

U.S. User Ratings of Mainframes

Datapro is pleased to present the 1987 edition of the annual Computer Users Survey. Once again, the survey was conducted in conjunction with *Computerworld* and is based on responses to questionnaires mailed to a cross-section of computer sites listed with International Data Corporation (IDC). This report summarizes the results received from mainframe users. For the results of the minicomputer users polled, please refer to *Datapro Reports on Minicomputers*.

The users were asked to rate their systems in 23 subjective categories and respond to a variety of questions covering such areas as system configuration, programming languages, and planned acquisitions. They were also asked if they would recommend the system to other users.

This report includes a number of charts and tables for easy comparison of the various systems. In many cases, we have also compared the 1987 survey results with the 1986 results to help you spot trends and changes.

We would like to stress that individual profiles or ratings should never be the major consideration in making an acquisition decision. The reader can use the material in this report to help formulate questions about a computer system as the evaluation process proceeds. The information within this report is very informative if used with discretion and with the understanding that there are many factors involved in selecting the right computer system to meet your particular needs.

SURVEY METHODOLOGY

The 1987 survey has been based on results received from 15,026 questionnaires mailed to known computer users listed with IDC. The total number of questionnaires was divided into two groups: 9,017 surveys were mailed to minicomputer users and 6,009 to mainframe users. In addition, the users were chosen based on the computer system they had installed. Datapro supplied IDC with a list of specific system models to be included in the mailing, and the model was listed directly on the mailing label. In an effort to improve the response rate and thereby increase the statistical validity, the users were contacted twice; a first request was followed two weeks later by a second request.

Each questionnaire allowed the user to rate one computer system and specifically requested that the rating apply to the system listed on the label. The recipient was encouraged to reproduce the form if he/she wished to rate additional systems. The IDC labels were used as initial validation vehicles and for identification and elimination of invalid and duplicate returns. All returns were analyzed by senior Datapro analysts and some returns were judged invalid for one or more of the following reasons: more than one system model was rated on a single form; the response was a duplicate; the form was received after the deadline; the ratings section of the questionnaire was not completed; the

Presented in this report are the results of Datapro's 1987 survey of computer users. User experiences with over 1,200 mainframe systems have been summarized and are presented in the accompanying tables. The users' ratings evaluate performance, reliability, and vendor support for the most popular mainframes sold today. The information provided by current users should be of great value to prospective users who are evaluating computer systems.

systems rated were not mainframe or minicomputer systems; or the response revealed a vested interest on the part of the respondent. In addition, system models receiving fewer than five valid responses were grouped together under "Other Mainframes" or "Other Minicomputers."

Of the 15,026 questionnaires mailed, 3,789 responses were received from 3,570 respondents, a return of 24 percent on the total mailing. Of the total responses, 139 were judged invalid, giving us 3,650 valid responses from 3,431 users. Of these valid responses, 1,281 rated mainframe systems, while 2,369 rated minicomputers.

Datapro batched the valid returns by manufacturer and model and sent the returns to Mathematica Policy Research, Inc. for tabulation of the results. The summary information was prepared in the form of either averages, percentages, or weighted averages. Weighted averages were computed in a manner similar to that used for most college grading systems: "Excellent" is weighted as 4, "Good" as 3, "Fair" as 2, and "Poor" as 1. The tallied numbers for each value are then multiplied by the corresponding weight, and the average is taken by dividing the sum of the products by the total number of responses for that category.

THE 1987 QUESTIONNAIRE

Users were asked to answer 31 multiple-part questions. Each user was asked to identify the manufacturer and model of his/her system, as well as the month and year of installation and the method of acquisition. Users were requested to identify the type of industry their company was in, principal applications, and the sources of those applications programs. We also asked the users for information about their hardware and software configurations, and about acquisitions or implementations planned for 1987.

The remaining questions asked the users to rate various aspects of their computer systems. The categories rated included ease of operation, reliability of system, reliability

U.S. User Ratings of Mainframes

Chart 2. Computer Usage by Manufacturer and Industry Type

Type of Industry Manufacturer	Banking/Finance/ Securities	Chemical/ Petroleum	Construction	Education	Engineering/ Scientific	Government	Health Care/ Medical	Insurance	Legal	Manufacturing	Media	Public Accounting/ Consulting	Retail/Wholesale	Service Bureau	Transportation	Utilities (Public)	Other
Amdahl (29)	3.45	0.00	0.00	6.90	0.00	31.03	3.45	13.79	0.00	20.69	0.00	0.00	0.00	3.45	3.45	10.34	3.45
Honeywell (78)	1.28	0.00	2.56	15.38	1.28	10.26	1.28	3.85	0.00	32.05	1.28	0.00	7.69	8.97	2.56	0.00	11.54
IBM (866)	8.89	3.35	0.58	9.47	1.73	8.43	5.89	8.55	0.12	23.21	1.04	0.23	10.74	3.46	2.54	3.23	7.97
NAS (19)	10.53	0.00	0.00	15.79	0.00	0.00	5.26	5.26	0.00	15.79	0.00	0.00	21.05	10.53	0.00	5.26	10.53
NCR (65)	24.62	0.00	1.54	7.69	0.00	21.54	3.08	0.00	0.00	10.77	0.00	0.00	16.92	6.15	0.00	1.54	4.62
Unisys (208)	9.13	0.96	0.96	10.58	2.40	14.90	3.37	1.44	0.00	24.52	0.96	0.00	9.13	5.29	4.81	2.88	8.65
Other (16)	0.00	0.00	0.00	18.75	6.25	6.25	0.00	0.00	0.00	31.25	6.25	6.25	18.75	0.00	0.00	0.00	6.25

of peripherals, maintenance service (responsiveness and effectiveness), technical support (troubleshooting, education, and documentation), manufacturer's software (operating system, compilers and assemblers, and applications programs), ease of programming, ease of conversion, and overall satisfaction. Additional ratings included timeliness of hardware installation; timeliness of software installation; ease of expansion; compatibility of terminals, peripherals, and software carried over from other systems; power/energy efficiency; productivity aids; software support delivered by the vendor; noise level of equipment; and ease of keeping up with and implementing vendor changes to hardware/software.

We also asked users if they were using certain software packages in the following categories: data base management systems, data management systems, application development tools, utilities, communications software, performance monitors or security systems, and system enhancement packages. Users who checked off any of the listed packages were asked to rate those packages on a scale of 1 to 10, with 1 as the lowest rating and 10 as the highest. The users' ratings will be included in our reports on individual software products in Volume 3 of *Datapro 70*.

Finally, we asked if the computer system did what it was expected to do, and if the users would recommend their computer system to others.

