Census Bureau Moves Ahead on Measuring E-business

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Based on material provided by Thomas Mesenbourg of the U.S. Bureau of the Census, this article describes strategies the Census Bureau is using to incorporate e-business measures into Federal statistics. The Census Bureau welcomes reader feedback.

The growth, integration and sophistication of information technology and communications are changing our society and economy. Although the expanding use of computers and other electronic tools is widely acknowledged, their effects are largely undefined and, therefore, hidden or poorly measured in official economic statistics. The terms Internet, e-business, e-commerce and cybertrade are often used interchangeably and with no common understanding of their scope or relationship. Important unanswered questions include how big is e-business? How does it work? How does it affect participating businesses? How might it change affected industries? How will it develop in the future? How does it alter the collection and presentation of economic statistics?

The Census Bureau is taking a leadership role in measuring e-business, primarily through the extension of existing surveys. Key activities include the development of measurement definitions and concepts, research aimed at understanding e-business, introduction of preliminary measures of e-commerce in retail trade and development of a comprehensive e-commerce measurement program for activities covered in the Census' economic census and survey programs.

Clarifying Terms and Concepts

Establishing terms that clearly and consistently describe our growing and dynamic networked economy is a critical first step toward developing statistics about it. It is useful to think of electronic business as having three primary components—supporting infrastructure, e-business processes (how business is conducted) and e-commerce transactions (buying and selling). In addition, it is important to note that a common feature of both e-business processes and electronic commerce transactions is reliance on the use of computer-mediated networks. This feature is the essential difference between electronic and other kinds of business.

During the summer of 1999, the Census Bureau, working with other government agencies as well as private sector experts, developed definitions and concepts to describe the changes taking place in the economy as a result of the rapid shift to e-business. From this effort, the Census Bureau identified three primary components of e-business, which are defined below. Each definition includes examples of its scope and content. They are intentionally broad so as to provide an inclusive framework for planning statistical measures and to allow flexibility to incorporate continuing changes in the electronic economy.

E-business process is any process that a business organization conducts over a computer-mediated network. Business organizations include any for-profit, governmental or nonprofit entity. Examples of online electronic business processes include purchasing, selling, vendor-managed inventory, production management and logistics, as well as communication and support services, such as online training and recruiting.

E-business infrastructure is that part of the total economic infrastructure that is needed to support e-business processes and to conduct electronic commerce transactions. It includes investment in computers, routers and other computer hardware; satellite, wire and optical communications and network channels; and system and applications software. It also includes expenditure for support services--such as Web site development and hosting, consulting, electronic payment and certification services as well as human capital, such as programmers.

E-commerce is any transaction completed over a computer-mediated network that involves the transfer of ownership or rights to use goods or services. Transactions occur within selected e-business processes (e.g., selling process) and are "completed" when the agreement between the buyer and seller to transfer the ownership or rights to use goods or services occurs over computer-mediated networks. Electronic agreement, not payment, is the key determinant of an e-commerce transaction. (Census plans to measure the market value of transactions, excluding unpriced transactions such as free software available on the Internet.) Examples of e-commerce transactions include

sales of books or CDs over the Internet, an electronic marketplace selling parts to another business, a manufacturing plant selling electronic components to another plant within the company using the firm's Intranet and a manufacturer selling to a retailer over an EDI network.

Both the e-business and e-commerce definitions make reference to "computer-mediated networks." These networks are defined as electronically linked devices that communicate interactively over network channels. A variety of electronic devices can be linked, including computers, Internet-enabled cellular phones, personal digital assistants, WebTV and telephones linked with interactive telephone systems. Such links generally involve minimal human intervention. Networks include the Internet, Intranets, Extranets, EDI networks and telecommunication networks. These networks may be either open or closed.

Present Program—Current Surveys and Research Studies

The present Census Bureau measurement program consists of the collection of e-commerce measures in a number of current economic surveys and the funding of two research studies.

In August 1999, Census asked roughly 8,000 firms in the monthly retail trade survey sample if they currently sold online or had plans to start by the end of the year. Those that responded affirmatively were mailed a form with e-commerce questions in October 1999 and have been asked to continue to report this information monthly for publication quarterly. The first official retail e-commerce estimates were released on March 2, 2000, covering fourth quarter 1999. E-commerce sales totaled $5.3 billion and represented 0.6 percent of total retail sales. First quarter 2000 estimates became available in late May 2000. (The news release reporting these results is available on the Census Bureau's Web site, www.census.gov.)

