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REVIEW OF APPLIED URBAN RESEARCH

CENTER FOR APPLIED URBAN RESEARCH
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Computers and Small Local Governments: Users and Uses

This is Part II 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, published in last month's issue, reported 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 presents data on problems with computer use, the principal factors and information systems used to acquire computers, and future plans for acquisition and use plus a summary of both parts of the article.

By David R. DiMartino
and Donald F. Norris

Problems

The study sought to determine whether computer users had encountered problems with their data processing systems. If problems had been encountered, the local governments were asked to identify the nature of the problems and to indicate whether they had been solved. The data are shown in Table 6.

The principal problem identified by the 88 respondents was equipment/hardware failure. Nearly one-third (31.8 percent) of the system users said they had encountered problems in this area. Of those 28, most (67.9 percent) said the problems had been solved, and only 7.1 percent said the problems were recurring.

The second most commonly identified problem area was programming/software failures. More than one-fourth (27.3 percent) of the local governments said they had experienced problems in this area. Of these 24 governments, 58.3 percent said the problems had been solved, and 29.2 percent said the problems were recurring.

The third most commonly cited problem area was vendor service or support with 21.6 percent of the local governments citing this problem. Interestingly, nearly half of these communities (47.4 percent) said that this problem had not been resolved, and only 21 percent said it had been.

Another complaint was that training to use the system was inadequate (13.6 percent), and over half of this number (58.3 percent) said that the problem had not been solved.

Two other problem areas were identified. Staff resistance was cited as a problem by 9.1 percent, and half of these local governments felt that this was a recurring problem. The other problem identified was system complexity with 4.5 percent that felt their computer systems were too complex. Two of these four said that this problem had not been solved.

Factors Affecting Computer Adoption

Local governments cited a number of reasons that affected their decisions to acquire computer systems.

The greatest proportion (96.6 percent) cited improved performance as the most important factor, and the next most frequently mentioned reason was cost savings (90.8 percent).

The other factors mentioned as

important in decisions to computerize (in descending order of frequency) were keeping up with modern technology, no other way to keep up with work, and reducing or avoiding hiring more personnel. The fact that a key management or elected official wanted a computer was not an important factor in these governments' decisions to automate.

Respondents were asked in a separate open-ended question to identify the most important reasons they acquired computers. Several respondents provided more than one answer, suggesting that solitary factors seldom are sufficient to move local governments in the direction of computer acquisition.

By far the most frequently cited reason for acquiring computers was related to efficiency improvements. Others were cost, convenience, growth, technology, specific functional areas requiring automation, and politics.

Information Sources

Numerous sources of information about computers are available to local governments. All survey respondents, including those with and without computer systems, were asked to identify the sources from which they received information about computers and also to rate the importance of these sources.

Computer vendors were cited most frequently as information sources (63 percent) of these governments. This was nearly twice the frequency of the next most frequently cited information source, the popular media. (See Table 7.)

Such a heavy reliance on vendor-provided information may have signifi-

TABLE 6
PROBLEMS ENCOUNTERED BY COMPUTER USERS

Problem Areas	Problems Encountered? (N=88)		Problem Solved?				Problem Recurring?	
	Number	Percent*	Yes	Percent	No	Percent	Number	Percent
Equipment or hardware	28	31.8	19	67.9	2	7.1	9	32.1
Programming or software	24	27.3	14	58.3	7	29.2	8	33.3
Vendor service or support	19	21.6	4	21.1	9	47.4	11	57.8
Training to use system	12	13.6	4	33.3	7	58.3	6	50.0
System complexity	4	4.5	2	50.0	2	50.0	1	25.0
Staff resistance	8	9.1	2	25.0	4	50.0	5	62.5

*Responses are not additive as each potential respondent (N=88) could check each applicable category.

cant implications for these communities, particularly since vendors were also cited as the most important information source by the greatest number of communities (33.9 percent). Vendors are in a highly competitive business. Their reward structure is based on the sales of their hardware and software. As such, vendors can hardly be expected to provide unbiased information to prospective buyers. Consequently, communities that rely heavily on vendors for information about computers and automation are not likely to receive a complete and unbiased picture of available alternatives for local government automation.

After vendors, the next most frequently cited sources of information about computers, in descending order, were the popular media, staff people, consulting firms, and state municipal leagues and county associations. Other sources were relied upon less heavily. These included professional journals, professional associations, national local government organizations, universities and colleges, and extension agents.

A substantially similar picture emerged when the respondents' ratings of the importance of various information sources were examined. The most frequently cited sources were also considered the most important. For example, computer vendors were viewed as the most important source of information by 33.9 percent of the cities. This was followed, in order, by staff persons, consulting firms, the popular media, and other communities. All other choices were selected by fewer than 6 percent of the respondents, and extension agents were selected by none.

