raise fund in the form of debt given their fear for not having any money coming in (ENR, 2000). With more promotion on the concept of leverage and improvement in the regulatory and rating system, the development of bond market in Hong Kong would be more promising (Montes, 1999).

Even if SMEs like indigenous contractors were eligible to list on the Growth Enterprise Market (GEM) to raise finance in the equity market, the listing fees may be a kind of financial burden. The maintenance of high degree of transparency in operations and financial position may also be deterrents to indigenous contractors in accessing equity finance.

4. ENHANCEMENT OF COMPETITIVENESS

Other than finance, technology, human resources and national policy are also key and interrelated factors for competitive advantage (Toh & Tan, 1998). Thereby, the SMEC (2001) recommended the implementation of various schemes in enhancing the competitiveness of SMEs in aforesaid areas. SMEs like indigenous contractors are core of Hong Kong's economy and driving force of economic development and thus more focus should be given in raising their competitiveness to new challenges and business opportunities. The four funding schemes established in 2001 are SME Business Installation and Equipment Loan Guarantee Scheme, SME Export Marketing Fund, SME Training Fund and SME Development Fund. Indigenous contractors are eligible to the scheme and thus upgrade

their competence. In this section, the roles and importance of technology and human resources in competitiveness enrichment are discussed below with their conditions and developments in Hong Kong reviewed.

4.1 Technology

Technology itself could be a raw input or an intermediate facilitator (Haque, 1995); however it cannot be competitive by itself (Loh, 1998). Technology in this paper refers to technology application and development, rudiments in stimulating productivity in construction process. Porter (1990) attributed technology as the essence in the amplification of factor conditions for competitive advantages, inputs that allow competition to take place. Cost reduction and qualitatively superior product and process innovations are some significant progress of technology application (Johnson & Sims, 1968). Nam & Tatum (1992) interpreted the pattern of technology development in four spheres. The application of already-known technology into a new area, the conjunction of various known technologies, dramatic cost reduction of the known technology or the increase in magnitude of the known technology with more complex configurations.

It is obvious that indigenous contractors could enhance their competitiveness by upgrading their production line in conjunction with prefabrication and industrialization. Toh (1998) considered the use of prefabricated components, standardization of design of buildings, equipment application in the construction process to be key technology strategies in construction industry to boost up competitiveness and productivity. The Construction Industry Review Committee (CIRC, 2001) also suggested prefabrication and mechanization as parts of the solutions to alarming problems in the construction industry of Hong Kong: substandard building quality, corruptive practices and high site accident rate, resulting from industry fragmentation and excessive fierce competition among indigenous contractors. The Hong Kong Housing Authority (HKHA, 2000) considered the emphasis on tenderer's technical capabilities would help eliminating unhealthy cut-throat price competition.

The growing popularity of applied technology, e-tendering, e-commerce or Electric Services Delivery (ESD), has also brought forth revolutionary impact on the basic technological requirement of indigenous contractors. The application of operational management techniques like 'fast-tracking' would help cutting costs by speeding up the construction process. Similar to Japanese 'just-in-time' techniques used to speed up manufacturing outputs. Critical path analysis (CPA) or Programme evaluation review techniques (PERTS) are some useful software.

As Toh (1998) pointed out, fostering diffusion and assisting in exploitation are of prime importance to utilize an industry differentiated approach to target technology effectiveness. There is no doubt that long-term investment in technology could enhance the competitiveness of indigenous contractors with greater productivity and efficiency. Thereby the SMEC (2001) recommended the SME Business Installations and Equipment Loan Guarantee Scheme to support SMEs to cope with the growing technological needs and opportunities associated. Indigenous contractors are eligible to the scheme. With secured loans from banks and financial institutions, indigenous contractors could then acquire necessary business installations and equipment. Assistance would also be offered in preparation of audited account to relevant lending institutions. As a result, not only the financial management technique of indigenous contractors but also their relationship with banks would be better.

The HKCA (Hong Kong Construction Association) could also play a more active role in assisting technology development and promotion to indigenous contractors. Though the association has already 400 members, most of them are the larger local and overseas contractors, more indigenous contractors should be encouraged to join the organization. The voices and needs of indigenous contractors could then be expressed through dialogue between professional organizations and the Government. The association could also gain a more realistic and solid picture on the problems encountered by indigenous contractors. And in response, the association could formulate suitable assistance programme and explore business opportunities among members. The coordination of Quality Contractor Award or Outstanding Contractor Award may arouse contractor's initiatives to provide more value-added services. The association could also raise awareness of their members on the importance and benefits attributed to technological application and development by conducting seminars or exhibitions. Demonstration projects could also be synchronized among members with benefits of innovative technology and application disseminated by means of forum or conference.