In addition, Census has added e-commerce sales questions for both 1998 and 1999 to annual surveys covering retail trade, wholesale trade, accommodations and food services and the rest of the services sectors. Retailers and wholesalers were also asked if they were purchasing goods, supplies or services over computer-mediated networks. Non-store retailers (catalog and electronic shopping sites) and all computer, software and office supply firms were also asked to report the following: total sales and e-commerce by eleven commodity categories (including books, CDs, computers, software and apparel), e-commerce sales by class of customer (individuals, businesses, government) and total foreign e-commerce sales (percentage ranges). Report forms covering reference year 1999 were mailed in March-April 2000, and publication of the results is scheduled for early 2001. In June 2000, a special supplement to the 1999 Annual Survey of Manufactures (ASM) was mailed to plant managers. The supplement collects data from some 60,000 manufacturing plants on e-commerce sales and purchases, on types of information (e.g., design specifications, product descriptions, demand projections, orders, inventory, production schedules) that manufacturers are sharing online with suppliers and customers, and on e-business processes use (present and planned). The results are scheduled to be released in early 2001.

Census also has funded two outside research studies. One is to study changing supply-chain industries and organizations and will provide specific recommendations regarding how to better capture and describe supply-chain activities in the 2002 Economic Census and in related current economic statistics programs. A second study will focus on the information technology drivers of e-business, describing how these drivers are affecting the value-chain, identifying the implications for Census measurement programs and making specific program recommendations. This study also will assess how well the newly adopted North American Industry Classification System captures e-business activities and will make specific recommendations on how we can supplement the NAICS industry classifications to better describe e-business activities and support the new 2002 Economic Census data aggregations.

Plans for a More Comprehensive Approach

The Census Bureau has included in its FY 2001 budget initiative a request for the funds necessary to implement a comprehensive e-business measurement program. This program would enable Census to provide for complete tabulation and analysis of the data now being collected, to expand the coverage of information on e-business and to utilize e-business processes in its data collection programs.

Initially, Census would process, review and prepare data products covering manufacturing, wholesale, retail, food and accommodations as well as service industries, based on the data already collected, and provide e-commerce measures for most other economic sectors and their associated industries. For manufacturing industries, Census also would prepare "baseline" measures of usage of e-business processes. In addition, data from the ASM supplement will be linked to full ASM data, permitting an analysis of the effect of these

processes on individual plants, firms and industries. Baseline measures will also be established for other sectors.

Census would expand coverage of electronic marketplaces and other important distribution channels in the annual wholesale trade survey. In addition, a new survey of supply-chain organizations is under consideration to help us understand changing functions and activities. Finally, Census would also consider adding an e-commerce inquiry to the monthly wholesale trade survey to provide more frequent measures of e-commerce activity in this important sector. Work will also begin on the development of e-business infrastructure measures. Key activities will include identification of priority measures and initiation of data collection.

For respondents to Census data collection programs, Census will study the potential of its own increased use of e-business processes. One Census goal is to ease reporting burdens and increase efficiency in data collection programs by developing and implementing an Internet reporting capability for all five million businesses included in the 2002 Economic Census. A second goal is to establish a Customer Relationship Management staff to coordinate and improve communication with the largest companies and to facilitate their responses to information requests from separate Census Bureau data programs. A third is to develop an Internet-based customer support system for the 2002 Economic Census in order to provide on-request information and technical assistance to census respondents.

User Feedback Welcome

Measuring the digital economy poses many new challenges to the Census Bureau and other statistical agencies. Census welcomes your comments and input on their plans and priorities. For example, Census invites suggestions on measures of e-business infrastructure that should be considered for collection. More information is available on the Census' Web site at *www.census.gov/epcd/www/ebusines.htm*. Please forward your comments and suggestions to Thomas L. Mesenbourg at tmesenbo@census.gov. ■

[1]Related electronic business measurement programs also are being developed at other government statistical agencies, including the Bureau of Economic Analysis for its economic accounts and the Bureau of Labor Statistics for its price and employment programs.