The fact the vendors were cited most frequently as an important source of information can be explained partially by the frequency with which vendors contacted these governments. More than two-thirds (67.3 percent) of the governments surveyed had been contacted by

computer vendors during the past year, and more than one-third (34.5 percent) had been contacted four or more times. The average was 2.2 times. These results suggest a concerted marketing effort by computer vendors in the region.

Three vendors had contacted these local governments far more than the others. They were IBM, Burroughs, and NCR. This finding is especially interesting as IBM, Burroughs, and NCR were also the three vendors with the most installations in the seven states.

The 88 governments with automated systems were asked whether they had sought information from specific sources during their search for a computer. Over half had relied upon staff people, and another large group sought help from data processing consultants. Staff people and data processing consultants were also the two sources considered most helpful by the governments responding to that question.

The governments were also asked whether they called upon other local governments for assistance in their decisions to automate. A majority sought assistance from other local governments, but a sizeable minority did not. Most types of assistance provided by other local governments consisted of verbally transferred information and advice, and only a very few of the respondents reported more tangible assistance such as sharing software/hardware.

Future Plans

An important part of this survey sought to determine the respondents' plans for future computer use. Here, all 165 of the respondent local governments were asked about plans to acquire data processing equipment during the next two years.

Only 25.5 percent of the total sample reported plans to acquire data processing equipment within the next two years.

TABLE 7
SOURCES OF INFORMATION ABOUT COMPUTERS

A. Sources of Information (N=165)		
	Number	Percent*
Vendors	104	63.0
Popular media	53	32.1
Staff	50	30.3
Consultant firms	39	23.6
State municipal leagues/associations of counties	34	20.6
Professional journals	24	14.5
Professional organizations	21	12.7
National local government organizations	17	10.3
Universities/colleges	15	9.1
Extension agents	6	3.6

*Each respondent could cite as many sources as were applicable. Hence, total responses equal more than 165, and percentages are calculated for each column as a percent of 165.

B. Most Important Source (N=127)		
	Number	Percent*
Vendors	43	33.9
Staff	18	14.2
Consultant firms	12	9.4
Popular media	11	8.7
Other communities	10	7.9
Universities/colleges	7	5.5
State municipal leagues/associations of counties	5	3.9
Professional journals	3	2.4
Professional organizations	3	2.4
National local government organizations	2	1.6
Extension agent	0	0.0
More than one source	9	7.1
Other	4	3.1
Total	127	100.0

*Each respondent could cite only one most important source. Only 127 of the 165 respondents gave an answer to this question.

Conversely, 74.5 percent said they had no such plans. A total of 38 of the 42 governments that indicated plans to

TABLE 8
PLANS TO PURCHASE EQUIPMENT DURING NEXT TWO YEARS

Response	Plan to Purchase		Type	Type of Equipment		Percent of Sample
	Number	Percent		Number	Percent Answering	
Yes	42	25.5	Micro	14	36.8	47.3 } 10.9
No	88	53.3	Micro and other	4	10.5	
Don't know	35	21.2	Not a micro	20	52.6	
Total	165	100.0		38	100.0	23.0
			No Answer	4	-	
			Total	42		

acquire computers responded to a follow-up question regarding the type of equipment they intended to buy. Slightly over one-third (36.8 percent) said they planned to buy microcomputers, 10.5 percent said both micros and other computer equipment, and 52.6 percent said other computer equipment. (See Table 8.)

These figures do not suggest a rush to buy computers, either micros or other types of equipment. For example, only 10.9 percent of the total sample said they planned to buy either micros alone or micros and other computer equipment, and only 12.1 percent planned to buy other types of computer equipment.

The reported future rate of microcomputer adoption by 10.9 percent of the local governments in this survey is significantly lower than the rate reported in a recent survey by the International City Management Association. In that survey, 35.2 percent of the cities under 50,000 said they intended to acquire microcomputers within the next two years. However, the ICMA survey sampling technique was different from the technique used in this survey and may have resulted in a disproportionate number of respondents in that survey being favorable toward microcomputers.⁵

All respondent governments were also asked whether they thought local governments would make more use of computers and data processing in the next three to five years. Nearly all of them (94.5 percent) felt there would be more use, and over half (54.0 percent) strongly agreed that this would be the case. Only 5.5 percent disagreed with this statement. (See Table 9.)

Respondents were also asked whether they felt that local governments would make more use of microcomputers in the next three to five years. Here again, the vast majority of surveyed governments agreed (85.8 percent). Nearly one-third (29.7 percent) strongly agreed, and only 14.1 percent disagreed. (See Table 9.)

