12-1983


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This is Part I of an article based on a CAUR survey of computing in small local governments in the plains and mountain states. The study was conducted under a grant from the W. K. Kellogg Foundation.

Part I reports on the frequency of computer use by local governments, the types of computers used, system administration, typical uses, and attitudes toward and satisfaction with computer systems.

Part II, which will be published in the next issue, will present data on problems with computer use, the principal factors and information systems used to acquire computers, and future plans for acquisition and use.

By Donald F. Norris and David R. DiMartino

Introduction

In February, 1982 the Center for Applied Urban Research conducted a survey of computer use and computing plans and needs in 165 randomly selected small local governments in Nebraska and the surrounding states of Colorado, Kansas, Montana, North Dakota, South Dakota, and Wyoming.

Computer Use

Studies in the mid-1970's indicated that over 90 percent of larger city and county governments used computers in their operations. Less than 50 percent of cities with populations of 10,000 to 50,000 and counties with 10,000 to 100,000 did so. These studies also found that as population declined so did the use of computers by local governments.

The passage of time and the introduction of new technology, especially minicomputers and desktop and microcomputers, had a definite if modest impact on the use of computers by small governments. Only slightly over half (53.3 percent) of the communities in the CAUR study said they used computers. (See Table 1.) As population decreased, so did the frequency of computer use. Table 1 shows, for example, that 75.6 percent of governments with populations of 10,000 and over used computers while only 17.4 percent of those with populations under 2,500 did so.

More cities (67.7 percent) used computers than did counties (36.0 percent). More council/manager (91.4 percent) than mayor/council (52.7 percent) forms of city government used computers in their operations, and more metropolitan (68.6 percent) than nonmetropolitan (46.5 percent) governments did so. Though a few more governments in the three-state mountain region used computers than in the plains states, adoption rates between the two regions did not appear to be significantly different. (See Table 1.)

Of the 88 communities that used computer systems, 86.3 percent had in-house computer systems, 10.2 percent used service bureaus, and 3.4 percent had joint computer operations with other governmental units. (See Table 1.)

The 76 governments with in-house systems owned a total of 86 computers. Almost nine out of ten (98.5 percent) owned one computer, 9.2 percent owned two, and one government owned four systems, all micros.

Systems Used

Of the 86 computer systems used by the 76 communities, the majority (59.3 percent) were minicomputers. An additional 22.1 percent were desktop or microcomputers, and 18.6 percent were bookkeeping or accounting machines. None was a mainframe computer.

The vast majority (81.4 percent) of the 76 governments with in-house computer systems owned their systems, and only 17.4 percent leased or rented. Two of these governments reported the ownership of one and the lease of a second system.

These 86 systems were also evaluated according to whether they represented a manufacturer's current commercial computer system at the time of the survey. Over half (54.7 percent) were considered current models, 20.9 percent were the immediately previous models, and 24.4 percent were two or more models removed from a vendor's most current model on the market at the time of the survey. Thus, almost one in four of these models was either dated or represented antiquated technology.

Almost three-quarters (74.4 percent) of the computers used by the sample governments had been owned for less than five years. Only 20.9 percent had been owned for five years or longer. A small number of governments (4.7 percent) did not know how long they had owned their computers.

When systems were categorized by computer manufacturer, the governments with in-house systems had acquired their systems primarily from the three largest computer manufacturers: IBM (26.7 percent), NCR (25.6 percent), and Burroughs (18.6 percent). These "big three" brands constituted 70.9 percent of...
the in-house systems owned. The largest users (39.3 percent) indicated rather varied computer purchasing habits by the surveyed communities, probably not unlike the purchasing habits of the broader society. Included in this group were systems from several manufacturers, including Altron, Apple, Cado, Data General, DEC, Olivetti, Phillips, Radio Shack, Telvico, Texas Instruments, Wang, and others.

System Administration

Previously reported data have indicated that local government computer operations were mostly often administered within local finance departments. Separate data processing departments were the second most frequent location. 

The present study showed that among the 76 governments with in-house systems, the city or county clerk most frequently administered the system (43.4 percent) followed by a separate data processing department (21.2 percent). Administration of the computer systems occurred through the finance department in only 9.2 percent of the governments.

Programming and Programmers

Acquisition of programming to perform various functions can often be a problem for local governments. This is partly because of the uniqueness of some local government functions and also because manufacturers and other software firms programmed in a local government. Hence, administration of the computer systems is critical. Programming is a key consideration of large government. (See Table 2.) In small governments, city and county clerks are primarily involved in financial management related activities. Hence, administration of the computer through their offices is not inconsistent with earlier findings among larger government systems.

Functions Performed

When analyzed in terms of functions performed on both in-house and other computer systems in these governments, financial management activities clearly ranked first. (See Table 3.) For example, 87.2 percent of the 88 local government computer systems using computers of all kinds performed payroll functions on their computer systems. This was followed, in descending order, by accounting (80.7 percent), budgeting (72.7 percent), and utility billing (69.9 percent). Thereafter, frequency of use in specific functional areas fell below the reporting governments (e.g., tax assessment 40.2 percent) and dropped to only 16.1 percent listing voter registration.

Attitudes Toward Computers

The 88 local governments used computers were asked to respond to questions concerning the effects of their computer systems on the cost, efficiency, and accuracy of their operations. Taken together, the responses to these questions showed a highly favorable evaluation of the benefits of computer technology in local government. By large majorities, respondents felt that their computer systems had reduced costs and improved efficiency and accuracy. Eighty-six percent said improved accuracy was a major benefit of their computer systems and 79.2 percent said the systems had reduced costs. When analyzed in terms of functions performed on both in-house and other computer systems in these governments, financial management activities clearly ranked first. Eighty-six of the 90 governments responded to a question regarding the effect of their computers on accuracies. (See Table 4.) Over 80 percent said improved accuracy had resulted from their computer systems while 11.1 percent saw no effect on record keeping accuracy, and 2.5 percent actually felt their computer systems decreased record keeping accuracy.

Satisfaction with Systems

In a related question, the respondents were asked to indicate their satisfaction or dissatisfaction with several elements of their computer systems. The greatest levels of satisfaction were: 96.3 percent-staff response to the system, 96.3 percent-ease of use, 92.8 percent-equipment/hardware, and 88.8 percent-training of staff to use the system.

In fact, for only four system elements did as many as 10 percent of respondents report dissatisfaction. These were, in order of frequency, vendor service/support (18.2 percent dissatisfied), programming (14.6 percent), programs (15.8 percent), and training of users (11.3 percent). These results were significant in that all of these elements relate to the operation of systems, rather than the physical technology or attitudes of the users.

Respondents were also asked to describe their overall satisfaction with their computer systems. Of the 88 governments responding, 92.9 percent were satisfied while only 7.1 percent were dissatisfied. These data further confirmed the observation that the simple governments were highly positive toward their computer systems. (This article will be concluded in the next issue.)
Footnotes


2 Governments were considered metropolitan if they were located within a county classified as part of a Standard Metropolitan Statistical Area (SMSA) by the Census Bureau or if they were located in counties adjacent to SMSA counties. In this way, all cities and counties falling within the primary market area (or tributary area) of major urban centers were classified metropolitan. All other cities and counties were labeled nonmetropolitan.

3 Current technology was defined as a manufacturer's most recent commercially available system(s) at the time of the survey. As examples, these included: IBM System/34, Burroughs B90 and B900, and comparable minicomputers; and Apple II Plus and IBM Personal Computer, and comparable microcomputers. Dated systems included IBM System/32, Burroughs B80 and B800, and comparable systems. Antiquated systems included Burroughs L series equipment and comparable equipment.