Hong Kong Innovation Project

Report No. 12

Information Technology Service as a Key Supporting Industry of Hong Kong

Mei-Chih HU*

Graduate Institute of Technology & Innovation Management,

National Tsing Hua University, Taiwan

Abstract

The overseas Chinese network has become one of the concerned organizational models for business in the 21st century and the main driver of economic transformation of Asia. Hong Kong is no doubt standing at the forefront of East-West flows of intra-Asian foreign direct investment. Given the importance of IT services in the knowledge-intensive era, this study aims to explore the development of IT services in Hong Kong and its reciprocal relationships with its three pillar industries (finance, trade, and business services). It is suggested that acting as an entrée for Chinese companies in the international market and MNCs in China and Southeast Asia, Hong Kong's economy needs to secure the emerging opportunities to be more diversified along with its promising industries through service and business model innovations. Endogenous IT services industry may be the one of the essentials to further stimulate Hong Kong's growth as a whole.

1. Introduction

The economic dominance of the West is shifting toward a more equal balance between East and West (Amsden, 2007; Hu and Mathews, 2005). China attracted US$83.5 billion in foreign direct investment in 2007 (the highest among developing countries and sixth in the world) while the Asian newly industrialized economies (NIEs) are also emerging as new investors in other Asian nations (UNCTAD, 2008). The overseas Chinese network has thus become one of the concerned organizational models for business in the 21st century and the main driver of economic transformation of Asia (Mohamed and Khalid, 2005; Naisbitt, 1997). Amongst this, HK is no doubt standing at the forefront of East-West flows of intra-Asian foreign direct investment. The access freedom or laissez-faire of HK (in trading sector only) thus has attracted many European and American services professionals to arrange strategic alliances (mostly in the trading, logistics and finance areas), aiming at the Asian market and tackling the opportunities on the Chinese Mainland and other fast-growing economies Thailand, Vietnam, Malaysia and Indonesia (Mathews et al., 2008; Meyer, 2000; Enright et al., 1997).

HK's opportunities arise for further diversification of sourcing and for adding value by using intensive application of information technology in their role between

factory suppliers and retail outlets in Western and regional markets. In other words, Hong Kong has the potential to develop new strengths through further internationalization of its service sector, which is already relatively larger, more diverse and developing faster than perhaps anywhere else in the region (as a regional services center through well-established telecommunications and information technology (IT hereafter) infrastructure). However, to well-utilize this infrastructure not only depends upon the government and institutional support system, but also relies extensively upon a variety of IT services such as software service applications. In this regard, however, HK presents a neither quantified nor qualified deficit in these services due to a far lower percentage of its GDP on R&D (0.81% of GDP which is one of lowest in the advanced world), especially lacking basic R&D and a stronger position like Japan, South Korea, Singapore and Taiwan, which also have high-tech industries.

The lower degree of R&D activity in Hong Kong resulted mainly from their excellent service industries (i.e. financial, trading and logistics sectors) contributed from the favorable tax incentives and outstanding geographic location. These have been the engines of Hong Kong's economic growth for the past few decades. However, the development of China's Pearl River Delta has inspired many shippers to bypass Hong Kong and move closer to manufacturers in China. The shifts of

transitional economy in China caused 60 percent of Hong Kong's trading workforce to be at risk (McKinsey Quarterly, 2006). To date, HK already can no longer compete with the IT or high-tech manufacturing industries like other Asian economies such as China, Taiwan or South Korea. However, HK may position itself as a complementary partner of high-tech or IT service provider. This is seen as more of a diversification alternative to sustain HK's economic growth.

Nevertheless, the development of IT services (e.g. engineering processes, business process software, financial and control systems, new business models derived from the IT utilization, integration systems and package software for new electronics products and new networking technology) has a great effect on improving business processes and infrastructure (Davenport and Prusak, 2000; Powell and Dent-Micallef, 1997). From the views of evolutionary and resource-based research, such development is a critical competitive advantage for HK's economic scene, which may generate a greater positive impact to sustain HK economy than promotion of high-tech product industries *per se*. In other words, demand-pull IT services through its existing expertise on recognizing customer needs may become a critical driver for sustaining Hong Kong's promising industries of financing, trading, and business services. Amongst which, software development is seen as a core growth engine in the IT services sector due to its tight link between business processes and market

performance as a whole.

Compare to the mature IT services industry in advanced countries, the higher growth rate of IT services are found in the emerging economies like China, Southeast Asia, Latin America, Middle-East, and East Europe (Market Intelligence Center, 2006). Given the importance of IT services in the knowledge-intensive era, this study thus aims to explore the development of IT services in Hong Kong and its reciprocal relationships with three pillar industries: finance, trade, and business services). In particular, when manufacturing and service industries have a complementary relationship such as China and Hong Kong, then the research questions in this study are further extended to investigate: (1) whether the development of IT services can shape and create a more innovative environment for service-oriented Hong Kong; and (2) the challenges and opportunities to develop IT services as an industry in Hong Kong.

This study is organized as follows. An examination of Hong Kong as a service-oriented economy along with its major industries is provided in Section 2. Section 3 discusses the development of Hong Kong's IT services, and its relationships with other specialized services industries, followed by case studies conducted in Section 4. Discussion and policy implications are then addressed in Section 5.

2. Hong Kong: a service-oriented economy

Many prosperous Asian economies such as China, Japan, Taiwan, South Korea and Singapore have listed the development of high-tech industry, particular in IT, as one of the nation's promising strategies. Hong Kong, in contrast, is extremely focused and specialized in the service areas, contributing 87% of its total GDP (see Table 1).

Table 1: Share of services sector in GDP, by country, 2006

Country	Agriculture		Manufacturing		Services	
	% of GDP	% of employment	% of GDP	% of employment	% of GDP	% of employment
Hong Kong	0.0	0.3	13.0	18.3	88.7	81.4
US	1.4	2.6	22.0	21.8	77.6	75.6
Germany	1.0	2.5	26.5	31.9	74.5	65.6
France	3.0	3.6	25.0	23.9	73.0	72.5
U.K.	1.0	1.4	30.0	24.1	70.0	74.6
Japan	1.3	4.2	30.4	28.7	69.3	67.1
Taiwan	1.8	7.3	30.4	34.8	68.8	57.9
Singapore	0.0	0.3	34.0	24.6	65.0	75.1
South Korea	3.2	8.8	34.6	19.1	64.2	72.1
China	14.8	44.1	52.9	17.7	33.3	38.3

Source: Hong Kong Census and Statistics Department, Social and Economics
Indicators, http://www.censtatd.gov.hk/home/index.jsp

According to the industry categories in the Statistics Department, there are six major industries in the Hong Kong economy, including: (1) manufacturing (including mining, electricity, gas and water); (2) construction; (3) trading (including wholesale,

retail, import and export trades, restaurants and hotels); (4) logistics (including

transport, storage and communications); (5) financial services (including insurance,

real estate and business services); and (6) community and personal services. When the

services industry overwhelmingly took 88.7% of GDP in Hong Kong in 2006, trading

(29.6%), financial (21.6%), and community and personal services (19.7%) were the

three pillar industries. In other words, the three pillar industries contributed a

substantial 71% of total GDP in Hong Kong's services industry in 2006, as shown in

Figure 1.