SURVEY RESULTS

Table 1, "Mainframes by Vendor and Model," contains the results on 20 model groupings from 6 mainframe vendors, representing 1,281 user responses. Table 2, "Mainframe Vendor Summaries," contains summaries by vendor of the information in Table 1. This year, systems manufactured by Burroughs and Sperry have been listed together under Unisys, the new company formed when Burroughs acquired Sperry.

Financial Alternatives

Users have three options by which they can acquire their computer system: purchase, rent/lease from the manufacturer, or lease from a third party. Each method of acquisition offers its own benefits, and each method should be

examined carefully to see which of these methods would be most beneficial to your company. By using the purchase option, the user can enjoy benefits such as the investment tax credit and depreciation schedule allowances. With the rapid advances in technology, however, many users feel that rental/lease from the manufacturer is the best option for them, because it allows them to upgrade faster to new systems. Also, many vendors include maintenance in the rent/lease price. The advantages a user can receive from third-party leasing are faster delivery and more attractive lease prices.

One of the questions we asked, therefore, was how users acquired their systems: outright purchase, rental/lease from the manufacturer, or third-party lease.

Reference to Chart 1 shows that the percentage of purchased systems has decreased again this year. For a few years, the percentage of purchases kept going up, probably because many vendors, including IBM, were making outright purchase more attractive by lowering purchase prices and raising rental and lease prices. Perhaps in 1986 users found it more difficult to borrow the money needed to purchase a system outright, or they were less inclined to risk a large outlay of money until the economy improved.

Industry and Applications

One of the questions we asked the users was "What type of industry describes your company?" Chart 2 shows the market penetration in each industry by manufacturer for each class of computer systems.

We also asked the survey respondents to specify their principal applications. In 1987, as in 1985 and 1986, the

Method of Acquisition	1987	1986	1985
Purchase (%)	52	54	56
Rent/Lease from Mfr. (%)	15	14	14
Lease from 3rd Party (%)	32	32	30

Chart 1. Financial alternatives.

U.S. User Ratings of Mainframes

Chart 4. Usage of Local and Remote Workstations/Terminals

Manufacturer & Model	Local						Remote					
	No. of Workstations/Terminals per System						No. of Workstations/Terminals per System					
	None	1-5	6-15	16-30	31-60	Over 60	None	1-5	6-15	16-30	31-60	Over 60
Amdahl 580 Series (29)	0.00	0.00	0.00	6.90	3.45	89.65	0.00	17.24	3.45	6.90	6.90	65.51
Honeywell DPS 7 (40)	0.00	7.50	17.50	45.00	22.50	7.50	25.00	27.50	20.00	17.50	0.00	10.00
DPS 8 (38)	2.63	2.63	10.53	26.32	26.32	28.95	2.63	18.42	7.89	10.53	15.79	44.74
IBM 4361 (185)	0.54	1.62	17.30	24.32	34.59	21.62	21.62	14.59	18.38	15.68	17.30	11.89
4381 (335)	0.30	1.49	1.79	10.45	18.51	66.57	11.64	7.16	9.25	12.24	14.33	43.58
4300, Other (28)	0.00	7.14	17.86	10.71	21.43	42.86	14.29	14.29	14.29	7.14	17.86	32.13
308X Series (233)	0.00	0.43	2.58	3.43	9.44	83.26	2.15	3.00	1.29	7.30	7.73	76.39
3090 Series (85)	0.00	0.00	1.18	3.53	7.06	85.88	1.18	3.53	2.35	1.18	2.35	87.06
NAS All Models (19)	0.00	0.00	5.26	5.26	26.32	63.16	5.26	5.26	10.53	10.53	5.26	63.16
NCR 8500/8600/8800 (65)	0.00	7.69	26.15	36.92	15.38	13.85	24.62	20.00	21.54	6.15	9.23	18.46
Unisys V Series (14)	0.00	0.00	21.43	7.14	35.71	35.71	7.14	0.00	14.29	21.43	0.00	57.14
A 3/A 5 (53)	0.00	1.89	16.98	37.74	30.19	13.20	22.64	11.32	20.75	16.98	16.98	9.43
A 9/A 10 (40)	0.00	0.00	20.00	22.50	25.00	32.50	7.50	7.50	7.50	17.50	10.00	50.00
B 7900 (8)	0.00	0.00	0.00	0.00	37.50	62.50	0.00	0.00	0.00	0.00	50.00	50.00
A 15 (8)	0.00	0.00	12.50	0.00	25.00	62.50	0.00	0.00	0.00	0.00	0.00	100.00
1100/60 (9)	0.00	0.00	22.22	11.11	0.00	66.67	0.00	11.11	44.44	11.11	0.00	33.33
1100/70 (62)	0.00	1.61	11.29	24.19	19.35	41.94	6.45	8.06	17.74	16.13	9.68	40.32
1100/90 (6)	0.00	0.00	0.00	16.67	16.67	66.67	0.00	0.00	16.67	16.67	0.00	66.67
Other Unisys (8)	0.00	0.00	12.50	12.50	50.00	25.00	0.00	0.00	0.00	0.00	12.50	87.50
Other Mainframes (16)	0.00	6.25	0.00	31.25	6.25	56.25	18.75	12.50	6.25	6.25	18.75	37.50
All Mainframes (1,281)	0.23	1.80	8.59	15.77	19.44	53.47	10.93	9.29	10.54	11.01	11.48	45.51

top three applications were accounting/billing, payroll/personnel, and order processing/inventory control. (See Chart 3, "User Rankings of Principal Applications.") Banking, in seventh place last year, moved down to tenth place, while insurance moved up from tenth place to ninth place. Education, in ninth place for the past two years, moved up to seventh place.

Applications—1987	Applications—1986
1. Accounting/Billing	1. Accounting/Billing
2. Payroll/Personnel	2. Payroll/Personnel
3. Order Processing/Inv. Control	3. Order Processing/Inv. Control
4. Purchasing	4. Purchasing
5. Sales/Distribution	5. Sales/Distribution
6. Manufacturing	6. Manufacturing
7. Education	7. Banking
8. Engineering/Scientific	8. Engineering/Scientific
9. Insurance	9. Education
10. Banking	10. Insurance

Chart 3. User rankings of principal applications.

Hardware Configurations

Several of the survey questions asked users to describe their hardware configurations. Main memory capacities continue to increase. About 49 percent of the mainframe users had at least 16 megabytes of main memory on their systems, with 28 percent using between 16 and 32 megabytes.

