

Country Paper on

Innovations in Official Statistics for Singapore

Official statistics are essential inputs to the economic and social development of any country. Not only are reliable data important, the timeliness and comprehensiveness of such data are essential for policy-making and effective decision making by the private sectors.

Advances in information technology and the growing preference for evidence-based decision-making are but a few of the key trends in the environment that the Singapore Department of Statistics (DOS) operates in.

While these trends add to the complexity and challenges in the statistical landscape, they nonetheless bring about opportunities for innovation in official statistics. This paper highlights the achievements of DOS in the areas of data collection and dissemination.

Improvement in Data Collection Activities

Census of Population 2000

In 2000, Singapore conducted its first register-based Census of Population. For the first time since 1871, information was no longer collected through survey from the entire population. Basic demographic information was sourced from administrative registers while additional data required for in-depth studies were collected from a sample of the population.

For the sample enumeration, a tri-modal collection strategy, integrating the Internet, Computer Assisted Telephone Interview (CATI) and fieldwork, was adopted for the Census of Population 2000. This multi-modal strategy facilitated the conduct of the Census and optimised the operations, in terms of costs, manpower and convenience to different groups of the population.

General Household Survey 2005

The 2005 General Household Survey (GHS 2005) built upon the experiences of the Population Census 2000. For the sample enumeration, the GHS 2005 adopted the tri-modal data collection strategy, incorporating lessons learnt from Census of Population 2000.

A key innovation and improvement in the data collection strategy for GHS 2005 was the use of Personal Digital Assistants (PDAs) in the face-to-face interviews. Questions, response options, branching algorithm and completeness checks were built into the PDA.

The branching algorithm in the PDA guided the interviewer in the conduct of the interview and ensured that respondents answer only the relevant questions. As on-line completeness checks were carried out with the PDA, respondents were also less likely to be called or revisited by the field interviewer to provide information on questions that were inadvertently omitted.

The removal of form scanning and data entry of fieldwork returns in office from the workflow resulted in saving in time and manpower for data processing. Potential errors of transcription from hard copy form were also eliminated. In addition, the use of PDA further simplified fieldwork operations by eliminating the need for printing of partially collected data on paper forms.

Another innovation in the GHS 2005 was the development of an automated system of mobile phone SMS alerts. SMS alerts were sent automatically to the field supervisors' mobile phones in instances where incomplete survey returns had been downloaded to the PDA for face-to-face interviews and the households subsequently called the CATI interviewers to complete the survey or provide new information.

Where the survey returns of households had been completed via CATI, the supervisor would inform the field interviewer concerned not to visit the house. Incidents of field interviewers visiting households who had completed the survey were therefore minimised.

Where the household had provided new information but had yet to complete the survey, the supervisor would inform the field interviewer to contact the GHS call

centre for the latest updates before visiting the house to complete the survey. As the field interviewers collected only the outstanding items, the time for the face-to-face interviews was shortened.

The use of PDA and mobile phone SMS alerts in the GHS 2005 has shown that technological advancements can be exploited to benefit survey respondents and improve survey operational efficiency.

Household Expenditure Survey 2007/08

With the successful experience from the GHS 2005, PDAs were adopted again for field collection in the Household Expenditure Survey 2007/08 (HES 07/08) to reap the benefits of the technology.

Integrated Business Survey System (IBSS)

In 2008, DOS embarked on the development of the Integrated Business Survey System (IBSS), an integrated end-to-end survey system covering the survey processes of survey set-up, survey administration, data collection, data editing, imputation, evaluation and compilation. The IBSS is designed to improve the effectiveness and efficiency of the survey processes through harnessing technological advances and adopting the best practices of established National Statistical Offices (NSOs).

The desired outcome of the IBSS is to make available more detailed business survey data and better quality economic indicators for services industries/clusters which are important for agencies and businesses for their industry/cluster monitoring, policy planning and research purposes.

A multi-modal data collection and data capture strategy will be adopted in the IBSS. To cater to different groups of survey respondents with wide diversity in technological aptitude and capability, the IBSS provides for the submission of survey returns via the internet or mail. To facilitate data capture, the Intelligent Character Scanning (ICR) technology is used to capture data from hardcopy survey returns more efficiently, in addition to conventional data entry.

In the area of data processing, DOS makes use of the software on outlier detection, imputation and compilation developed by Statistics Canada which provides a wide

range of well-established statistical methods on outlier detection, imputation and compilation to improve data quality and timeliness.

To further facilitate data submission by respondents, the Consumer Prices Section has introduced an additional mode, i.e. via email. This has improved the timeliness of data.

Innovation in Data Dissemination

The SingStat website (www.singstat.gov.sg) serves as a statistical portal providing Singapore official statistics compiled by DOS and other government agencies. Since its launch in 1995, the SingStat website has undergone continuous enhancements and major revamps to better serve our data users' needs.

The latest revamp was completed in July 2007, which incorporated more content and new services, such as the Really Simple Syndication (RSS). The SingStat RSS delivers statistical news highlights and hyperlinks to the source documents whenever the updates are posted. Such alerts are delivered in an XML file called the RSS feed or RSS channel.

DOS offers the "Singstat Express" service, which emails to subscribers press releases and notifications of new publications by DOS as soon as they are released. Since 2004, SMS alerts were introduced for local users.

In 2004, DOS also launched the internet-accessible time series system, SingStat Time Series (STS) Online that replaced the remote dial-up system used previously. The STS presently includes more than 7,000 statistical time series on Singapore society and economy arranged in 19 statistical domains. Time series within each domain are presented in tree-like data-tables. Metadata on individual time series are available when users click their desired time series. STS also allows STS users to search for their desired time series using keyword(s) found in the data-table title or in the time series title. Finally, STS users can download their chosen time series in excel, text or xml format.

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.

In addition, DOS provides the pdf version of the "Singapore in Brief" (SIB) for downloading by Palm OS devices via the SingStat website. The SIB is a pamphlet that provides key indicators on the Singapore economy and population. The facility brings convenience to data users as they could refer to the latest key official statistics that had been downloaded onto their PDAs, even when they are on the move.

As part of DOS' continuous effort to provide multi-channel dissemination service, a free mobile service, "Data on SMS" was launched in 2008. Local users could retrieve the latest data for key indicators via SMS through this service. Data users are thus provided with a choice of email, internet, fax, telephone, and mobile to obtain official statistics from DOS.

To stay relevant to the user needs and adapt to an increasingly complex working environment, innovations in official statistics are necessary. DOS not only harnesses advances in information technology to improve operations and introduce more services, but also maintain good working relationships and understanding with the key stakeholders.