Figure 1

Source: Hong Kong Census and Statistics Department (2008).
http://www.censtatd.gov.hk/home/index.jsp
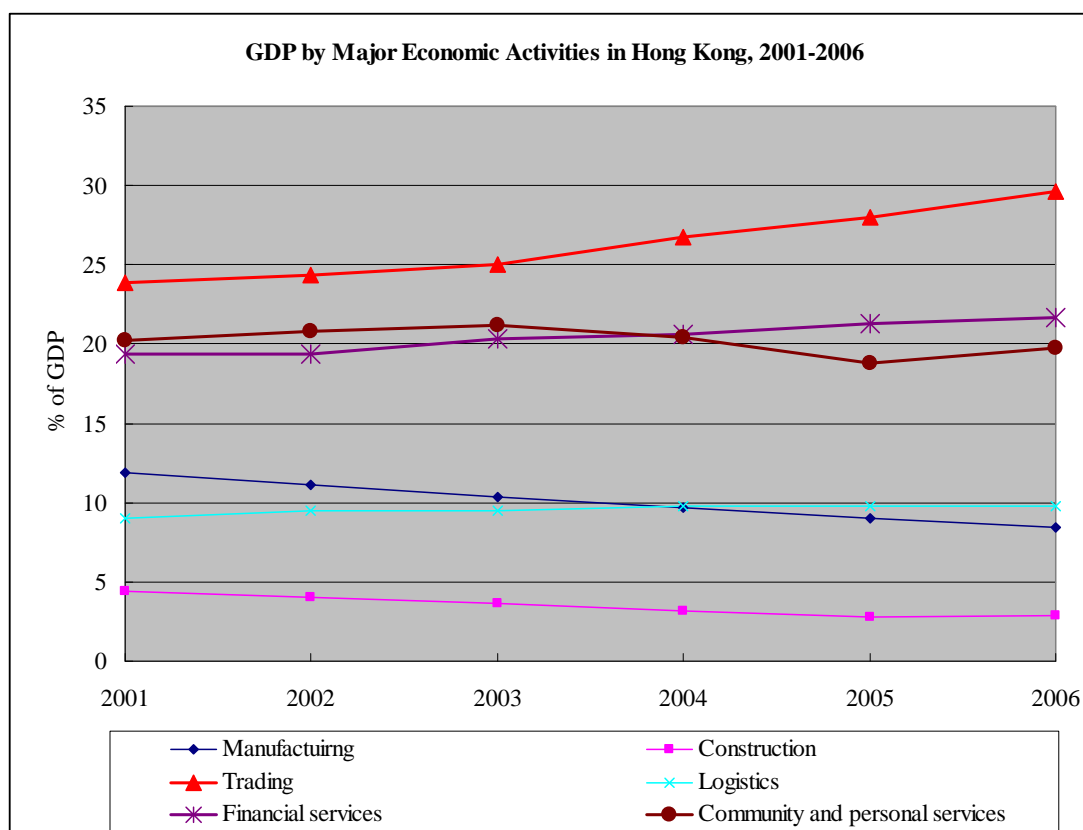
With the favored business and services infrastructure, many of China's technology-based companies are opening HK offices or seeking HK partners to commercialize their own developments, while a substantial percentage of Asian-Pacific as well as Western companies have chosen HK as the critical gateway into the Chinese market. In this respect, the economic growth in HK is largely linked with China and throughout the Asia-Pacific region with the MNCs.

The economic opportunities created by Hong Kong are thus deepening its integration with Mainland China for cost comparative advantages and business middleman. However, it is found that more than 100,000 jobs in the trade sector face relocation to the Mainland China within five years (McKinsey, 2006). Trading activities account for 450,000 jobs in Hong Kong and has accounted for one-fifth of its GDP in 2006, which has long been essential to Hong Kong's success as a broker between China and the world. However, the development of the Pearl River Delta associates along with the strong support by Chinese government has greatly reduced the importance of Hong Kong's trading business as a gatekeeper for China.

With the pace of competition intensified, simultaneously computers and software applications have become more powerful. The use of information technology as a competitive weapon has been accelerating ever since the 1980s-1990s (Powell and Dent-Micallef, 1997; Rackoff, et. al., 1985). However, the future globalization

competition will rely on the utilization of IT in emerging countries (Davenport and Prusak, 2000). For example, when Hong Kong relies on the logistics business between Asia Pacific areas, the prosperous green supply chain requires significant support from the green IT services. This certainly requires a substantial intellectual capability exerted from the IT services sector.

3. IT services in Hong Kong

The information technology (IT) infrastructure in Hong Kong is among the most advance in the world and is ranked as the second in Asia and among the world's top 15 economies in terms of its readiness to participate in and benefit from IT developments (World Economic Forum, 2006/07). A key factor contributing to Hong Kong's advance IT status is the cutting-edge telecommunications infrastructure of the city, which is the world's first to have a fully digitized fixed telephone network. This well-established infrastructure along with the outstanding geographic position grant the economic nature of Hong Kong as a services-oriented economy (except for the development of light manufacturing in the 1950s-1980s), as seen in Table 1. The lowest R&D ratio and patenting record amongst the East Asian tiger economies (as demonstrated in Figure 2) further illustrates that HK is more IT application-oriented rather than IT research-oriented.

Figure 2

G7 v.s. East Asian 5 -patenting average for 5- and 30-year periods
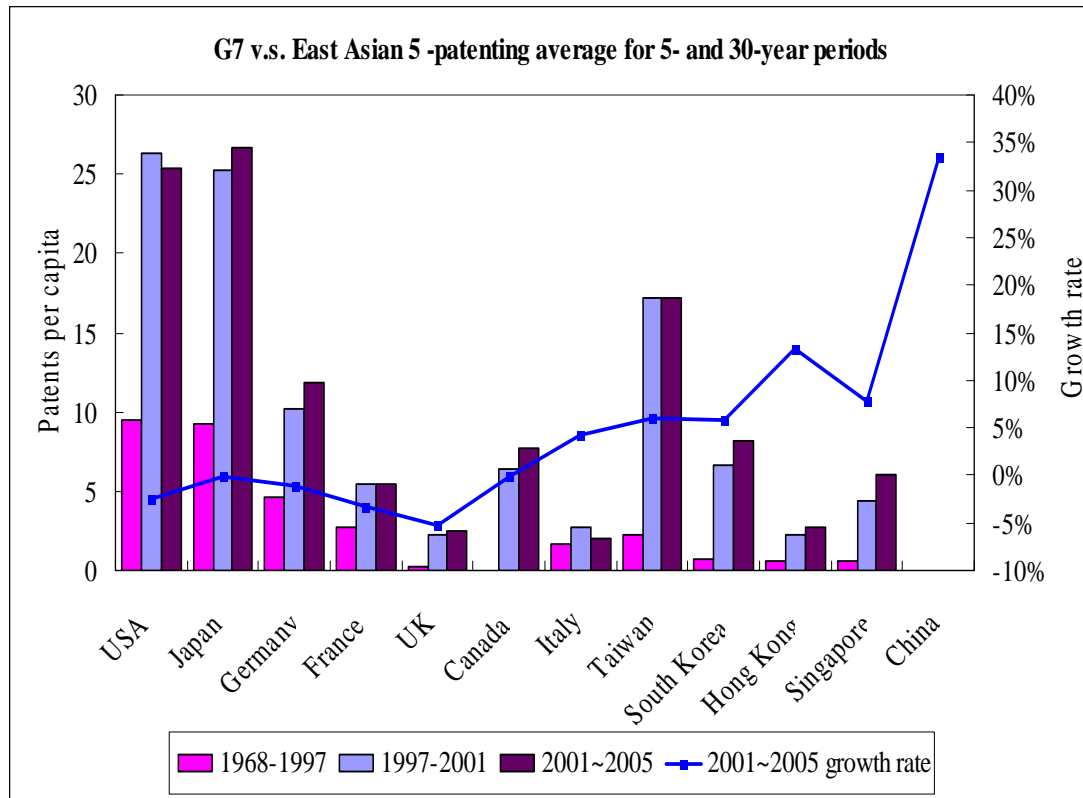
Source: USPTO.

Compared to the well established IT infrastructure and modernized Hong Kong Science and Technology Park and Cyber Port (hardware), the scale of the IT services sector (software) in Hong Kong is relatively smaller (a total of 4,728 companies taking 0.3% of the global market share in 2005) but steadily increasing from HK$6.7 billion in 1997 to HK$16.9 billion in 2006 (see Figure 3).[1] In particular, software implementation service has been the major sector while other computer and related

---

[1] According to the HK Census and Statistics Department, IT services sector includes consultancy services to the installation of computer hardware, software implementation services, data processing services, maintenance service and other computer and related services (also see the Provisional UN Central Product Classification (UNCPC) for the description).

services (including training, and data preparation services) comes next with a double

growth from 2005 to 2006, as demonstrated in Figure 2.