Finally, respondents were asked (regardless of their current plans concerning computer acquisition) whether they thought acquiring a microcomputer to assist in performing their local government functions would be a good idea. (See Table 8.) Not quite a majority (43.8 percent) of the governments said yes, slightly over one-fourth (29.7 percent) said no, and an additional one-quarter (26.7 percent) were unsure.

A follow-up question was asked the

TABLE 9
ATTITUDES TOWARD FUTURE USE OF COMPUTERS

A. Increasing local government use of computers in next 3 to 5 years.				B. Increasing local government use of microcomputers in next 3 to 5 years.			
	Number	Percent		Number	Percent		Percent
Agree strongly	88	154 } 94.5	54.0	46	133 } 85.8	29.7	94.5
Agree	66		40.5	87		56.1	
Disagree	6		3.7	21		13.5	
Strongly disagree	3		1.8	1		0.6	
No answer	2	-	-	155	99.9	-	-
Total	165		100.0	10		-	

C. Favor purchase of microcomputer				
	For All Responses		For Yes/No Responses Only	
	Number	Percent	Number	Percent
Yes	72	43.6	72	59.5
No	49	29.7	49	40.5
Unsure	44	26.7	-	-
Total	165	100.0	121	100.0

18 local governments that said they intended to acquire microcomputers to determine which functions they planned to automate. (See Table 10.)

Budgeting was the most frequently mentioned function (61.1 percent), followed by accounting, payroll, and police functions (50 percent each). Other functions cited (in order of frequency) were inventory (44.4 percent), utility billing (38.9 percent), personnel (22.2 percent), tax assessment (22.2 percent), tax billing (22.2 percent), word processing (16.7 percent), voter registration (16.7 percent), and other (5.6 percent). Although the absolute numbers of responses were small, they provide a feel for functional areas planned for future automation on microcomputers.

To find that these governments plan to automate basic financial management functions such as accounting, budgeting, and payroll is not surprising. This is entirely consistent with previous research and with earlier findings in this study. The fact that police functions are

TABLE 10
FUTURE FUNCTIONS TO BE PERFORMED ON MICROS (N=18)

Functions	Number	Percent*
Budgeting	11	61.1
Accounting	9	50.0
Payroll	9	50.0
Police	9	50.0
Inventory	8	44.4
Utility billing	7	38.9
Tax assessment	4	22.2
Tax billing	4	22.2
Personnel	4	22.2
Word processing	3	16.7
Voter registration	3	16.7
Other	1	5.6

*Responses are not additive as each potential respondent (N=18) could check each applicable category.

mentioned prominently for automation on microcomputers is not entirely surprising either. In this case, not only is the proposed automation consistent with findings from other studies, but it is also consistent with the notion that personal

computer technology can provide an automated answer for departments of small local governments that suffer under heavy paperwork loads.

Summary of Findings

A large market potential exists in the mid-plains for local government computer installation. Only about half the surveyed governments had computer systems, and one in four of these were dated or antiquated technology. However, this finding must be tempered by the fact that only one in four of the governments said they had plans to acquire computer technology within the next two years.

The vast majority of computerized functions were and will continue to be typical governmental "housekeeping" activities, e.g., budgeting, payroll, and accounting.

Systems most frequently were located

in city or county clerks' offices which is consistent with their use in financial management activities.

Three of the largest U.S. computer vendors (IBM, Burroughs, and NCR) accounted for a large majority of the installed systems, but the remaining systems suggest rather varied purchasing habits by local governments.

Almost three out of five in-house systems were minicomputers, and less than one in four were desktop or microcomputers. Almost one in five were antiquated bookkeeping machines.


Most governments cited improved performance and cost savings as important in their decisions to acquire computers.

Most of the governments relied on computer vendors as their principal sources of information. They also felt that vendors were their most important sources of information. The average government in the sample was contacted 2.2 times by computer vendors during

the past year. More than a third had been contacted four or more times. This suggests a concerted marketing effort by computer vendors in this region.

Slightly over one-third of computer owners had programmers in their employ but only a small minority reported actually writing programs in-house. This suggests that "packaged" or "turn-key" systems should be of great interest to governments in this region.

⁵Donald F. Norris and Vincent J. Webb, "Microcomputers and City Governments," *Urban Data Service Report* (Washington, DC: International City Management Association, July, 1983). The authors believe that because this was an ICMA survey and a survey on micros, more city managers and more respondents with favorable attitudes toward computers completed and returned questionnaires. Note, too, that the ICMA survey dealt with city governments, and the survey reported in these pages included both cities and counties.

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