Seven percent of the survey respondents had installed systems with more than 64 megabytes of main memory, compared to five percent last year. Just three years ago, the majority of the users had installed between 2 and 8 megabytes of main memory, and only 2 percent of them were using more than 32 megabytes.

Our survey also shows a slight increase in high-capacity disk storage. In 1987, 83 percent of the systems had at least 1.2 gigabytes of disk capacity, with 35 percent using more than 10 gigabytes. In 1986, only 31 percent used more than 10 gigabytes of disk storage.

We also asked the users how many local workstations/terminals and how many remote workstations/terminals they were using. Chart 4 shows the usage of local and remote terminals by manufacturer and model. About 53 percent of the mainframe users had more than 60 local terminals in operation, while 46 percent were using more than 60 remote terminals. In 1986, 50 percent of the respondents had installed more than 60 local terminals, and 45 percent had more than 60 remote terminals.

Software

The computer application development life cycle is a highly labor-intensive cycle. As labor costs climb, so does the

U.S. User Ratings of Mainframes

▷ cost of software development. As computers increase in capability and speed, and as users become accustomed to results, the clamor for additional applications increases. Because many systems already face a two-year backlog in bringing up desirable applications, it is quite common for users to seek multiple sources for applications programs. And as the proprietary software industry increases in maturity and sophistication, "packaged" software becomes a desirable adjunct to in-house development.

We asked the users how they acquired their applications software. First on their list was in-house personnel. The preparation of software by in-house personnel is often a highly desirable route because of in-house management control plus, ideally, the total tailorability of the software to the user's operational requirements. Software from independent suppliers was ranked second by the users, followed by packaged programs from the manufacturer, contract programming, and programs prepared by the manufacturer's personnel. The 1987 results on this question were identical to the 1986 and 1985 results.

"Which programming language should I use?" is a question that often results in a long debate among programmers and computer scientists. Because most studies show that it takes about the same amount of time to code an instruction, whatever the language, the answer would appear to be: "Whichever language will result in the fastest possible documented implementation of the application."

For mainframe users, the most frequently used language was Cobol (77 percent), followed distantly by Assembler (9 percent), PL/1 (4 percent), and Fortran (2 percent).

Acquisition Plans

We asked how users were planning to spend their enhancement/acquisition dollars in 1987. Chart 5 shows the user rankings of planned acquisitions. This year the top priority with users in the mainframe class is to expand their present hardware, closely followed by expansions to data communications facilities and additions to their proprietary software. Expansion to data communications facilities was in first place last year, but data communications and hardware seem to take turns in first place; the 1985 results were identical to the 1987 results.

Acquisition Plans—1987	Acquisition Plans—1986
1. Expansion to Present Hardware (63%)	1. Expansion to Data Communications Facilities (68%)
2. Expansion to Data Communications Facilities (62%)	2. Expansions to Present Hardware (65%)
3. Additional Proprietary Software (55%)	3. Additional Proprietary Software (62%)
4. Additional Software from Mfgr. (50%)	4. Additional Software from Mfgr. (53%)
5. Laser Printers (28%)	5. Laser Printers (26%)

Chart 5. User rankings of planned acquisitions.

Disaster recovery is of critical importance to computer installations, so we asked the users if they had implemented

a disaster recovery plan. About 53 percent said they had done so, compared with 55 percent in the 1986 survey. This year 19 percent reported that a disaster recovery plan was on their agenda, while 18 percent reported such intentions last year.

We also asked the users if they had established an information center. Forty-two percent said that they had an information center, and 7 percent said they planned to add one this year. Last year 40 percent had established an information center, while 9 percent reported plans to do so.

User Satisfaction Ratings

Consistent with our belief that what users think is extremely important, we asked users to rate their computer systems and the associated software and vendor support by assigning a rating of Excellent, Good, Fair, or Poor to each of 14 factors: ease of operation, reliability of mainframe, reliability of peripherals, maintenance service (responsiveness and effectiveness), technical support (troubleshooting, education, and documentation), manufacturer's software (operating system, compilers and assemblers, and applications programs), ease of programming, ease of conversion, and overall satisfaction. All ratings are expressed in terms of Weighted Averages, which were calculated by assigning a weight of 4 to each user rating of Excellent, 3 to Good, 2 to Fair, and 1 to Poor, and then dividing the sum by the number of users who rated each factor.

System	Overall Satisfaction	Lowest Score	No. of Responses
Honeywell DPS 7	3.59	2.80	40
IBM 3090	3.24	2.81	85
Amdahl 580	3.21	2.85	29

Chart 6. Systems of special merit.

The individual responses by vendor and model appear in Table 1. In analyzing the ratings, we decided to see how many systems could meet the following criteria for special merit: a minimum of 20 user responses, an overall satisfaction rating of at least 3.20, and a rating of no less than 2.80 in all other system rating categories. Last year, *not one* of the systems met our criteria. This year, however, three systems made the grade, as shown in Chart 6.

For a number of other categories, we picked out those systems that received at least 20 responses and a rating of at least 3.50. Chart 7 shows the systems that met those criteria for ease of operation, reliability of mainframe, reliability of peripherals, and operating system. Once again, the greatest strength of the systems rated was in mainframe reliability. In the ease of operation category, only three systems met our criteria this year, compared to five systems last year. In 1986 four systems earned at least 3.50 in the reliability of peripherals category, while only one did that well in 1987. ▷

U.S. User Ratings of Mainframes

	Weighted Average	No. of Responses
Ease of Operation		
Amdahl 580	3.62	29
Honeywell DPS 7	3.59	40
Unisys A 9/A 10	3.59	40
Reliability of Mainframe		
IBM 4381	3.84	335
IBM 308X	3.79	233
Unisys A 3/A 5	3.79	53
IBM 4361	3.78	185
Amdahl 580	3.72	29
Honeywell DPS 7	3.72	40
IBM 3090	3.70	85
Unisys 1100/70	3.60	62
Honeywell DPS 8	3.55	38
Unisys A 9/A 10	3.52	40
Reliability of Peripherals		
IBM 308X	3.51	233
Operating System		
Honeywell DPS 7	3.65	40
Unisys A 3/A 5	3.57	53
Unisys A 9/A 10	3.55	40

Chart 7. Systems with the highest ratings in key categories.

Vendor service and support are key areas when considering a computer system. Although users have no control over the effectiveness of maintenance service, they can influence promptness of maintenance service by spelling out their requirements in their contract with the vendor.