Figure 3

Production value of IT related services in Hong Kong, by type of services, 1997-2006

Legend:
- Consultancy services to the installation of computer hardware
- Software implementation services
- Data processing services
- Maintenance services of office machinery and equipment
- Other computer and related services
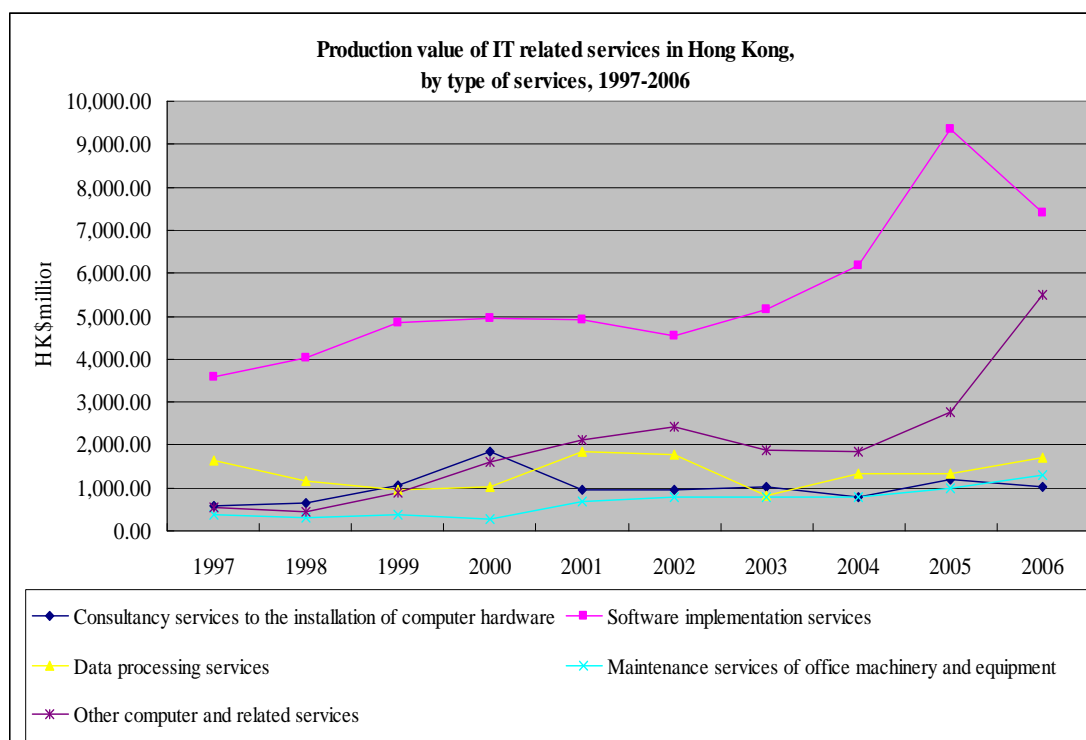
Source: Hong Kong Census and Statistics Department (2006).

According to the 2006 Manpower Survey Report conducted by the Vocational

Training Council (VTC), 64,473 persons (only about 1.8% of the 3.5 million

workforce in Hong Kong) were employed in the IT-related sector. As shown in Figure

4, software services capture the largest IT employees, accounting for 28.6%, followed

by the wholesale, retail, import/export, restaurants and hotels sector securing 23.3%,

the financing, insurance, real estate and business services sector sharing 19.4%, and

the community, social and personal services sector having 13.9%. If we turn to look

into the distribution details of Hong Kong's IT services employees in Figure 5, it
further confirms that the software development (44.8%) is the main pool of Hong
Kong's IT services industry.[2] It is also noticed that nearly 80% of the Hong Kong IT
services providers are SMEs with less than 20 employees (Hong Kong Productivity
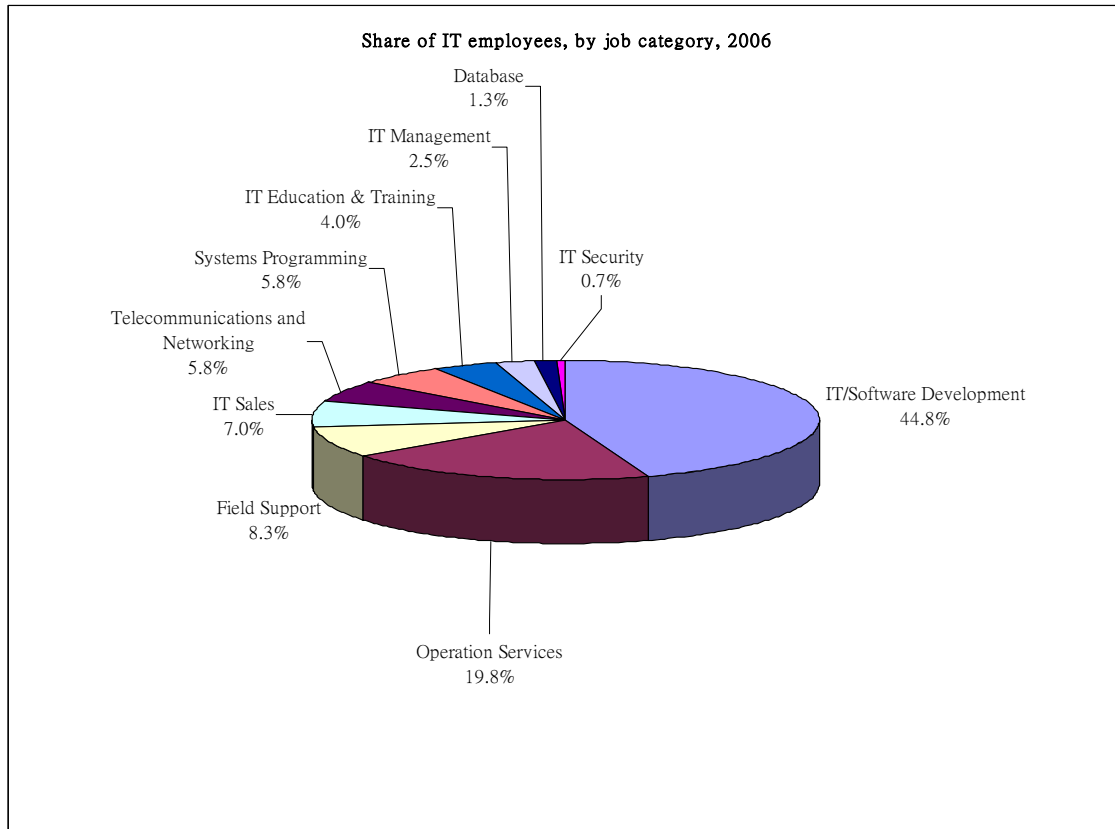Council, 2007).