4.2 Human Resources

Human resources at all levels are in fact contributing to the growth and development of a company. Every managerial, technological and frontline personnel should keep abreast with the ever-changing economic conditions. Over the years, the unskillful and substandard construction site workers have been blamed for inferior buildings. Though the Government will implement the Labour Registration System in 2002 aimed at improving the excellence of construction, indigenous contractors themselves should also allocate resources to staff training and self-development of employees in recognizing their contribution to the competitiveness of the company.

According to a survey conducted by VTC (Vocational Training Centre) on the demand and supply of manpower for the period of 1999 to 2002, there were 6,857 technologists, 14,901 technicians and 37,268 craftsmen working in the civil engineering and construction sectors. Technologists refer to civil engineers, structural engineers, geotechnical engineers, environment engineers, builders and safety officers. Since the supply of technicians and craftsmen falls short of the forecast demand, more workforces should be trained to fill up the gap.

Table 3: Technical Manpower Demand & Supply of Civil / Structural Engineering & Building / Construction Technology for the period of 1999 – 2002

Technical Level of Manpower	Annual Supply	Annual Demand
Technologists	601	593 – 696
Technicians	1,499	1,586 – 1,889
Craftsmen	1,523	3,425 – 4,179

Source: VTC (2000)

There are comprehensive courses organized by CITA (Construction Industry Training Authority) for construction workforce. There are 93,059 courses available for the academic year of 2000 – 2001 (CITA, 2002). The training is significant in upgrading the expertise and know-how of the workforce. With the introduction of mandatory safety card courses, there has been a dramatic drop in the number of site accidents in construction industry since 1998. The number fell from 19,588 to 11,925 from 1998 to 2000 (OSHC, 2002) while the training courses of construction safety card jumped from 26, 703 to 120,254 from 1998 to 1999 (CITA, 2002). The figures on one hand prove the significance of staff training and on the other hand give prominence to its positive impact on the construction industry as a whole.

Although there is always high turnover rate for the limited number of staffs engaged in SMEs, staff training and self-enhancement could reinforce the intensification and expansion of a company. In light of shortage of capital and inadequate supportive resources, indigenous contractors could apply for the SME Training Fund and SME Development Fund under the SMEs funding assistance scheme. Grants and subsidies, together with supports from SMEC would be obtained. Consequently, the aptitudes of indigenous contractors would then be improved with trained specialists and skillful site workers. With the growing concern on quality assurance, the provision of in-house skillful site workers may bring indigenous contractors additional credit from the client in the tender assessment. Together with self-development of qualified expertise, indigenous contractors could enhance their competitiveness through the provision of differentiated and value-added services to their clients.

5. CONCLUSION

Together with other SMEs in Hong Kong, indigenous contractors are contributing significantly to the growth and development of the Hong Kong's economy. However they are losing rivalry to foreign and local leading contractors whom are financially and technologically powerful. Indigenous contractors are surviving with cut-throat tender price competition. However such strategy is not sustainable gives the industry's raising concern on quality building. With the growing introduction and implementation of industrialization, there is a need if not a must for indigenous contractors to upgrade for the ever-changing market condition. Moreover, finance is key to technology and human resources development. Yet the supply and demand of construction finance for indigenous contractors is mismatched. With the absence of collateral as pledge and sound track business records, bank's prejudiced perception on nature of construction business and on contractor's poor financial management skills, indigenous contractors encountered difficulties in lending from banks. Given finance is a prerequisite to the enhancement of competitive advantage, construction finance should be made more accessible to indigenous contractors.