We checked the survey results to see which vendors had received the highest overall ratings for maintenance service and technical support. To be listed in our chart, the vendor had to have a minimum of 20 user responses and a rating of at least 3.5 for maintenance service and 3.0 for technical support. Through the years that Datapro has been conducting this survey, we have found that the area of technical support usually receives the lowest ratings. We felt, therefore, that any vendor receiving a 3.0 rating in technical support was deserving of special mention. Chart 8 lists the vendors that met our criteria in these service categories.

These results show a decline in user satisfaction over the 1986 survey, in which two vendors met our requirements for maintenance service. IBM is the only vendor to receive at least a 3.0 in any of the technical support categories both in 1986 and in 1987. However, NAS would have made the list in all five maintenance and technical support categories this year if we had received 20 responses on NAS systems. Last year, Amdahl was kept off the list because of a small response.

	Weighted Average	No. of Responses
Maintenance Service:		
Responsiveness		
Amdahl	3.66	29
Effectiveness		
Amdahl	3.50	29
Technical Support:		
Troubleshooting		
Amdahl	3.41	29
Honeywell	3.17	78
IBM	3.07	866
Education		
Amdahl	3.43	29
Documentation		
Amdahl	3.18	29

Chart 8. Vendors with the highest ratings for service and support.

Expectations and Recommendations

We asked the computer system users "Did the system do what you expected it to do?" This year, 95 percent answered "Yes," 1 percent said "No," and 3 percent said "Haven't decided." (Not all users answered the question.) Last year, too, 95 percent answered "Yes."

The final question we asked users was whether they would recommend the computer system to another user in their situation. Ninety-two percent said "Yes," 3 percent answered "No," and 4 percent said they "Haven't decided." (Again, not all respondents answered the question.) In 1986, the numbers were 92 percent, 3 percent, and 5 percent, respectively.

The vendors that received the highest overall percentages of user recommendations were:

Amdahl	97%
NAS	95%
IBM	93%
Unisys	93%

THANK YOU

Datapro extends a sincere thanks to everyone who responded to our 1987 survey of user experiences with computer systems. Without your participation it could not have been the success it is, and we hope that this compendium of the opinions of user colleagues will be of significant value to you. We look forward to hearing from you again next year. □

U.S. User Ratings of Mainframes
TABLE 1. MAINFRAMES BY VENDOR AND MODEL

Survey Item	Manufacturer and Model							
	Amdahl 580 Series	Honeywell DPS 7	Honeywell DPS 8	IBM 4361	IBM 4381	IBM 4300 Series, Other Models	IBM 308X Series	IBM 3090 Series
No. of User Responses	29	40	38	185	335	28	233	85
Average Life of System (months)	18.79	31.51	44.06	31.56	22.51	44.50	30.07	14.66
Acquisition Method (%)								
Purchase	65.52	72.50	52.63	65.41	45.67	42.86	48.07	36.47
Rental or Lease from Manufacturer	17.24	10.00	28.95	9.73	19.10	14.28	7.73	10.59
Lease from Third Party	17.24	17.50	18.42	24.86	33.43	42.86	42.92	48.24
Principal Applications (%)								
Accounting/Billing	62.07	90.00	68.42	74.05	74.03	67.86	72.10	72.94
Banking—Check Processing/Loans/Savings	6.90	2.50	0.00	10.27	7.46	14.29	10.73	17.65
Construction/Architecture	3.45	2.50	2.63	1.08	2.99	0.00	2.15	4.71
Education—Scheduling/Administration	10.34	7.50	36.84	12.97	15.52	14.29	17.60	20.00
Engineering/Scientific	24.14	5.00	5.26	10.81	11.94	3.57	24.89	18.82
Health Care/Medical	10.34	5.00	0.00	3.24	11.04	7.14	12.45	16.47
Insurance	24.14	7.50	7.89	9.19	14.33	10.71	16.31	16.47
Manufacturing	24.14	40.00	28.95	28.11	26.87	28.57	20.60	16.47
Mathematics/Statistics	17.24	0.00	7.89	5.41	10.75	14.29	14.16	12.94
Order Processing/Inventory Control	37.93	62.50	44.74	52.97	46.27	39.29	44.21	38.82
Payroll/Personnel	55.17	62.50	60.53	61.08	57.31	39.29	67.38	58.82
Petroleum/Fuel Analysis	0.00	0.00	0.00	1.08	1.19	0.00	3.86	2.35
Process Control	20.69	10.00	5.26	2.70	5.37	7.14	5.58	7.06
Purchasing	31.03	37.50	28.95	42.16	42.39	35.71	38.20	43.53
Sales/Distribution	20.69	35.00	21.05	37.84	28.06	28.57	28.76	24.71
Other	31.03	10.00	10.53	9.19	14.33	21.43	15.02	10.59
Source of Applications Programs (%)								
In-house Personnel	96.55	97.50	97.37	91.35	92.24	89.29	93.99	90.59
Contract Programming	58.62	32.50	26.32	25.95	29.25	42.86	43.78	49.41
Manufacturer's Personnel	3.45	12.50	7.89	2.70	2.39	7.14	5.15	5.88
"Packaged" Programs from Manufacturer	37.93	40.00	42.11	30.81	40.00	32.14	52.36	42.35
Independent Suppliers	31.03	35.00	36.84	54.59	51.94	42.86	55.79	49.41
Location of Computer (%)								
Departmental System	6.90	2.50	5.26	3.24	7.46	25.00	3.43	4.71
Organizational System	93.10	95.00	94.74	96.76	91.34	75.00	95.28	92.94
Use Third-Party Maintenance (%)								
Yes	6.90	5.00	5.26	21.62	17.91	35.71	10.30	5.88
No	93.10	95.00	94.74	78.38	81.19	64.29	88.41	90.59
Have a Disaster Recovery Plan (%)								
Yes	72.41	45.00	50.00	48.11	44.78	57.14	64.81	65.88
Plan to in 1987	10.34	20.00	26.32	19.46	22.99	14.29	19.31	17.65
Have an Information Center (%)								
Yes	79.31	12.50	23.68	22.70	40.00	35.71	66.09	72.94
Plan to in 1987	3.45	5.00	7.89	4.86	9.55	0.00	6.01	7.06
Planned Acquisitions/Implementations for 1987 (%)								
Additional Software from the Manufacturer	55.17	45.00	50.00	37.30	54.03	42.86	64.81	67.06
Proprietary Software from Other Suppliers	82.76	30.00	18.42	47.03	61.49	46.43	67.81	74.12
Expansions to Present Hardware	86.21	70.00	44.74	62.16	63.58	57.14	61.80	77.65
Expansions to Data Communications Facilities	82.76	65.00	57.89	52.97	62.39	35.71	67.81	78.82
Unix-based Operating System	0.00	2.50	2.63	1.08	1.19	0.00	5.58	3.53
Laser Printers	48.28	22.50	31.58	17.84	28.36	21.43	38.63	37.65
Power Conditioning Systems	13.79	12.50	15.79	8.11	16.42	10.71	9.01	14.12
Optical Disk Devices	10.34	0.00	0.00	2.16	3.28	10.71	5.58	3.53