Figure 4: Share of IT employees, by industry, 2006
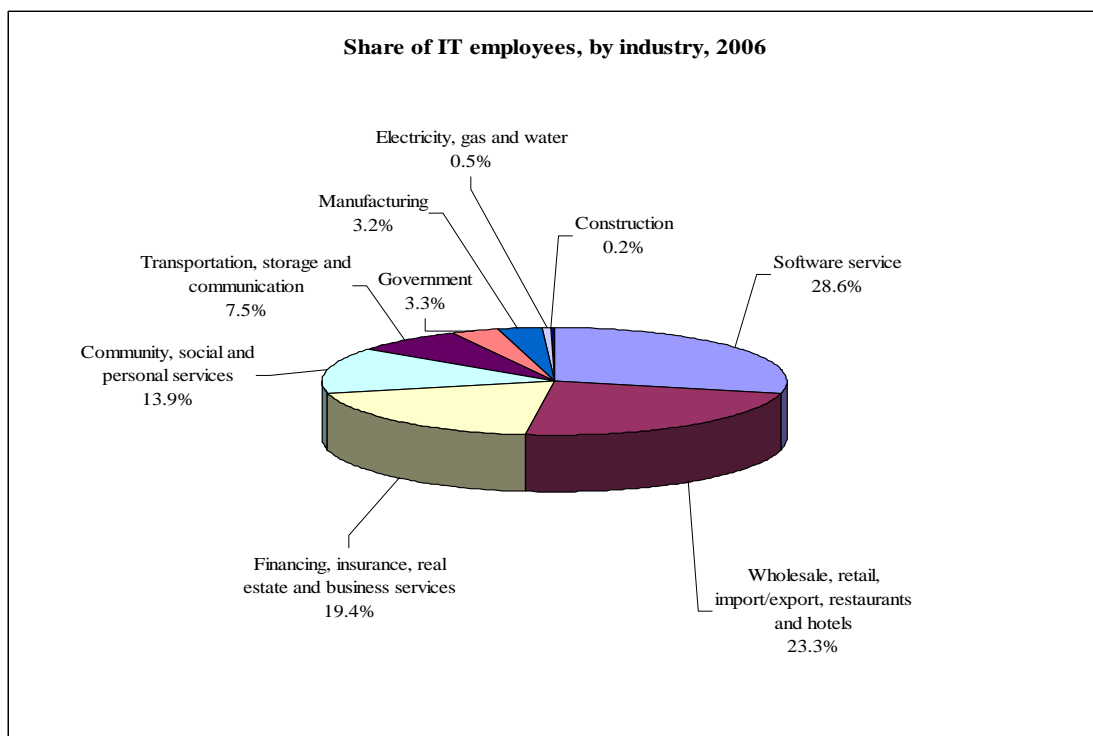
Source: *2006 Manpower Survey Report: Information Technology Sector*, Vocational
Training Council

---

[2] IT services can be broadly divided into software and hardware services. Most hardware service providers in HK are distributors of large international computer companies, and the largest ones combine service provision with software development and consultancy while there were about 700 independent software vendors (ISVs) SMEs in Hong Kong (Hong Kong Productivity Council, 2004).

Figure 5

Share of IT employees, by job category, 2006

Database
1.3%

IT Management
2.5%

IT Education & Training
4.0%

IT Security
0.7%

Systems Programming
5.8%

Telecommunications and
Networking
5.8%

IT Sales
7.0%

Field Support
8.3%

Operation Services
19.8%

IT/Software Development
44.8%

Source: *2006 Manpower Survey Report: Information Technology Sector,* Vocational Training Council

Furthermore, the HKPC survey reveals that about 77% of the software and services provided were locally consumed (HKPC, 2003) while China has been the largest export destination (more than 50% since 2005) with the rest exported, followed by Japan (14.3%) and the US (8%), as shown in Table 2. Despite of the relatively smaller share of exports, the domestic export of computer software shrunk dramatically in 2006, while its production value continues to grow (Census and Statistics Department, 2007). This implies an increasing local demand for software services and evidenced by Hong Kong's innovation activities survey. The firms' technological innovation

activities derived from suppliers of components or software (33%) surpassed computer-based information networks (19%) and customers (18%), which has been ranked as the most significant driver since 2001 (Hong Kong Monthly Digest of Statistics, 2007). In order to clarify the role of IT services in Hong Kong, the relationships between IT services and the three pillar industries are examined in greater details as follows.

Table 2 Major total export markets of computer software 2002-2006 (HK$ million)

-	2002	2003	2004	2005	2006
China	1,327(43.9%)	1,435(47.6%)	1,127(47%)	1,305(53.7%)	1,295(53.5%)
Japan	479(15.8%)	456(15.1%)	327(13.6%)	394(16.2%)	345(14.3%)
US	692(22.9%)	659(21.8%)	569(23.7%)	346(14.3%)	194(8%)
Taiwan	156(5.2%)	187(6.2%)	162(6.8%)	126(5.2%)	166(6.9%)
Others	370(12.2%)	281(9.3%)	211(8.8%)	259(10.7%)	418(17.3%)
Domestic export	1502 (49.7%)	1557(51.6%)	1250(52.2%)	1216(50.1%)	860(35.6%)
Ex-export	1523 (50.3%)	1460(48.4%)	1146(47.8%)	1213(49.9%)	1558(64.4%)
Total export	3025 (100%)	3017(100%)	2396(100%)	2429(100%)	2418(100%)

Sources: Sources: *Report on Hong Kong Trade in Services Statistics for 2005*, Census and Statistics Department.

3.1 IT utilization in HK

Although HK has a well-established digitalized infrastructure ;however, it is found that the IT utilization in the three pillar industries as well as other major industries still involve a lower-medium level of utilization, as shown in Table 3. This Table illustrates how the financial services industry enjoys the highest degree of IT utilization, followed by trading, and community and personal services industries. Moreover, the size of the company indicates that IT seems to be mainly applied in the large and medium size companies, while very few small sized companies (taking 86.3% of total number of company in Hong Kong) have experienced the advantages of IT. In particular, the percentages with Internet connection or websites are tremendously lower than other indicators, including the promising financial services industry (for example, merely 22% in average, and 74.7%, 37% and 13.5% respectively in the large, medium and small companies in 2006).

Table 3 Facts of IT utilization in Hong Kong

	Industry Sector						Employment size		
	Manufacturing	Construction	Trading	Logistics	Financial services	Community & personal services	Large	Medium	Small
Number of company									
2004	17,481	22,869	165,582	36,310	48,630	35,257	6,405	35,060	284,663
2005	14,624	21,085	165,420	34,729	46,649	31,424	6,053	32,583	275,295
2006	14,830	19,093	154,592	30,026	43,764	34,980	6,052	34,659	256,574
% using PCs									
2004	63.1	49.5	59.7	33.7	82.3	48.8	97.4	83.7	54.5
2005	58.4	55.4	63.6	28.9	87.2	44.2	97.5	88.9	56.4
2006	47.3	55.2	60.6	33.7	88.1	57.3	99.2	85.9	56.2
% with internet connection									
2004	54.1	39.3	52.5	23.5	76.9	37.6	89.7	76.2	46.4
2005	46.9	45.0	58.1	25.8	81.8	38.5	91.5	83.6	50.5
2006	44.0	48.3	55.6	30.2	87.1	49.6	94.7	80.7	51.7
% with web site									
2004	16.2	7.3	13.5	6.6	25.8	18.4	67.7	39.2	10.6
2005	10.4	7.0	17.5	5.4	20.7	16.4	72.3	34.6	12.0
2006	10.3	2.3	19.3	7.1	22.0	24.6	74.7	37	13.5

Source: Hong Kong Census and Statistics Department.

Note: Figures are based on the annual survey on information technology usage and penetration in the business sector conducted from May to July in each year.

These data exhibit the service-oriented industrial structure in Hong Kong is largely composed of small-medium size companies (even though some are so-called 'paper companies' for financial purposes), but the market power of these SMEs is very weak when the economy is mostly dominated by the large companies (Mathews et al., 2008; Meyer, 2000). This suggests that the sustainable growth of Hong Kong's service-oriented economy would benefit if they paid more attention to the small and

medium size companies along with their overall diffusion of IT utilization. However, given the limited resources and capabilities in the SMEs, the establishment of the IT services industry in Hong Kong has become essential to promote its economic productivity and efficiency as a whole. To establish an industry, challenges certainly emerged.

**3.2 Challenges of IT services development in Hong Kong**

3.2.1 Internal challenge: IT manpower

Hong Kong has a population of nearly seven million in 2008 and its labour force is about 3.5 million. The workforce in Hong Kong is a mixture of skilled and unskilled workers. The old and middle-aged manufacturing workers tend to be unskilled or low-skilled, whereas those employed with the growing service industries are more likely to be better educated and possess more advanced skills, but mostly in the areas of financing and trading. The shortage of skilled workers for the service industries including the growing high-tech manufacturing and IT related sectors have emerged since the year 2000.

