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MANAGING INFOCOMM TECHNOLOGY (ICT) IN
SINGAPORE DEPARTMENT OF STATISTICS

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Introduction

1.   This paper lists the major ICT applications in the Singapore Department of Statistics (DOS), as well as the key strategies, approaches and problems in ICT implementation.

Major ICT Applications and Systems

2.   Over the years, DOS has introduced various ICT applications and systems, of which the significant ones in data collection and dissemination are listed below.

Data Collection

3.   The ICT applications introduced in data collection have moved in tandem with the technological and socio economic conditions prevailing at the relevant periods in time. Computer-Assisted Telephone Interview (CATI) was first implemented in the 1995 General Household Survey (GHS), the mid-decade mini-Census. With rising PC ownership in households and higher internet usage, internet submission was added as the third mode of data collection (the other two being CATI and fieldwork) in the 2000 Population Census. In the 2005 GHS, Personal Digital Assistants (PDA) and an automated system of mobile phone SMS alerts were used in fieldwork.

4.   In establishment surveys, various ICT applications were also introduced. In 1999, the Survey Answering Guide Expert (SAGE) was first deployed for the Annual Surveys of Commerce and Services (covering some 16,000 companies and businesses), followed by the Business Expectations Survey in 2000. SAGE is a sophisticated software tool which allows end users to design, create and maintain survey systems, and supports multiple modes of data collection via mail (paper), fax and Internet.

5.   In 2003, the dissemination of customized survey forms for the monthly Producer Prices Surveys was automated through the use of the Department's Lotus Notes email system. This resulted in significant productivity and efficiency gains. The application was subsequently extended to other short term surveys such as Monthly Surveys on Retail Sales and Catering Trade, Quarterly Survey of Wholesale Trade and Quarterly Survey of Services.

Data Dissemination

6.   The SingStat website (www.singstat.gov.sg) serves as a statistical portal providing Singapore official statistics compiled by DOS and other government agencies. This website also contains links to overseas statistical agencies and international organizations. With effect from June 2006, DOS publications have been made available for free access via SingStat website. Since its launch in 1995, the SingStat website has undergone continuous enhancements and revamps in contents and navigation aspects to better serve our data users' needs. The latest revamp is currently on-going and is targetted for completion in the second half of 2007.

7.   In 2004, DOS launched the internet-accessible time series system, SingStat Time Series (STS) Online to replace the remote dial-up system. The STS presently includes about 6,000 statistical time series on Singapore society and economy from several domains, including national accounts, balance of payments, investments, finance, labour, prices, business expectations, trade, manufacturing, tourism, demography, health and education. With an easy-to-use search engine and personalized portals accessible via the internet, STS subscribers could search, select and retrieve important, timely and relevant time series data.

8.   Data users could subscribe to our "Singstat Express" service, which emails to the subscribers press releases and notifications of new publications by DOS as soon as they are released. SMS alert is available for local users. Moving forward, DOS will be exploring the use of mobile technology on data dissemination.

New Projects

9.   One of the new projects DOS is embarking on is the Integrated Business Survey System (IBSS). IBSS is an integrated end-to-end survey system covering the survey processes of survey set-up (including questionnaire design), survey administration, data collection, data editing, imputation, evaluation and compilation for DOS' business surveys. IBSS seeks to achieve the following outcomes:

- Improvement in operational efficiency in survey administration, data collection, processing, editing, estimation and compilation through an integrated system covering all survey processes for DOS' business surveys
- Better co-ordination and improved data consistency among DOS' business surveys
- Improved data quality and increased availability of more detailed business statistics

10. The Commercial Establishment Information System (CEIS), an establishment database maintained by the Business Statistics Division of DOS, is also being redeveloped to achieve the following objectives:

- Store updated basic information on all enterprises and establishments which are registered in Singapore
- Serve as a sampling frame for both external and internal users
- Facilitate the tracing of organizational structure of enterprise groups
- Store contact and other information of establishments to facilitate the DOS' survey sections in managing their contact with the respondents
- Facilitate study on the use of administrative data for statistical compilation

Approaches and Strategies

Tap on available ICT Infrastructure and Facilities

11. To avoid duplication and minimize cost, DOS uses available Central ICT Services whenever possible. These include:

- Service-Wide Applications for common application systems such as Human Resource system (e.g. pay, leave submission)
- Common ICT Infrastructure such as the Government Network
- Service-Wide Hosting Environment for systems e.g. corporate website of government departments
- Period Contracts for IT equipment and services

12. In the event when using the Central ICT services is not possible, the strategy of the IT technical architecture in DOS is to establish a consolidated infrastructure to be shared by the various application systems to achieve economies of scale. With this approach, the deployment of hardware and software is being fully optimized.

IT Service Contracting

13. To optimize the organization and financial benefits, services relating to development of IT application and survey/data processing systems, infrastructure development and maintenance services, are contracted to commercial IT vendors. Contract management is primarily carried out by IDA IT staff[*] deployed in DOS together with inputs from statistical staff. To ensure

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[*] The professional IT staff in DOS are seconded from the Infocomm Development Authority of Singapore (IDA) which is the government agency responsible for ICT implementation in the country. These IT officers are rotated between the various government departments and IDA every few years, facilitating sharing of best practices across ministries and IDA.

quality and success of the IT contracting, the IT management framework was developed, based on established procedures and guidelines provided by IDA. These guidelines specify key procedures and processes for governing and managing IT contracts.

Optimizing ICT Expenditure

14.   To ensure that our expenditure on ICT is optimized, budgetary quotation based on the proposed solution is usually carried out with extensive consultations with users and research on available ICT solutions in the market, to ensure that the users' current and near future requirements are met. This will be followed by the acquisition of the project development and services via standard government procurement process to obtain the most competitive project cost that meets the project requirements.

Problems and Challenges

15.   Implementing and maintaining a cost-effective IT project is always a challenge with ever-changing technology. Therefore, thorough assessment on technology adopted must be carried out to reach an optimal system that can maximise the life-span of the system and infrastructure adopted and meets the business operation needs at the same time.

16.   In implementing new system, we also have to balance ease of system usage with security to optimize the usability of the system. Respondents are increasingly more aware of the need to safeguard the confidentiality of their individual data. If they feel insecure using the system, the survey response rate would be adversely affected.

17.   The introduction of new processes with ICT tools can be a challenge to implement and therefore change management and training must be carried out to address the concerns of staff whose work processes are affected. Continual communication processes would need to be put in place to engage the staff involved. If the changes involve submission of survey returns, respondents would also need to be trained and persuaded to switch to the new mode.

Concluding Remarks

18.   Increased use of ICT in National Statistical Offices (NSOs) is inevitable. The challenge is to come up with ICT solutions which are easy to use, secured and cost effective.