U.S. User Ratings of Mainframes
TABLE 1. MAINFRAMES BY VENDOR AND MODEL

Manufacturer and Model Survey Item	Amdahl 580 Series	Honeywell DPS 7	Honeywell DPS 8	IBM 4361	IBM 4381	IBM 4300 Series, Other Models	IBM 308X Series	IBM 3090 Series
System Ratings (4.0-1.0)								
Ease of Operation	3.62	3.59	3.32	3.13	3.22	3.04	3.20	3.35
Reliability of Mainframe	3.72	3.72	3.55	3.78	3.84	3.50	3.79	3.70
Reliability of Peripherals	3.34	3.35	3.03	3.48	3.47	3.21	3.51	3.44
Manufacturer's Maintenance Service:								
Responsiveness	3.66	3.50	3.38	3.42	3.37	3.08	3.40	3.46
Effectiveness	3.50	3.36	3.22	3.42	3.38	3.13	3.36	3.50
Manufacturer's Technical Support:								
Troubleshooting	3.41	3.22	3.11	2.97	3.05	2.71	3.14	3.26
Education	3.43	2.92	2.76	2.73	2.96	2.67	3.01	2.96
Documentation	3.18	2.80	2.68	2.66	2.90	2.61	2.94	2.95
Manufacturer's Software:								
Operating System	3.14	3.65	3.39	3.04	3.18	3.07	3.23	3.27
Compilers & Assemblers	3.04	3.52	3.37	3.13	3.27	3.14	3.29	3.27
Applications Programs	3.04	2.86	2.58	2.80	2.86	2.88	2.88	2.86
Ease of Programming	2.85	3.45	3.05	2.91	2.92	2.61	2.87	2.89
Ease of Conversion	2.86	3.37	2.76	2.62	2.76	2.52	2.79	2.81
Overall Satisfaction	3.21	3.59	3.16	3.12	3.20	3.04	3.22	3.24
Additional Ratings (4.0-1.0)								
Timeliness of Hardware Installation	3.72	3.54	3.53	3.39	3.54	3.23	3.62	3.67
Timeliness of Software Installation	3.48	3.41	3.37	3.06	3.22	2.88	3.23	3.36
Ease of Expansion	3.55	3.49	3.39	2.99	3.24	3.12	3.16	3.39
Compatibility of Hardware Carried Over from Other Systems	3.48	3.28	3.00	3.05	3.25	2.83	3.24	3.46
Compatibility of Programs/Data Carried Over from Other Systems	3.45	3.33	3.03	2.99	3.14	2.96	3.14	3.38
Power/Energy Efficiency	3.24	3.38	3.06	3.04	3.23	2.85	3.06	3.18
Productivity Aids Help Keep Programming Costs Low	2.71	3.11	2.51	2.61	2.67	2.46	2.56	2.65
Software Support Delivered by Vendor	3.07	3.13	2.76	2.74	2.87	2.64	2.92	2.97
Keeping Up with & Implementing Vendor Changes to Hardware/Software (Very Easy=4.0; Very Difficult=1.0)	3.19	3.25	3.05	2.66	2.78	2.81	2.73	2.79
Did the system do what you expected it to do? (%)								
Yes	96.55	95.00	92.11	94.59	96.42	96.43	94.42	91.76
No	0.00	2.50	5.26	1.08	0.60	0.00	0.86	2.35
Undecided	0.00	2.50	2.63	4.32	2.09	3.57	1.72	2.35
Would you recommend system to another user? (%)								
Yes	96.55	87.50	81.58	88.11	95.22	96.43	93.56	94.12
No	0.00	7.50	7.89	4.86	0.90	0.00	0.86	1.18
Undecided	0.00	5.00	10.53	5.41	2.39	3.57	2.15	1.18

U.S. User Ratings of Mainframes
TABLE 1. MAINFRAMES BY VENDOR AND MODEL

Manufacturer and Model Survey Item	NAS All Models	NCR 8500/8600/8800	Unisys V Series	Unisys A 3/A 5	Unisys A 9/A 10	Unisys B 7900	Unisys A 15	Unisys T100/60
	No. of User Responses	19	65	14	53	40	8	8
Average Life of System (months)	25.68	34.89	17.80	16.60	18.85	22.25	13.25	58.00
Acquisition Method (%)								
Purchase	36.84	70.77	57.14	50.94	65.00	25.00	37.50	22.22
Rental or Lease from Manufacturer	21.05	16.92	14.29	18.87	15.00	12.50	0.00	33.33
Lease from Third Party	42.11	12.31	28.57	28.30	20.00	62.50	62.50	44.44
Principal Applications (%)								
Accounting/Billing	73.68	52.31	50.00	83.02	75.00	75.00	37.50	88.89
Banking—Check Processing/Loans/Savings	15.79	29.23	50.00	9.43	7.50	0.00	25.00	11.11
Construction/Architecture	0.00	1.54	0.00	0.00	0.00	0.00	0.00	11.11
Education—Scheduling/Administration	26.32	15.38	7.14	13.21	37.50	0.00	0.00	0.00
Engineering/Scientific	31.58	0.00	0.00	5.66	5.00	12.50	25.00	22.22
Health Care/Medical	10.53	6.15	7.14	9.43	10.00	0.00	0.00	0.00
Insurance	5.26	1.54	7.14	1.89	7.50	37.50	0.00	0.00
Manufacturing	21.05	9.23	0.00	28.30	17.50	62.50	12.50	22.22
Mathematics/Statistics	31.58	1.54	21.43	9.43	5.00	0.00	0.00	0.00
Order Processing/Inventory Control	52.63	29.23	35.71	52.83	45.00	75.00	25.00	66.67
Payroll/Personnel	52.63	52.31	50.00	54.72	62.50	50.00	25.00	88.89
Petroleum/Fuel Analysis	0.00	0.00	0.00	1.89	0.00	0.00	0.00	0.00
Process Control	10.53	1.54	14.29	7.55	12.50	0.00	0.00	11.11
Purchasing	31.58	27.69	14.29	41.51	40.00	62.50	25.00	55.56
Sales/Distribution	26.32	23.08	28.57	41.51	32.50	50.00	25.00	44.44
Other	10.53	12.31	0.00	11.32	12.50	25.00	50.00	22.22
Source of Applications Programs (%)								
In-house Personnel	89.47	80.00	92.86	83.02	95.00	100.00	87.50	100.00
Contract Programming	36.84	26.15	14.29	26.42	30.00	75.00	25.00	22.22
Manufacturer's Personnel	5.26	9.23	0.00	7.55	10.00	12.50	37.50	22.22
"Packaged" Programs from Manufacturer	47.37	49.23	28.57	20.75	45.00	87.50	25.00	22.22
Independent Suppliers	42.11	47.69	21.43	39.62	52.50	87.50	50.00	44.44
Location of Computer (%)								
Departmental System	0.00	6.15	0.00	3.77	2.50	0.00	0.00	22.22
Organizational System	100.00	93.85	100.00	94.34	97.50	100.00	100.00	77.78
Use Third-Party Maintenance (%)								
Yes	5.26	4.62	14.29	1.89	2.50	0.00	0.00	22.22
No	94.74	95.38	85.71	96.23	97.50	100.00	100.00	77.78
Have a Disaster Recovery Plan (%)								
Yes	52.63	61.54	64.29	49.06	40.00	75.00	50.00	66.67
Plan to in 1987	15.79	13.85	7.14	11.32	25.00	0.00	25.00	11.11
Have an Information Center (%)								
Yes	42.11	27.69	50.00	16.98	40.00	25.00	37.50	44.44
Plan to in 1987	0.00	9.23	14.29	5.66	10.00	37.50	12.50	0.00
Planned Acquisitions/Implementations for 1987 (%)								
Additional Software from the Manufacturer	10.53	24.62	21.43	39.62	50.00	37.50	50.00	33.33
Proprietary Software from Other Suppliers	63.16	47.69	35.71	26.42	47.50	75.00	25.00	33.33
Expansions to Present Hardware	63.16	56.92	64.29	66.04	62.50	25.00	62.50	55.56
Expansions to Data Communications Facilities	68.42	58.46	64.29	56.60	67.50	75.00	62.50	66.67
Unix-based Operating System	5.26	6.15	0.00	1.89	5.00	25.00	12.50	0.00
Laser Printers	31.58	15.38	14.29	16.98	30.00	12.50	12.50	11.11
Power Conditioning Systems	26.32	16.92	0.00	9.43	17.50	0.00	0.00	0.00
Optical Disk Devices	15.79	0.00	0.00	3.77	7.50	12.50	0.00	0.00