As shown in Figure 6, skilled manpower funded by the university grants committee (UGC) in the past years is mostly focused on the area of business, commercial and social science (33% of total fund in average), followed by the field of

humanities, education and art (23% in average), and engineering technology (19% in average). This corresponds to industrial demand in Hong Kong which specializes in business and commercial applications. It is noticed that an increasing number of students studies in the medicine and biology program (increased from 5,489 in 2001 to 6,506 in 2007) while the students enrolled in computer science program decreased from 3,865 in 2001 to 2,799 in 2007. The nature of a small economy that heavily relies on business and commercial industries suggest that Hong Kong needs to adopt an external talent recruitment strategy as Singapore did, so they can leverage cheaper manpower from Mainland China and its neighboring countries.

Figure 6

Stduent Enrolment (Full-time equivalent) of UGC-funded Program, by academic program, 2001-2007
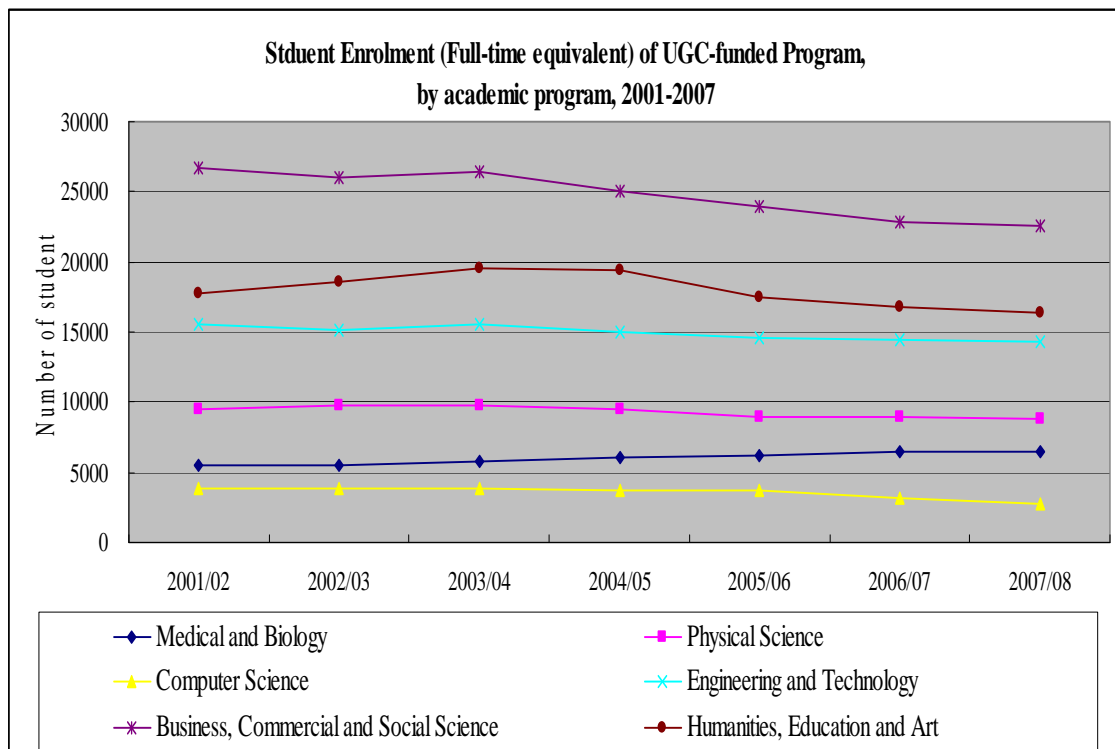
Source: Adapted from the Hong Kong University Grants Committee (various years).
Note: The number of students in the computer science program was extracted from the total number in the physical science program.

The decreasing supply of IT manpower may pose a potential pitfall for Hong Kong's application-oriented economy, whereas IT services/software serves as one of the core components for advancing existing industries through increasing productivity, cost controlling, and time efficiency. Furthermore, the IT services/software also presents potential opportunity on service and business model innovations for the SMEs and a strategy platform for the larger companies (Davenport and Prusak, 2000; Powell and Dent-Micallef, 1997). Given the strong incentive in financing and trading industries in Hong Kong, IT-related fields have never been a priority for most of the local students. IT services/software is not only knowledge-intensive but also labour-intensive (especially for programming or coding). The characteristics of a longer time for return on investment and shorter product life cycle are somehow against the nature of Hong Kong's business environment. The hustle characteristics of Hong Kong make relevant manpower recruitment and attraction most difficult for the development of IT services in Hong Kong. The manpower flows between IT and other industries is an interesting cyclical pattern as observed in many industry cycles, which will be discussed in Section 5.

3.2.2 External challenge: linking with Mainland China

As the largest industry in Hong Kong, trading is tightly linked with ex-export activities, especially with those to and from Mainland China as shown in Table 2.

When the value of Hong Kong's export (including ex-export) doubled from 2000 to 2006, reaching HK$24.6 billion (approximately US$3.2 billion), the inward and outward ex-exports took 94.5% of the total export. Amongst which, the destination to and from Mainland China acquired 48% and 63% of re-exports respectively, the largest proportion of ex-exports in Hong Kong (National Bureau of Statistics of China, 2007).

Hong Kong is certainly closely linked with MNCs and Mainland China. As MNCs dominated the service-oriented economy, HK must sustain its distinctive transnational focus and build up its distinctive characteristics, otherwise, MNCs will quickly bypass HK and build relationships directly with Mainland China (McKinsey Quarterly, 2006). This has been evident in recent years, particularly in the area of logistics, as shown as a flatten growth curve in Figure 1 above. The pace of intensive competition since the 1990s has threaten Hong Kong's sustainability while other Asian cities such as Shanghai, Singapore and Taipei have emerged as competitors and challenged Hong Kong's financial and logistics leadership in Asia (Lee and Lee, 2008; Zheng and Hu, 2007).

Targeting on Mainland China market, the direct competitors of Hong Kong IT services/software sector are those inner Chinese players who share a similar language and business culture, and are also strongly supported by the Chinese government.

However, HK's competitive advantages are deep-seated in its historic resources such as a familiarity with multinational cultures, relatively better English ability and legal systems (including intellectual property rights), and excellence in the management and marketing integrations between East and West. In order to gain insightful understanding of Hong Kong's IT services sector, the eleven IT services related organizations and companies, ranging from public institutes, local companies, MNCs, and industrial associations, have elected to study at a greater level of detail.[3]

4. The main results of the interviews and a case study

4.1 Main results from the interviews

As in other countries, the IT services industry in Hong Kong acts as one of the keys in reinforcing competitive advantages to promising industries in financing, trading and logistics services through various aspects. From interviews with eleven IT services related organizations and companies, some consistent standpoints are elaborated.

1. MNCs choose HK as the regional office or headquarters for two main reasons: (1) financial leverage; and (2) stronger IP protection and ease of relating to the complex Chinese market (i.e. HK is the only place who has two legal systems

---

[3] The interviews with the CEOs or general managers in eleven IT service related organizations and companies were conducted in August 2008, including Hong Kong Productivity Council, (Hong Kong and Mainland Software Industry Cooperation Association (HMSICA), Hong Kong Science and Technology Park (HKSTP), Hong Kong IT Federation, and etc.

(China's and western) and two monetary (RMB$ and free monetary HK$)), so HK can be the value-added gate keeper for inflow and outflow between China and the rest of the world.

2. Nearly all of the IT services companies agree the necessarily of overseas market expansion. HK's scale is too small to go into overseas markets because of limited manpower and finance capabilities and the focus is mainly on 'application' and 'local customization' without upstream R&D and design. Even so, many feel optimistic about opportunities in Mainland China with a great-interest to develop in this market in the near future.

3. HK needs to carefully focus on its knowledge-intensive industrial development. Based on the resource-based views, three advantages of Hong Kong IT services (software) are identified: (1) Flexibility: like the very flexible telecommunications program enables marketing staffs to individually customize their service program; (2) communications capability: the sense of international business operations; and (3) project management capability: coordination skills between customer and producer. Two disadvantages are also illustrated: (1) expensive manpower cost; and (2) management of leveraging Mainland China manpower and quality control. In a word, Hong Kong IT services (software) companies have to continue its accumulated competitive advantage as a business intermediary.

