

Development of Information and Communication Technology Statistics in Hong Kong, China

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Abstract

Hong Kong, China has achieved great strides over the years in the application of information and communication technology (ICT), which brings about technological and socio-economic progresses in the economy. To help understand the development of Hong Kong as an information economy, the Census and Statistics Department (C&SD) of Hong Kong, China has developed a comprehensive set of ICT statistics since 2000 in accordance with the international statistical guidelines. This paper highlights the statistical framework and methodology adopted by C&SD for the compilation of ICT statistics, including business operating statistics of the ICT sector; information technology (IT) usage and penetration in the business and household sectors; IT expenditure in the business and government sectors; IT manpower; electronic commerce and trade in ICT goods. This paper also outlines the work plan of C&SD to align its statistical framework for measuring an information economy with the latest international statistical standards promulgated by the United Nations Conference on trade and Development (UNCTAD) in 2009.

Introduction

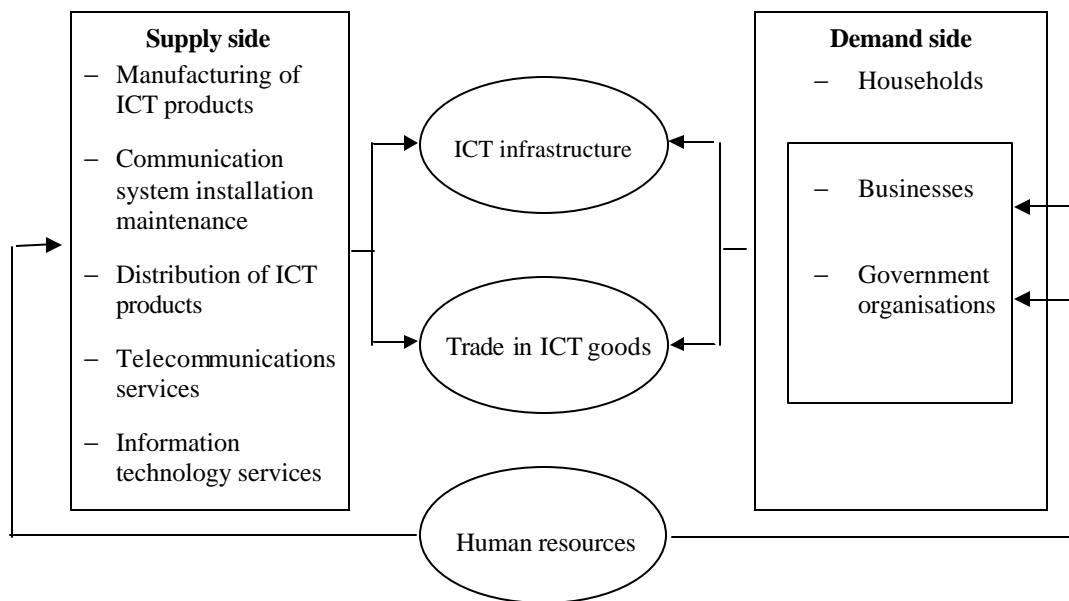
Advanced telecommunication infrastructure and information technology-savvy population are key factors contributing to Hong Kong's success in becoming an international business centre. According to the International Telecommunication Union's ICT Development Index, Hong Kong ranked 11st among 154 selected economies in 2007, reflecting Hong Kong's advanced position in ICT infrastructure, intensity of ICT use and readiness of using ICT.

2. To help understand the technological and socio-economic changes in the Hong Kong economy brought about by the development and application of ICT over the years, the C&SD has developed a comprehensive set of ICT statistics, on both the supply and usage sides. The following is a brief account of C&SD's current statistical programme of ICT statistics.

Statistical Framework for the Measurement of the Information Economy

3. The statistical framework adopted by C&SD for measuring Hong Kong as an information economy covers both the supply (production) and demand (usage) sides of ICT. (see Figure 1). On the supply side, statistics are collected for the activities relating to the production of ICT products and services. From the demand perspective, statistical indicators are compiled for measuring the intensity of usage of ICT by households, businesses and government organisations. Statistical measurement is also made for ICT infrastructure and access, trade in ICT goods and human resources in ICT field.