U.S. User Ratings of Mainframes
TABLE 1. MAINFRAMES BY VENDOR AND MODEL

<div style="text-align: center;">Manufacturer and Model</div> <div style="text-align: left;">Survey Item</div>	NAS All Models	NCR 8500/8600/8800	Unisys V Series	Unisys A 3/A 5	Unisys A 9/A 10	Unisys B 7900	Unisys A 15	Unisys 1100/60
System Ratings (4.0-1.0)								
Ease of Operation	3.44	3.12	3.43	3.49	3.59	3.50	3.75	3.00
Reliability of Mainframe	3.89	3.48	3.64	3.79	3.52	3.38	3.75	3.78
Reliability of Peripherals	3.39	3.38	2.93	3.33	3.05	2.83	3.13	3.22
Manufacturer's Maintenance Service:								
Responsiveness	3.53	3.20	3.46	3.34	3.27	2.86	3.75	3.22
Effectiveness	3.53	3.06	3.29	3.35	3.10	2.38	3.38	3.22
Manufacturer's Technical Support:								
Troubleshooting	3.37	2.86	2.86	3.02	2.97	2.25	2.88	2.78
Education	3.00	2.92	2.71	2.85	2.77	2.25	2.75	2.44
Documentation	3.00	2.64	2.57	2.56	2.49	2.25	2.71	1.75
Manufacturer's Software:								
Operating System	3.14	3.20	3.57	3.57	3.55	3.13	3.75	3.11
Compilers & Assemblers	3.23	3.11	3.29	3.52	3.27	3.38	3.63	3.00
Applications Programs	3.08	2.46	2.50	3.07	2.61	2.71	2.63	2.00
Ease of Programming	2.86	2.89	3.33	3.50	3.27	3.13	3.50	2.78
Ease of Conversion	2.87	3.10	3.50	3.34	3.11	2.75	3.38	2.11
Overall Satisfaction	3.13	3.15	3.33	3.51	3.35	2.75	3.38	3.00
Additional Ratings (4.0-1.0)								
Timeliness of Hardware Installation	3.84	3.31	3.14	3.48	3.32	3.63	3.63	3.22
Timeliness of Software Installation	3.50	3.14	3.21	3.27	3.25	3.50	3.13	2.67
Ease of Expansion	3.47	3.40	3.43	3.82	3.53	3.29	3.63	3.00
Compatibility of Hardware Carried Over from Other Systems	3.63	3.21	3.64	3.44	3.31	3.00	3.88	2.56
Compatibility of Programs/Data Carried Over from Other Systems	3.63	3.40	3.50	3.35	3.22	3.00	3.63	2.67
Power/Energy Efficiency	3.32	2.95	3.36	3.58	3.25	3.00	3.88	2.67
Productivity Aids Help Keep Programming Costs Low	2.75	2.56	2.75	3.00	2.95	2.50	3.00	1.78
Software Support Delivered by Vendor	3.05	2.46	2.57	2.88	2.75	2.50	3.00	1.89
Keeping Up with & Implementing Vendor Changes to Hardware/Software (Very Easy=4.0; Very Difficult=1.0)	3.26	3.09	3.50	3.06	3.05	2.88	3.38	2.44
Did the system do what you expected it to do? (%)								
Yes	94.74	92.31	100.00	96.23	95.00	100.00	100.00	100.00
No	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00
Undecided	5.26	6.15	0.00	3.77	5.00	0.00	0.00	0.00
Would you recommend system to another user? (%)								
Yes	94.74	81.54	92.86	94.34	92.50	100.00	100.00	88.89
No	0.00	10.77	0.00	0.00	2.50	0.00	0.00	0.00
Undecided	5.26	7.69	7.14	5.66	5.00	0.00	0.00	11.11