4. Despite Hong Kong's well-built IT infrastructure and science parks (hardware), the IT services (software) is weak due to the overwhelming focus on the three pillar industries. The shortage of IT related manpower (even the large companies claim this is difficult for their IT departments) and lack of long-term public funding have become major weaknesses in developing HK's IT (services).

5. The recruitment of domestic IT related manpower and Mainland Chinese talents are both considered problems due to university graduates (especially the elites) mostly attracted to the three pillar industries and complicate process for applying the inner Chinese enter Hong Kong.

6. The definition of 'innovation' in Hong Kong is unique from others, which is very focused on 'commercial applications' in the value chain process. Hong Kong needs a long-term perspective on IT-related development, particularly in the manpower cultivation and public funding.

7. IT services/software industry is an extremely critical infrastructure for almost all the industries. A substantial proportion of finance infrastructure in Hong Kong is attributed from software development which makes HK as the regional financial hub today.

8. IT graduates have greatly reduced since the year 2000–which makes the IT

(software) manpower shortage an even bigger problem in HK. The turnover rate of IT services related manpower (30%-40% in average, according to the interviews) is usually higher than other sectors, especially for the middle-lower level manpower. They are usually attracted by the finance industry with a better salary package (about 35% higher), especially when the finance industry cycle is at the growth stage.

9. Larger local companies and MNCs have different perspectives from the local SMEs on the importance of intellectual assets such as IPs and international certificates (e.g. 'CMMI' or China's 'SIQC'). The former believes the long-term competitiveness has to take intangible assets as a core competence, while the latter tends to be more 'application-oriented' and ignores the IPs. However, it is agreed that the development of IT services in Hong Kong should focus on reinforcing the promising industries in finance, trading, and logistics.   .

10. Even though the economy is somehow relied on MNCs, 90% of the manpower in the MNCs is local Hong Kong people. It is the manpower diffusion from the MNCs, resulting in the establishment of hundreds SMEs software companies.

The quick adoption for the new technology is one of the most competitive advantages in HK. However, the IT utilization seems to be limited in the large

companies only while most of HK's SMEs did not really know how the IT application can help to improve their business performance. This is an interesting point observed by the large companies in Hong Kong who have many M&A (merge and acquisition) experiences with SMEs, which the first step after acquisition is to upgrade the IT system for these SMEs.

4.2 Case study: fast track to achieving nationwide distribution in China via IT services/software support[4]

The Abbott Laboratories: customer who intends to expand market in Mainland China

Knowing that winning in China was important for the long-term growth of the company, Abbott Laboratories, a global infant nutrition brand, aimed to focus its energy on what it did best: product development, consumer insights and brand marketing. The company therefore decided to seek for a Hong Kong partner who is familiar with both the Chinese and western business complexities to implement market distribution through both the modern trade channel as well as the local trade channel. When the company approached IDS in 1998, its business was mainly concentrated in the wealthy coastal cities of China. It did not have a national presence.

---

[4] The case information and internal data is provided by the IDS. Headquartered in Hong Kong, the IDS Group is a leading integrated distribution and logistics services provider. With 150 IT staffs in 2008, IDS is specializing in utilizing IT services/software capabilities on value-chain logistics.

However, having been in China for some time, Abbott believed it was ready for national expansion within the next few years. The key factor for establishing a national distribution network equivalent to or better than key competitors depends on the rapid establishment of an IT services support system and experienced customer-oriented logistics management capability. Apart from the advantage of affiliating with Mainland China, IDS is able to take on the challenge and achieve the goal by devising tailored sets of capabilities: customer-oriented projects and management capabilities, application-oriented market capabilities, and customized IT services/software capabilities (Lee and Lee, 2007).

The IDS: Customized IT services provider

<u>Customer-oriented project and management capabilities</u> – In addition to helping the company develop a multi-layer distributor/wholesaler network under the supervision of an experienced management structure, IDS brought along field sales staff to service these trade accounts to ensure high-quality execution of in-store activities. Within each city, IDS in collaboration with Abbott helped identify and prioritize the most important trade channels and target cities that would best realize the growth goals of the infant nutrition brand. This allowed the company to validate its growth targets and tied revenue numbers to specific trade channels. Outsourcing of this set of activities also allowed the company to achieve a fast national rollout at a lower fixed

cost.

Application-oriented market capabilities – As the first foreign distributor of consumer goods to receive a nationwide license from China's State Ministry of Commerce under the Closer Economic Partnership Arrangement (CEPA) between Hong Kong and China, IDS has a network of 18 branch offices across China in 2008 with invoicing and direct selling capabilities. For Abbott's key trade accounts, IDS helped develop comprehensive servicing capabilities, such as direct invoicing and shortening lead-time in every step of the supply chain.   All of this helped improved cash flow and profit margins for both Abbott and key trade accounts.

Customized IT services/software capabilities – Through strong design capability of IT software along with management capability on customer demand using IDS' proprietary IT and software technology, in-field sales staffs were able to track and feed market and inventory data electronically through their handheld devices. A tailor-made reporting system is being developed to meet the specific needs of Abbott's market intelligence function on real-time sales and inventory information. Also, through a custom-designed web-based portal, Abbott Infant Nutrition is able to access business-critical information including sales data, order status and inventory level. This additional transparency in the supply chain has allowed Abbott Infant Nutrition to continuously refocus its investment on the right products.

Thus, the results for Abbott Laboratories were impressive. Sales improved by 50 percent from 2005 to 2007 while the brand's city presence has expanded from only 30 cities in China in 2004, to more than 150 by 2007. Abbott's value share position among the Key and A cities (refer to provincial capital cities) has advanced to number three by August 2008. With strong and comprehensive IT services/software support by IDS, Abbott Infant Nutrition also made substantial investments in understanding and reaching their target audience through various marketing programs, which augmented the role of IT services/software in supporting and strategizing onto the demand-oriented supply chain. By upgrading the IT services onto the strategizing platform, the successful story is just beginning to unfold.

5. Discussions and policy implications

To promote the knowledge economy and continue to act as an intermediary between China and intra-Asia, the public policy of Hong Kong's paragon in laissez-faire capitalism may need to be reconsidered, whereas IT services sector exerts a critical reciprocal relationship with the sustainability and further stimulation of Hong Kong's prosperity in service and business model innovations along with its promising industries. Two issues are elaborated as opportunities for discussions.

5.1 Internal opportunity: IT services as a key supporting sector through service and business model innovations

The significant impact of IT services on increasing industrial productivity has been widely recognized. The potential opportunity of IT services and applications in Hong Kong are tremendous as seen in Table 3. As shown in Figure 7, the financing, trading, and community and personal services are the three pillar industries while tourism, communications and media, transport, and light manufacturing have been clustered. The government should consider innovative strategies to prevent the 'pitfalls of familiarity' from utilizing IT services/software with the promising clusters in Hong Kong (Puccio et al., 2007; Meyer, 2000). A first step could be to identify growth opportunities in the sub-sectors from the promising service industries as targets and drawing upon IT services/software applications to increase their competitive advantages in the global market. In other words, Hong Kong can take advantage of its unique business linkages with marketing and coordination capabilities to develop 'niche' IT services surrounding its 'core competence' industries through service and business model innovations.