Figure 1: The conceptual framework for statistical measurement of Hong Kong as an information economy



Under the above framework, C&SD compiles a host of statistics including business operating statistics of the ICT sector; information technology usage and penetration in the business and household sectors; IT expenditure in the business and government sectors; IT manpower; electronic commerce and trade in ICT goods.

ICT Sector Statistics

4. The coverage of the ICT sector in Hong Kong (also known as the information technology and telecommunication sector in Hong Kong) is drawn up with reference to the guidelines promulgated by the Organisation for Economic Co-operation and Development (OECD) with local adaptations. The Hong Kong Standard Industrial Classification (HSIC),

which is based on the United Nation's International Standard Industrial Classification of All Economic Activities (ISIC) with local adaptations, is used to delineate activities that are classified to the ICT sector, comprising business establishments engaged in the manufacturing, distribution, installation and maintenance of ICT products and provision of ICT services.

5. Statistics on the operating characteristics of ICT sector are compiled based on the data collected through the annual economic surveys, including the number of establishments and persons engaged, gross output, value added, compensation of employees, gross surplus and gross fixed capital formation. These help reflect the contribution of ICT sector to the Hong Kong economy.

6. Indicators on telecommunications suppliers (e.g. number of mobile network operators, number of Internet Service Providers in Hong Kong) are also compiled regularly by the Office of Telecommunications Authority based on administrative data.

IT Usage and Penetration in the Business Sector

7. On the demand side, C&SD collects from business establishments data on their IT usage and application through an *Annual Survey on Information Technology Usage and Penetration in the Business Sector* since 2000. The survey covers some 5 500 establishments and capture data for the following areas:

- (a) Number of personal computers (PC) in use and their usage;
- (b) Internet usage;
- (c) Number of employed persons using PC and Internet at work;
- (d) Motivating factors for adopting IT;
- (e) Extent of adopting local area network, intranet and extranet;
- (f) Digital certificate usage;
- (g) Webpage/website usage;
- (h) Portal sites for industries;
- (i) Popularity of electronic business;
- (j) Budget for IT;
- (k) Information security and contingency measures for IT disasters; and
- (l) Usage of wireless and mobile services and technology in the business sector.

IT Usage and Penetration in the Household Sector

8. As regards ICT usage by households, C&SD conducts a *Thematic Household Survey on IT Usage and Penetration in Households* on a regular basis. The survey collects information on the penetration of PC and Internet among households, individual household

member's PC and Internet usage at different locations, usage of electronic business services, usage of online government services and awareness of information security. About 10 000 households are enumerated in the survey, within which all members aged 10 and above are interviewed.

IT Expenditure

9. Data on IT expenditure in the business sector have been collected in the annual economic surveys since the reference year 1998. Data items collected include:

- (a) Expenditure on purchases of computer hardware (e.g. PC, mainframes, notebook computers, storage devices and components) and peripherals (e.g. printers and scanners) for own use;
- (b) Expenditure on purchases of computer programmes, software and databases for own use, including standard ones available in the market and those specifically designed/developed by other firms;
- (c) Payments for other IT-related services (e.g. system design and development, computer training, Internet page design, Internet connection, website hosting, computer equipment leasing, data centre services, repair and maintenance of computer products); and
- (e) Cost of in-house development of computer programs and databases for own use (the total cost is taken to be the sum of labour costs and non-labour costs incurred).

As regards IT expenditure in the government sector, statistics are provided by the Office of the Government Chief Information Officer.

IT Manpower

10. C&SD also conducts the Manpower Survey of the IT Sector on behalf of the Vocational Training Council biennially to collect data on the manpower demand and training situation of IT staff in various economic sectors and government bodies. Some 1 500 establishments are selected in the survey for interviews. The up-to-date survey results are available for the reference year 2008.

11. The survey covers seven broad categories of IT jobs, viz. general IT management, IT/software development, telecommunications and networking, technical services (including IT security, database, system programming, and field support), operation services, IT education and training, and IT sales. The following data items are collected:

- (a) Number of IT employees in a number of major IT posts under each of the seven types of IT jobs in the survey period and the forecast number for the coming 12 months;
- (b) Preferred academic qualifications, preferred relevant years of IT experience and average annual remuneration package of IT employees in a number of major IT posts under each of the seven types of IT jobs;
- (c) Number of IT employees recruited by sources of recruitment and promoted during the past 12 months;
- (d) Major difficulties encountered in recruitment;
- (e) Training needs of existing employees in the next 12 months by training type ;
- (f) Percentage of local IT employees deployed/recruited to work in the mainland of China under each of the seven types of IT jobs; and
- (f) Outsourcing and shifting of all or some of the IT functions .

