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Topic (ii): Economic issues associated with the implementation of modern IT and management of human resources as driving forces to improve timeliness and quality of statistical data

**PUTTING THE PIECES TOGETHER: MEASURING THE COST-EFFECTIVENESS OF INFORMATION
TECHNOLOGY INVESTMENTS AT THE BUREAU OF THE CENSUS**

Submitted by United States Bureau of the Census¹

SUMMARY

1. Statistical organizations, such as the United States Bureau of the Census, increasingly rely on information technology (IT) to gather, enter, and disseminate data. To make the wisest IT investments, these organizations must assess the cost-effectiveness of different IT alternatives. At present, it is difficult to measure the cost effectiveness of IT for several reasons. For example, there is considerable subjective judgement involved when measuring intangible costs and benefits of IT investments. Also, consistent cost data over time is needed for programs being measured. Finally, agencies do not have much experience in measuring the cost-effectiveness of IT investments, which can result in underestimating the life cycle costs of investments.

2. In looking at the cost effectiveness of IT investments, it is important

¹ Prepared by Nancy Potok and Richard Levy.

not only to look at specific programs or surveys but also the overall bureau environment as well. Information technology requires new security measures to protect data confidentiality. Moreover, information technology divisions need to be able to handle system wide issues in order to maintain agency functioning. Other areas, such as training and recruiting a workforce with appropriate skills, are also significantly affected.

3. Recently the United States Congress passed several laws that guide federal agency policy, management, and activities. Several of these laws specifically detail requirements for IT investments. As the Census Bureau's main task is to produce information, these laws impact heavily on the way business is conducted.

The Bureau developed several management structures, such as an Information Technology Review Board, to ensure adherence to these laws.

4. Three areas of Census Bureau activity can illumine the challenges and issues associated with measuring the cost-effectiveness of IT. In one area, the Census Bureau switched from paper and pencil interviewing to computer assisted personal interviewing for its demographic surveys. This switch raised research and development costs, lowered shipping and printing costs, and reprioritized and expanded financial and human resource allocations. The switch offered intangible benefits, such as the ability to conduct more complex surveys, and exacted intangible costs, such as the difficulties in using the instrument. To compare the cost effectiveness of the two methods, all the costs and associated changes need to be considered, and intangible items assigned costs.

5. In a second area, the Census Bureau is moving towards more standardized IT across the economic and demographic survey programs. The purpose of this move is to save time and money and to manage work more cost-effectively. However, while the Census Bureau is standardizing IT tools, it must be remembered that economic and demographic programs collect different information from different respondents. To assess the cost-effectiveness of standardization, the bureau needs to examine a cluster of programs across program areas.

6. The third area of Census Bureau activity involves the development of a Data Access and Dissemination System (DADS) for the decennial census of population and housing in 2000. A business case analysis, taking into account personnel, development, capital and maintenance costs, determined that DADS was a better investment than using the previous system.

7. While implementing and measuring the cost-effectiveness of IT investments offers challenges, IT also offers opportunities in career development and agency performance. Even crude cost-effectiveness analysis can improve decision-making. Finally, it is important to remember that cost-effectiveness and cost-benefit analyses are merely tools to guide IT investments. Ultimately programmatic requirements must determine what investments are made.