Figure 7: IT services/software as a key supporting sector between and amongst Hong Kong's clusters
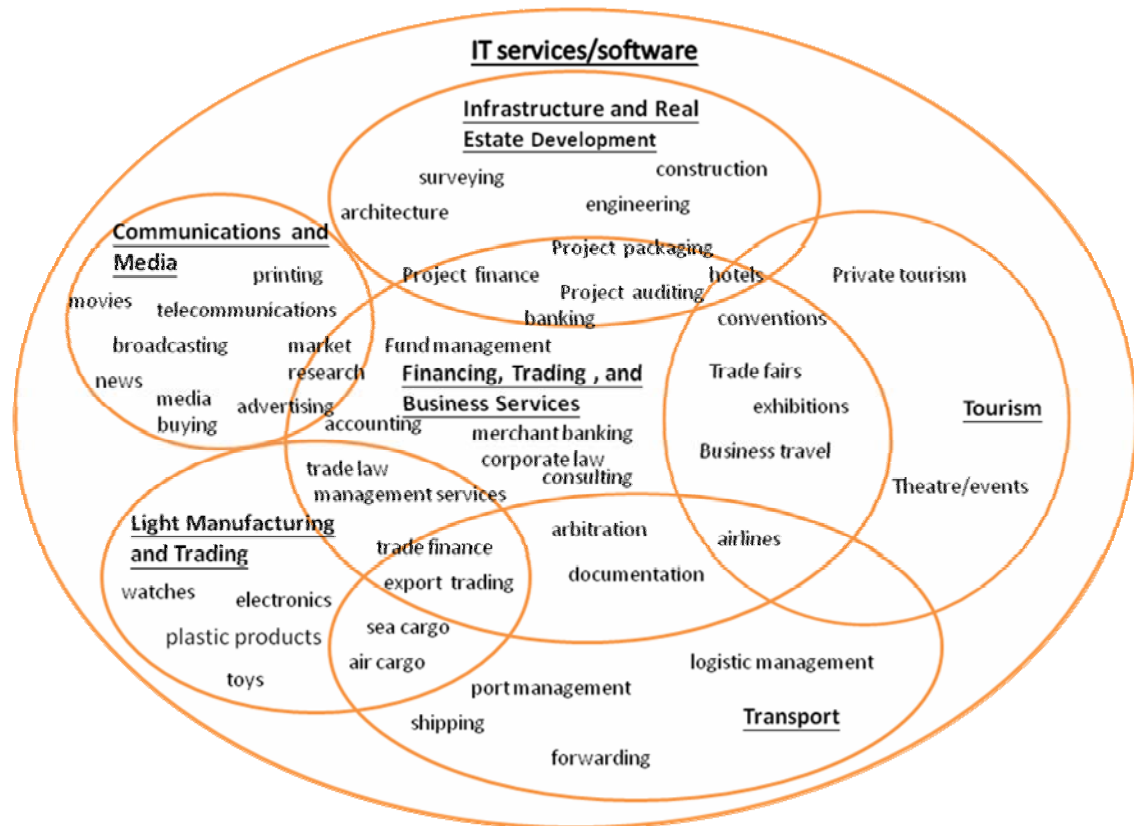
Source: Adapted from Enright, et. al. (1997).

Furthermore, it is seen that even the large companies have not yet fully utilized the IT for new business models or service innovations, let alone the SMEs. The large companies tend to have their own IT department as a strategic platform while the financial favorable incentive is also provided by other Asian cities (such as Singapore and Shanghai). When these large companies may shift their business operations to other places, the policy may need to put more emphasis on SMEs for diffusing the advantages of IT services/software applications, in which government funding and resource allocation may need to play a critical role. Perhaps industrial associations

could undertake a certain level of responsibility with respect to guidance and act as a mediator. For example, the industrial associations may collaborate with SME companies to train and recruit IT services/software manpower through providing training programs with national or international certificates in the Pearl River Delta in order to leverage Mainland Chinese manpower and increase the quality of manpower (some large companies such as iASPEC has adopted this strategy to solve the problem for manpower shortage). Another example is the Hong Kong Software Outsourcing Alliance (HKSOA) has been established in 2007, aiming at gathering the strengths of various specialized IT services SMEs to capture the opportunity from China's tremendous outsourcing market.

The nature of HK entrepreneurs is good at opportunity alertness, but opportunities must be seized if they are to be of any use (Mok, 2005; Yu, 1998). On one hand, IT manpower is the key in the IT services sector. The problems are not only about less quantity but also about the qualification of IT graduates cultivated from HK's education system who are lack of creativity and interdisciplinary specialties. As the intellectual knowledge of IT is embedded within manpower, an increase number of IT manpower (domestically and internationally) is equivalent to diffuse more IT intellectual into Hong Kong. Thus, the recruitment and cultivation of IT-related manpower may be one of the priorities for the development of IT services/software

sector as a key supporting linkage in Hong Kong.

On the other hand, industrial cycle makes a difference (Hu, 2008; Mathews, 2005). Market downturn provides the best time and opportunity to increase efficiency for markets and industrial players (Display Search, 2006; Mathews, 2005). As the global financial crisis recently started in 2008, the IT manpower may largely outflow from the financial related service sectors. It is the best time for the IT services/software start-ups and existing companies to take advantage of these talents (especially for the substantial number of retired or almost about to retired professional manpower who are experienced in the large MNCs companies) and target on the niche service markets (both large companies and SMEs) to promote IT services/software as a market platform and act as an integrator for the service provider, service requester and service matchmaker.

Through diffusing IT knowledge into numerous SMEs to create market demand, it is expected to attract various specialized players to join the sector (e.g. venture capital, university R&D, professional agency, and IP/legal system) while the increase of industrial demand is not only derived from the large companies but also from the numerous SMEs. Under such circumstances, the continuous and sustainable pillar industries and the IT services/software industry may reciprocally benefit, in which IT services are able to act as a key supporting industry in Hong Kong for incumbents as

well as for start-ups.

5.2 External opportunity: Creating an IT services industry through expanding into overseas and Mainland China markets

Hardware and software are two sides of a coin. Hong Kong has an excellent opportunity to develop IT services as an industry, given the characteristics of Hong Kong's management capability in corresponding to the nature of IT services on 'customer demand'. For example, the commercialization process of developing a new software product normally takes a longer time (about one to three years) and is initiated from an 'business idea', progressively followed by the 'architectural design', 'coding or programming', 'product testing', 'packing', 'maintenance' and 'after-sale service', while programming and coding is mostly at the labour-intensive stage. Hong Kong's specialized knowledge on project management (e.g. to ensure full documentations is effectively retained and is able to be retrieved and used throughout the long development process, so that the quick turnover programming tools can be always upgraded) is thus critical for a software product to be successful launched into the market in time. This also helps to reduce the risk and disadvantage of higher manpower turnover rate. In addition, effective communications in process is also one of the critical skills for project management. These are the complementary competency between Hong Kong (specialized in business sense of applications and

management skills) and China (with large scale market and abundant IT related manpower). To continuously act as an intermediary between China and intra-Asia, both overseas' and Mainland China's market expansions are indispensable for developing Hong Kong's IT services/software as an industry (Mathews et al., 2008).

Since the 10th five-year plan in 2000, China has announced its core industries for economic development are targeted on both integrate circuits (IC) and software. To promote Hong Kong's knowledge economy and continue to be a window between China and the global markets, two points are highlighted: (1) Hong Kong's IT services have to emphasize on outward strategies, customer relationship management (leverage from SMEs and associations), financial incentives (leverage from government), and interdisciplinary manpower supply (leverage from university and overseas/Mainland Chinese manpower); (2) intellectual property rights (IPRs) focus: aiming at China's market and gaining its IP protection in the first place (China's software IPs reach 30% growth rate per year since the year 2000), then focus on innovation around the IP-oriented building blocks in order to access the international markets.

For Hong Kong, IT services need to focus on "services on demand". Thus, market segmentations are important, especially for those targeting on the Mainland China markets. According to the SIIC (2007), three market segmentations are identified: 1)

new start-ups stage: companies are at the initial stage for IT applications. They do not have too much experience on IT. These companies are mostly located in the Pearl River Delta in China and Southeast Asian emerging industrialized economies and mostly are small-medium sizes; 2) system integration stage: the companies who haves about 3-5 years experience with IT applications. The services need to connect the different sub-systems within the companies or deeply and broadly utilize the IT into a specific business sector, so that the professional domain knowledge as well as the communication skills are essential. This segment requires a larger and more experienced IT integrators for the services. The companies at the growth stage are in this segmentation; 3) core competence transformation stage: the companies who have already experienced IT applications for 5-10 years or above, and are trying to transform their IT applications into the external competitive capability (e.g. banks and telecommunications industry). When the customer demand is not as clear as the previous two market groups, this segmentation requires highly specialized domain knowledge as well as a comprehensive understanding for industrial competition. However, the three market segmentations provide a clear evolving picture for Hong Kong's IT services providers to capture the growth opportunity along with the development of China and emerging economies in Southeast Asia in the 21st century.