Electronic Commerce

12. C&SD mainly adopts the broad definition of electronic commerce promulgated by the OECD¹ in compiling the relevant statistics. Data on electronic commerce are mainly collected through the above-mentioned survey on IT usage and penetration in the business sector. However, instead of defining electronic commerce in the survey, data on the following activities are collected:

- (a) Order or purchase of goods, services or information via electronic means²;
- (b) Receipts of goods, services or information via electronic means³;
- (c) Sales of goods, services or information via electronic means⁴; and
- (d) Delivery of goods, services or information via electronic means⁵.

¹ The OECD has promulgated both narrow and broad definitions of ecommerce based on a transactional approach. The broad definition covers all electronic transactions conducted via computer-mediated networks, while the narrow approach definition covers only those conducted via the Internet. For both definitions, the payment and the ultimate delivery of the goods or services may be conducted on -line or off-line.

² An establishment is regarded to have ordered or purchased goods, services or information through electronic means if the confirmation of order or purchase is done completely via electronic means, regardless of whether the payment and the ultimate delivery of goods, services or information are conducted via electronic means.

³ Browsing of information on the Internet is regarded as receiving information via electronic means. Goods and services received through electronic means are only restricted to products which could be transmitted via electronic media, such as software package and songs.

⁴ A firm is considered to have sold their goods, services or information via electronic means if they offered and accepted orders or purchases that were placed completely via electronic means. Apart from the sales of goods, services or information through electronic means such as the Internet and voice interactive telephone system, it also includes cases where a firm, in accordance with an agreement with its clients, automatically delivers certain products to the client for replenishment of stock when the firm learns, via electronic means, that the stock kept by the client falls to a certain level.

⁵ Placing information about a firm or the products sold on the Internet is considered to have delivered their information via electronic means.

Trade in ICT Goods

13. Statistics on external trade in ICT goods capture the international transfer of ICT, serving as an indicator in gauging diffusion of ICT in the economy and industry competitiveness. Based on the latest international guidelines, C&SD has compiled the statistics on imports and exports of ICT goods broken down into the following six categories since 2009:

- (a) Telecommunication equipment;
- (b) Computer and related equipment;
- (c) Electronic components;
- (d) Audio and video equipment;
- (e) Computer software; and
- (f) Other ICT goods.

Alignment with Latest International Guidelines on ICT Indicators

14. The UNCTAD has released the *Manual for the Production of Statistics on the Information Economy* (hereunder referred to as “the Manual”) in 2009, setting out the latest guidelines on compiling statistical indicators of information economy for international comparison. To adapt to the latest international standard promulgated by the Manual, C&SD has suitably refined the coverage of ICT goods based on a more comprehensive product classification in compiling the statistics on trade in ICT goods starting from 2009 (see para. 13). The other statistical development work of C&SD on this area includes:

- (a) **ICT Sector** - Following the introduction of the updated industry classification, known as HSIC Version 2.0 which is based on ISIC Revision 4, in October 2008, C&SD plans to restructure the existing industry domain of ICT sector into the internationally recommended ICT sector as from 2011 to tie in with the release of the sectoral business characteristics statistics under HSIC Version 2.0 and
- (b) **ICT Indicators** - To enhance the international comparability of ICT statistics, C&SD has made continued efforts to align the existing statistical framework for measuring the information economy with the latest standard set out in the Manual. Of the 46 core ICT indicators recommended to be introduced by the Manual, 30 indicators have already been put in place in C&SD's statistical system to suitably reflect the technology level and policy relevance of the Hong Kong economy. Review will be made to extend the existing set of ICT indicators where appropriate.

15. In the light of the rapid development of ICT, C&SD will constantly review the existing statistical programme for the subject of ICT and keep abreast of the latest statistical

development of measuring the information economy, with a view to enhancing its statistical framework to meet the needs of statistics users.

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