6. REFERENCE

- ASD (Architectural Services Department, 1985 – 2000) Construction Indices: <<http://www.archsd.gov.hk/english/reports.asp>>
- CIRC (Construction Industry Review Committee, 2000) Quality Housing: Partnering for Change, Consultative Document <<http://www.info.gov.hk/hd/eng/ha/consult/>>
- CSD (Census & Statistics Department, 2002) <<http://www.info.gov.hk/censtatd/chome/cindex.htm>>
- CSD (Census & Statistics Department, 1992-1999) Report on Annual Survey of Building, Construction & Real Estate Sectors, CSD, 1992-1999
- Chan Theresa Y. M. (1997) “Does the Competitive Construction Industry Keep Out Competition?”, unpublished undergraduate dissertation, Hong Kong Polytechnic University.
- Chesterton J & Ghose Y.K. (1998) Merchant Banking in Hong Kong, Butterworths Asia.
- Chiang Y. H. & Chan Theresa Y. M. (2001), *Matching the Supply and Demand of Construction Finance – The Case of Hong Kong*, Proceedings of Third International Conference on Construction Project Management, From Fragmentation to Integration, 29-30 March, Singapore, pp.259-269
- Chiang Y. H., Tang B. S. and Leung W. Y. (2001) “Market Structure of the Construction Industry in Hong Kong”. *Construction Management and Economics*, 19(5), 675-687.
- ENR (Engineering News Records, 2000) *Texas Ponders Using Bond*, 14/08/2000 pp.26
- CITA (Construction Industry Training Authority, 2002) <<http://www.cita.edu.hk>>
- Enright M. J. (1996) *The Challenge of Competitiveness: Venezuela*, St. Martian Press, New York.
- Eyiah A. K. (2001) An Integrated Approach to Financing Small Contractors in Developing Countries: A Conceptual Model, *Construction Management and Economics*, (19), pp.511-8
- Godley A. & Ross D. M. (1996) *Banks, Networks, and Small Firm Finance*, London, Portland, Frank Cass.
- Haque, I. (1995) “Technology and Competitiveness” in Haque, I, (ed), *Trade Technology, and International Competitiveness*, Washington, D.C., The World Bank.
- HKCC (Hong Kong Consumer Council, 1996) *How Competitive is the Private Residential Property Market?*, Hong Kong Consumer Council 11 July 1996.
- HKEx (Hong Kong Exchange, 2000) Bond Market: <http://www.hkex.com.hk/>
- HKHA (The Hong Kong Housing Authority, 2000) Quality Housing: Partnering for Change, Consultative Document: <<http://www.info.gov.hk/hd/eng/ha/consult/>>
- HKMA (Hong Kong Monetary Authority, 2002) <<http://www.info.gov.hk/hkma/eng/bank/index.htm>> January 2002
- HKMA (Hong Kong Monetary Authority, 1999) *Surveys on the Financing Situation of Small and Medium-sized Enterprises*, Hong Kong Monetary Authority, June.
- HSBC (The Hongkong and Shanghai Banking Corporate Limited, 2002), 5 Steps to Raising Finance: <http://www.hsbc.com.hk/hk/business/a_full.htm> January 2002
- Lai M.Y. (1987) “A Review of the Subcontracting Systems of the Construction Industry in Hong Kong”, unpublished MSc Dissertation, Department of Surveying, University of Hong Kong.
- Levy, B. (1993) Obstacles to Developing Small and Medium Sized Enterprises: An Empirical Assessment. *World Bank Economic Review*, 7 (1), pp.65-83
- Loh Lawrence (1998) *Technological Policy and National Competitiveness*, Competitiveness of the Singapore Economy : A Strategic Perspective, Singapore University Press, World Scientific, pp.40-80
- Montes, M. E. (1999), Tokyo, Hong Kong and Singapore as Competing Financial Centers, *Asia Pacific Financial Deregulation*, London, Routledge, pp.151-70
- Nam C.H. and Tatum C. B. (1992), Strategies for Technology Push: :Lesson from Construction Innovations, *Journal of Construction Engineering & Management*, ASCE, pp.507-24
- OSHC (Occupational Safety & Health Council, 2002) <http://www.oshc.org.hk/eng/statistics_oo/statistics.htm>
- Porter, M. (1990) *The Competitive Advantage of Nations*, New York: Free Press.
- Porter, M. (1986) *Competition in Global Industries*, Boston Mass, Harvard Business School Press
- Rowlinson S. M. (1995) *The Construction Industry in Hong Kong*, Longman, Hong Kong.

- Ryoju T. (2000) *Current Conditions and Perspectives of Technology Development of Medium-sized Construction Firms in Japan: Practices and Strategies of Joint Research*, Rotterdam: International Council for Research and Innovation in Building and Construction, 2000.
- Sheng Andrew (1998), ' Hong Kong as an International Financial Centre to 2010', Seminar Speech on "Hong Kong Towards The Next Millennium: The Way Forward" in Hong Kong on 15 April, 1998. <<http://www.info.gov.hk/hkma/eng/public/qb9805/qbsp04e.htm>> January 2002
- Smith N. J. (1999) *Managing Risk in Construction Projects*, Oxford, Blackwell Science, pp.136-58
- SMEC (The Small and Medium Enterprises Committee, 2001), *Staying Ahead: Smart, Motivate, Enterprising*, A Report on Support Measures for Small and Medium Enterprises, Trade and Industry Department: <http://www.smefund.tid.gov.hk/eng/eng_main.html>
- Strischek Dev. (1996) *Analysing Construction Contractors* (Philadelphia: Robert Morris Associates).
- Toh M. H. & Tan K. Y. (1998), *The Macroeconomic Perspectives of Competitiveness*, Competitiveness of the Singapore Economy : A Strategic Perspective, Singapore University Press, World Scientific, pp.143-177
- Toh M. H. (1998), *The Construction Industry: Restructuring for Competitiveness*, Competitiveness of the Singapore Economy : A Strategic Perspective, Singapore University Press, World Scientific, pp.143-177
- VTC (Vocational Training Centre, 2000) Demand and Supply Report on Technical Manpower of Major Hong Kong Industries, *Paper VTC (TC) 7/2000*, <<http://www.vtc.edu.hk>>