This study shows that the economic growth momentum of Hong Kong can not solely depend on the traditional pillar industries. Acting as an entrée for Chinese companies in the international market and MNCs in China and Southeast Asia, Hong Kong's economy needs to be more diversified along with its promising industries. It is suggested that Hong Kong needs to position itself not only as an expert in trading and financial services but also as an innovator around and beyond these promising industries through service or business model innovations, if Hong Kong desires to secure a competitive advantage as the hub of Asian value-chain services. Endogenous IT services industry may be the one of the essentials to further stimulate Hong Kong's growth as a whole. In regards to application-orientation, IT no doubt is a critical driver to reinforce and create Hong Kong's industrial competitive advantages, along with the leverage point to and from China and the rest of the world. In this respect, the public policy of Hong Kong's paragon in laissez-faire capitalism may need to be reconsidered.

6. Policy recommendations

To promote the knowledge economy and continue to act as an intermediary between China and intra-Asia, the public policy of Hong Kong's paragon in

laissez-faire capitalism may need to be reconsidered, whereas IT services sector exerts a critical reciprocal relationship with the sustainability and further stimulation of Hong Kong's prosperity in service and business model innovations along with its promising industries.

- **Diffusing the IT utilization capabilities to various specialized SME companies**. This can be achieved through (1) promoting and educating the domestic SMEs in all sectors for the advantages of IT utilization; (2) expanding overseas and Mainland China's markets; and (3) training and diffusing IT-services/software-specific manpower through providing training programs to increase the quality of manpower. In particular, public funding can assist in (1) IT adoption of SMEs; (2) recruiting retired middle-high level IT related government officers and industrial professionals in order to effectively diffuse the IT utilization capabilities across sectors.

- **Increasing both the quantity and quality of IT manpower (domestically and internationally)**. As the intellectual knowledge of IT is embedded within manpower, increasing the number of IT manpower is equivalent to diffuse more IT intellectuals into Hong Kong. This can be achieved by increasing the undergraduate bases, cross-college interdisciplinary courses training (universities), and attracting neighboring talents (immigration).

- **Targeting on the niche service markets (for both large companies and SMEs) to promote IT services/software as a market platform and act as an integrator for the service provider, service requester and service matchmaker**. Through diffusing IT knowledge into numerous SMEs to create market demand, it is expected to attract various specialized players to join the sector (e.g. venture capital, university R&D, professional agency, and IP/legal system) while the increase of industrial demand is not only derived from the large companies but also from the numerous SMEs.

- **Enabling IT services/software as a key supporting sector between and amongst Hong Kong's clusters, particularly through service and business model innovations**. Hong Kong needs to position itself not only as an expert in trading and financial services but also as an innovator around and beyond these promising industries through IT service and business model innovations, if Hong Kong desires to secure a competitive advantage as the hub of Asian value-chain services.

- **Creating an IT services industry through expanding into overseas and Mainland China markets.** Flexible management capability in corresponding to the nature of IT services on 'customer demand' is the complementary competency between Hong Kong (specialized in business sense of applications

and management skills) and China (with large scale market and abundant IT related manpower). To continuously act as an intermediary between China and intra-Asia, both overseas' and Mainland China's market expansions are indispensable for developing Hong Kong's IT services/software as an industry.

References

Amsden, A. H. (2007). *Escape from Empire: the Developing World's Journey through Heaven and Hell*. The MIT Press.

Davenport, T.H. and Prusak, L. (2000). Working knowledge: how organizations manage what they know. *Ubiquit* 1(24), pp.12-18.

Enright, M.J., Scott, E.E., and Dodwell, D. (1997). *The Hong Kong Advantage*. New York: Oxford University Press.

HKPC (Hong Kong Productivity Council), (2006). Study on Hong Kong IT services sector 2006. www.siic.org.hk, access on July 2008.

Hong Kong Census and Statistics Department (2008). The four key industries in Hong Kong economy. http://www.censtatd.gov.hk/home/index.jsp Access on November 2008.

Hong Kong Census and Statistics Department, (2006). Report on 2006 Annual Survey of storage, communications, banking, financing, insurance and business services.
https://dragon.nchu.edu.tw/cgi-bin/downfile/55201530076_tmp2.pdf/B1080 0052006AN06B0100.pdf?HTTP_COOKIE=key%3D%2405A2BEB1.mchu %3Atw&fake=/B10800052006AN06B0100.pdf Access on November 2008.

Hong Kong University Grants Committee, (2001-2007). Student enrolment of UGC-funded program.
http://www.ugc.edu.hk/english/documents/figures/big5/figure_frame.html Access on November 2008.

Hu, M.C. (2008). Exploring the technological innovation trajectories under modularity: evidence from Taiwan's bicycle industry. Global Entrepreneurship 2008, Monash University, 3-4 July 2008, Melbourne, Australia.

Hu, M.C. and Mathews, J.A. (2005). National innovative capacity in East Asia." , *Research Policy* 34(9): 1322-1349.

Lee, C.Y., and Lee, H.L. (2007). *Building Supply Chain Excellence in Emerging Economies.* Springer Science + Business Media, New York, N.Y.

Mathews, J.A. (2005). Strategy and crystal cycle. *California Management Review* 47 (2), pp. 6-31.

Mathews, G., Lui, T-L., and Ma, Eric, K-W. (2008). *Hong Kong, China: Learning to Belong to a Nation*. New York, NY : Routledge.

Market Intelligence Center. (2006). Global IT services outlook 2005. MIC, Taipei, Taiwan.

McKinsey Quarterly (2006). Hong Kong's changing workforce. June 2006. http://www.mckinseyquarterly.com/Hong_Kongs_changing_workforce_1801 Access on November 2008.

Meyer, D.R. (2000). *Hong Kong as a Global Metropolis.* New York, NY: Cambridge University Press.

Mohamed, A.,and Khalid, A.M. (2005*). Liberalisation and Growth in Asia: 21st Century Challenges.* London: Edward Elgar Publishing Co.

Mok, K.H. (2005). Fostering entrepreneurship: changing role of government and higher education governance in Hong Kong. *Research Policy* 34, pp.537-554.

Nasbitt, J. (1997). *Megatrends Asia: Eight Asian Megatrends That Are Reshaping Our World*. Simon & Schuster Publisher.

National Bureau of Statistics of China, (2007). China statistical yearbook 2007.

Powell, T.C., and Dent-Micallef, A. (1997). (1997). Information technology as competitive advantage: the role of human, business and technology resources. *Strategic Management Journal* 18(5), pp.375–405

Puccio, G. J., Murdock, M. C., & Mance, M. (2007). *Creative Leadership: Skills that Drive Change*. Thousand Oaks, CA: Sage Publications

Rackoff, Wiseman and Ulrich. (1985). Information systems for competitive advantage: implementation of a planning process. MIS Quarterly 9(4), pp. 285-295.

SIIC (Software Industry Information Center) (2007). Study on Hong Kong IT services sector 2006. http://www.siic.org.hk/upload/journal/443.pdf, access on July 2008.

UNCTAD (United Nations Conference on Trade and Development). (2008). World
Investment Report. Access on November 2008.

World Economic Forum, (2006/07). The Global Competitiveness Report . 2006-2007.
New York, USA.

Yu, F. L. (1998). Adaptive entrepreneurship and the economic development of Hong
Kong. *World Development* 26(5), 897-911.

Zheng, C. and Hu, M.C. (2007). Challenge to ICT manpower planning under the
economic restructured: empirical evidence from the MNCs in Singapore and
Taiwan. *Technological Forecasting and Social Change* 74(7).