U.S. User Ratings of Mainframes
TABLE 1. MAINFRAMES BY VENDOR AND MODEL

Survey Item	Manufacturer and Model							
	Unisys 1100/70	Unisys 1100/90	Unisys Other	Other Mainframes				
No. of User Responses	62	6	8	16				
Average Life of System (months)	39.90	25.00	58.60	43.40				
Acquisition Method (%)								
Purchase	58.06	66.66	12.50	68.75				
Rental or Lease from Manufacturer	19.35	16.67	62.50	18.75				
Lease from Third Party	22.58	16.67	25.00	6.25				
Principal Applications (%)								
Accounting/Billing	70.97	66.67	37.50	56.25				
Banking—Check Processing/Loans/Savings	1.61	0.00	25.00	0.00				
Construction/Architecture	3.23	16.67	0.00	6.25				
Education—Scheduling/Administration	11.29	16.67	0.00	31.25				
Engineering/Scientific	17.74	0.00	0.00	31.25				
Health Care/Medical	8.06	16.67	0.00	12.50				
Insurance	3.23	16.67	0.00	0.00				
Manufacturing	30.65	16.67	12.50	12.50				
Mathematics/Statistics	14.52	16.67	0.00	18.75				
Order Processing/Inventory Control	53.23	66.67	25.00	31.25				
Payroll/Personnel	43.55	50.00	37.50	43.75				
Petroleum/Fuel Analysis	3.23	16.67	0.00	0.00				
Process Control	3.23	16.67	37.50	0.00				
Purchasing	32.26	66.67	12.50	31.25				
Sales/Distribution	32.26	33.33	62.50	18.75				
Other	12.90	16.67	0.00	18.75				
Source of Applications Programs (%)								
In-house Personnel	98.39	100.00	87.50	87.50				
Contract Programming	27.42	33.33	12.50	31.25				
Manufacturer's Personnel	25.81	0.00	0.00	18.75				
"Packaged" Programs from Manufacturer	38.71	33.33	12.50	37.50				
Independent Suppliers	27.42	33.33	12.50	62.50				
Location of Computer (%)								
Departmental System	3.23	16.67	0.00	0.00				
Organizational System	96.77	83.33	100.00	100.00				
Use Third-Party Maintenance (%)								
Yes	0.00	0.00	37.50	0.00				
No	98.39	100.00	62.50	100.00				
Have a Disaster Recovery Plan (%)								
Yes	43.55	83.33	25.00	62.50				
Plan to in 1987	22.58	0.00	25.00	6.25				
Have an Information Center (%)								
Yes	38.71	66.67	50.00	43.75				
Plan to in 1987	3.23	0.00	25.00	6.25				
Planned Acquisitions/Implementations for 1987 (%)								
Additional Software from the Manufacturer	48.39	83.33	37.50	50.00				
Proprietary Software from Other Suppliers	40.32	50.00	50.00	50.00				
Expansions to Present Hardware	61.29	66.67	75.00	56.25				
Expansions to Data Communications Facilities	59.68	66.67	37.50	50.00				
Unix-based Operating System	14.52	0.00	12.50	6.25				
Laser Printers	20.97	50.00	12.50	18.75				
Power Conditioning Systems	19.35	16.67	0.00	12.50				
Optical Disk Devices	1.61	0.00	0.00	6.25				

U.S. User Ratings of Mainframes
TABLE 1. MAINFRAMES BY VENDOR AND MODEL

<div style="text-align: center;">Manufacturer and Model</div> <div style="text-align: left;">Survey Item</div>	Unisys 1100/70	Unisys 1100/90	Unisys Other	Other Mainframes				
System Ratings (4.0-1.0)								
Ease of Operation	3.15	3.33	3.38	3.38				
Reliability of Mainframe	3.60	3.67	3.50	3.69				
Reliability of Peripherals	3.13	3.33	3.38	3.38				
Manufacturer's Maintenance Service:								
Responsiveness	3.38	3.83	3.25	3.44				
Effectiveness	3.27	3.17	3.13	3.40				
Manufacturer's Technical Support:								
Troubleshooting	2.95	3.00	3.13	3.38				
Education	2.73	2.83	3.00	3.19				
Documentation	2.46	2.67	2.63	2.93				
Manufacturer's Software:								
Operating System	3.36	3.50	3.38	3.31				
Compilers & Assemblers	3.34	3.50	3.25	3.31				
Applications Programs	2.70	2.50	2.75	2.57				
Ease of Programming	3.16	3.33	3.40	3.13				
Ease of Conversion	2.89	2.80	3.60	3.00				
Overall Satisfaction	3.18	3.33	3.40	3.38				
Additional Ratings (4.0-1.0)								
Timeliness of Hardware Installation	3.16	3.83	3.13	3.50				
Timeliness of Software Installation	3.10	3.17	3.13	3.44				
Ease of Expansion	3.48	3.50	3.13	3.50				
Compatibility of Hardware Carried Over from Other Systems	2.67	3.40	3.33	3.38				
Compatibility of Programs/Data Carried Over from Other Systems	2.68	3.17	3.25	3.00				
Power/Energy Efficiency	2.81	3.17	3.00	2.53				
Productivity Aids Help Keep Programming Costs Low	2.76	2.83	2.25	2.53				
Software Support Delivered by Vendor	2.74	2.83	2.75	2.75				
Keeping Up with & Implementing Vendor Changes to Hardware/Software (Very Easy=4.0; Very Difficult=1.0)	2.70	3.17	3.25	3.13				
Did the system do what you expected it to do? (%)								
Yes	96.77	100.00	100.00	100.00				
No	1.61	0.00	0.00	0.00				
Undecided	1.61	0.00	0.00	0.00				
Would you recommend system to another user? (%)								
Yes	90.32	100.00	100.00	87.50				
No	1.61	0.00	0.00	12.50				
Undecided	8.06	0.00	0.00	0.00				

U.S. User Ratings of Mainframes
TABLE 2. MAINFRAME VENDOR SUMMARIES

Survey Item	Manufacturer and Model						
	Amdahl	Honeywell	IBM	NAS	NCR	Unisys	Other Mainframes
No. of User Responses	29	78	866	19	65	208	16
Average Life of System (months)	18.79	37.53	26.37	25.68	34.89	27.24	43.40
Acquisition Method (%)							
Purchase	65.52	62.82	49.54	36.84	70.77	52.40	68.75
Rental or Lease from Manufacturer	17.24	19.23	13.05	21.05	16.92	19.23	18.75
Lease from Third Party	17.24	17.95	35.91	42.11	12.31	27.88	6.25
Principal Applications (%)							
Accounting/Billing	62.07	79.49	73.21	73.68	52.31	71.63	56.25
Banking—Check Processing/Loans/Savings	6.90	1.28	10.16	15.79	29.23	10.10	0.00
Construction/Architecture	3.45	2.56	2.42	0.00	1.54	1.92	6.25
Education—Scheduling/Administration	10.34	21.79	15.94	26.32	15.38	14.90	31.25
Engineering/Scientific	24.14	5.13	15.59	31.58	0.00	10.10	31.25
Health Care/Medical	10.34	2.56	10.16	10.53	6.15	7.69	12.50
Insurance	24.14	7.69	13.86	5.26	1.54	5.29	0.00
Manufacturing	24.14	34.62	24.48	21.05	9.23	24.52	12.50
Mathematics/Statistics	17.24	3.85	10.85	31.58	1.54	9.62	18.75
Order Processing/Inventory Control	37.93	53.85	46.19	52.63	29.23	50.00	31.25
Payroll/Personnel	55.17	61.54	60.39	52.63	52.31	51.92	43.75
Petroleum/Fuel Analysis	0.00	0.00	1.96	0.00	0.00	1.92	0.00
Process Control	20.69	7.69	5.08	10.53	1.54	8.65	0.00
Purchasing	31.03	33.33	41.11	31.58	27.69	37.02	31.25
Sales/Distribution	20.69	28.21	30.02	26.32	23.08	36.54	18.75
Other	31.03	10.26	13.28	10.53	12.31	13.46	18.75
Source of Applications Programs (%)							
In-house Personnel	96.55	97.44	92.26	89.47	80.00	92.79	87.50
Contract Programming	58.62	29.49	34.87	36.84	26.15	27.88	31.25
Manufacturer's Personnel	3.45	10.26	3.70	5.26	9.23	14.42	18.75
"Packaged" Programs from Manufacturer	37.93	41.03	41.34	47.37	49.23	34.13	37.50
Independent Suppliers	31.03	35.90	53.00	42.11	47.69	38.46	62.50
Location of Computer (%)							
Departmental System	6.90	3.85	5.77	0.00	6.15	3.85	0.00
Organizational System	93.10	94.87	93.19	100.00	93.85	95.67	100.00
Use Third-Party Maintenance (%)							
Yes	6.90	5.13	16.05	5.26	4.62	4.33	0.00
No	93.10	94.87	82.91	94.74	95.38	94.71	100.00
Have a Disaster Recovery Plan (%)							
Yes	72.41	47.44	53.35	52.63	61.54	48.56	62.50
Plan to in 1987	10.34	23.08	20.44	15.79	13.85	17.31	6.25
Have an Information Center (%)							
Yes	79.31	17.95	46.42	42.11	27.69	35.10	43.75
Plan to in 1987	3.45	6.41	7.04	0.00	9.23	8.17	6.25
Planned Acquisitions/Implementations for 1987 (%)							
Additional Software from the Manufacturer	55.17	47.44	54.27	10.53	24.62	44.23	50.00
Proprietary Software from Other Suppliers	82.76	24.36	60.85	63.16	47.69	38.94	50.00
Expansions to Present Hardware	86.21	57.69	63.97	63.16	56.92	62.02	56.25
Expansions to Data Communications Facilities	82.76	61.54	62.59	68.42	58.46	61.06	50.00
Unix-based Operating System	0.00	2.56	2.54	5.26	6.15	7.69	6.25
Laser Printers	48.28	26.92	29.56	31.58	15.38	20.67	18.75
Power Conditioning Systems	13.79	14.10	12.24	26.32	16.92	12.02	12.50
Optical Disk Devices	10.34	0.00	3.93	15.79	0.00	3.37	6.25

U.S. User Ratings of Mainframes
TABLE 2. MAINFRAME VENDOR SUMMARIES

<div style="text-align: center;">Manufacturer and Model</div> <div style="text-align: left;">Survey Item</div>	Amdahl	Honeywell	IBM	NAS	NCR	Unisys	Other Mainframes
System Ratings (4.0-1.0)							
Ease of Operation	3.62	3.46	3.20	3.44	3.12	3.38	3.38
Reliability of Mainframe	3.72	3.64	3.79	3.89	3.48	3.64	3.69
Reliability of Peripherals	3.34	3.20	3.47	3.39	3.38	3.16	3.38
Manufacturer's Maintenance Service:							
Responsiveness	3.66	3.44	3.39	3.53	3.20	3.35	3.44
Effectiveness	3.50	3.29	3.39	3.53	3.06	3.22	3.40
Manufacturer's Technical Support:							
Troubleshooting	3.41	3.17	3.07	3.37	2.86	2.94	3.38
Education	3.43	2.85	2.91	3.00	2.92	2.75	3.19
Documentation	3.18	2.74	2.85	3.00	2.64	2.48	2.93
Manufacturer's Software:							
Operating System	3.14	3.53	3.17	3.14	3.20	3.46	3.31
Compilers & Assemblers	3.04	3.45	3.24	3.23	3.11	3.37	3.31
Applications Programs	3.04	2.72	2.86	3.08	2.46	2.72	2.57
Ease of Programming	2.85	3.26	2.89	2.86	2.89	3.29	3.13
Ease of Conversion	2.86	3.07	2.73	2.87	3.10	3.08	3.00
Overall Satisfaction	3.21	3.38	3.19	3.13	3.15	3.30	3.38
Additional Ratings (4.0-1.0)							
Timeliness of Hardware Installation	3.72	3.53	3.53	3.84	3.31	3.33	3.50
Timeliness of Software Installation	3.48	3.39	3.19	3.50	3.14	3.18	3.44
Ease of Expansion	3.55	3.44	3.17	3.47	3.40	3.53	3.50
Compatibility of Hardware Carried Over from Other Systems	3.48	3.14	3.21	3.63	3.21	3.17	3.38
Compatibility of Programs/Data Carried Over from Other Systems	3.45	3.18	3.13	3.63	3.40	3.10	3.00
Power/Energy Efficiency	3.24	3.23	3.12	3.32	2.95	3.19	2.53
Productivity Aids Help Keep Programming Costs Low	2.71	2.81	2.62	2.75	2.56	2.79	2.53
Software Support Delivered by Vendor	3.07	2.95	2.86	3.05	2.46	2.73	2.75
Keeping Up with & Implementing Vendor Changes to Hardware/Software (Very Easy=4.0; Very Difficult=1.0)	3.19	3.16	2.75	3.26	3.09	2.97	3.13
Did the system do what you expected it to do? (%)							
Yes	96.55	93.59	95.03	94.74	92.31	97.12	100.00
No	0.00	3.85	0.92	0.00	1.54	0.48	0.00
Undecided	0.00	2.56	2.54	5.26	6.15	2.40	0.00
Would you recommend system to another user? (%)							
Yes	96.55	84.62	93.19	94.74	81.54	93.27	87.50
No	0.00	7.69	1.73	0.00	10.77	0.96	12.50
Undecided	0.00	7.69	2.89	5.26	7.69	5.77	0.00