User Ratings of Mainframes

Datapro is pleased to present the 1985 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 25 subjective categories and respond to a variety of questions covering such areas as system configuration, languages, and data base management. 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 1985 survey results with the 1984 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.

Presented in this report are the results of Datapro's 1985 survey of computer users. User experiences with over 900 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 the actual users of these systems can aid a prospective user in the evaluation of a computer acquisition.

SURVEY METHODOLOGY

The 1985 survey has been based on results received from 15,000 questionnaires mailed to known computer users listed with IDC. The total number of questionnaires was divided into two groups: 9,000 surveys were mailed to minicomputer users and 6,000 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 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 15,000 questionnaires mailed, 3,007 responses were received from 2,812 respondents, a return of 20 percent on the total mailing. Of the total responses, 368 were judged to be invalid, giving us 2,639 valid responses from 2,444 users. Of these valid responses, 937 rated mainframe computer systems for a return of 16 percent on the 6,000 surveys mailed to mainframe users, and 1,702 rated minicomputer systems for a return of 19 percent on the 9,000 surveys mailed to minicomputer users.

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 1985 QUESTIONNAIRE

Users were asked to answer 29 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 application programs. We also asked the users for information about their hardware and software configurations, and about acquisitions or implementations planned for 1985.

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 of peripherals, maintenance service (responsiveness and effectiveness), technical support (troubleshooting, education, and documentation), manufacturer's software (operating system, compilers and assemblers, and application programs), ease of programming, ease of conversion, and ➢

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Method of Acquisition	1985	1984	1983
Purchase (%)	56	51	44
Rent/Lease from Mfgr. (%)	14	24	34
Lease from 3rd Party (%)	30	25	22

Chart 1. Financial alternatives.

overall satisfaction. Additional ratings included: 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; delivery of hardware and required software; noise level of equipment; and ease of keeping up with and implementing vendor changes to hardware/software.

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 21 model groupings from 7 mainframe vendors, representing 937 user responses. Table 2, "Mainframe Vendor Summaries," contains summaries by vendor of the information in Table 1.

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 increased again this year. This is undoubtedly because many vendors, including IBM, are making outright purchase more attractive by lowering purchase prices and raising rental and lease prices.

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 1985, as in 1984, the top three applications were: accounting/billing, payroll/personnel, and order processing/inventory control. (See Chart 3, "User Rankings of Principal Applications.") Engineering/Scientific, in ninth place last year, moved up to seventh place this year, while Education moved from seventh place to ninth place.

Hardware Configurations

Several of the survey questions asked users to describe their hardware configurations. This year's survey shows an increase in disk storage capacity over last year. In 1984, 66 percent of the systems included at least 1.2 gigabytes of disk storage. In 1985, 77 percent of the systems had at least 1.2 gigabytes of disk capacity, with 20 percent using more than 10 gigabytes.

In the continuing trend to bring computers to the people who need them, workstations/terminals are the primary means of implementation. We asked the users how many

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 (11)	10.00	0.00	0.00	0.00	0.00	10.00	0.00	10.00	0.00	30.00	0.00	0.00	10.00	0.00	0.00	20.00	10.00
Burroughs (106)	23.58	3.77	0.94	6.60	1.89	18.87	3.77	3.77	0.00	11.32	0.00	0.00	10.38	4.72	3.77	1.89	4.72
Honeywell (55)	1.82	0.00	0.00	12.73	0.00	16.36	7.27	5.45	0.00	20.00	0.00	0.00	14.55	5.45	3.64	1.82	10.91
IBM (581)	9.84	4.32	0.69	6.74	1.04	8.29	5.01	7.77	0.35	27.12	1.04	0.00	8.64	2.76	2.76	5.70	7.94
NAS (5)	20.00	0.00	0.00	20.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	20.00
NCR (132)	26.52	0.00	1.52	10.61	0.76	18.18	5.30	0.00	0.00	12.12	0.00	0.00	14.39	3.03	0.76	3.79	3.03
Sperry (30)	0.00	3.33	0.00	3.33	3.33	26.67	6.67	0.00	0.00	20.00	0.00	3.33	16.67	0.00	3.33	0.00	13.33
Other (17)	5.88	0.00	0.00	41.18	11.76	11.76	5.88	0.00	0.00	0.00	0.00	0.00	11.76	11.76	0.00	0.00	0.00
All Mainframes (937)	12.96	3.21	0.75	8.14	1.28	11.99	5.03	5.78	0.21	21.95	0.64	0.11	10.28	3.21	2.57	4.71	7.17

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Applications—1985	Applications—1984
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. Engineering/Scientific	7. Education
8. Banking	8. Banking
9. Education	9. Engineering/Scientific
10. Mathematics/Statistics	10. Mathematics/Statistics

Chart 3. User rankings of principal applications.

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 38 percent of the mainframe users had over 60 local terminals and over 60 remote terminals in operation, an increase of 11 percent over last year's responses.

Software

The computer application development life cycle is a highly labor-intensive cycle. As labor costs climb, so does the 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 the total tailorability of the software to the user's operational requirements (ideally). Packages from independent suppliers were ranked second by the users, followed by packages from the manufacturer, contract programming, and programs prepared by the manufacturer's personnel. The 1985 results on this question were identical to the 1984 and 1983 results.

"Which programming language should I use?" is a question that often results in a long debate among programmers and computer scientists. Since most studies show that it takes about the same amount of time to code an instruction,

Chart 4. Usage of Local and Remote Workstations Terminals

No. of Workstations/ Terminals per System / Manufacturer & Model	Local						Remote					
	None	1-5	6-15	16-30	31-60	Over 60	None	1-5	6-15	16-30	31-60	Over 60
Amdahl												
470/580 Series	0	0	0	0	2	9	0	0	0	0	0	11
Burroughs												
A 9	0	0	0	1	1	3	0	1	1	0	1	2
B 2900	0	4	15	14	5	7	5	8	8	7	4	12
B 3900	0	0	2	0	6	7	0	3	3	2	3	4
B 4900	0	1	1	3	2	0	1	0	0	0	2	4
B 5900	0	0	3	6	5	3	4	2	4	1	1	5
B 6900 & 7900	0	1	1	2	7	4	1	1	2	1	1	9
Honeywell												
DPS 7	0	2	3	8	6	2	4	9	2	5	1	0
DPS 8	0	1	3	7	12	11	2	2	4	5	4	16
IBM												
4331	0	1	1	3	3	1	4	2	2	0	0	1
4341	2	6	19	43	83	95	47	35	35	29	34	68
4361	0	0	8	18	22	12	18	14	8	8	9	4
4381	0	1	2	5	32	50	17	2	9	8	13	43
303X Series	0	0	0	0	5	9	2	1	1	0	2	8
3081	0	0	1	5	8	46	0	1	2	2	3	52
3083	0	0	1	3	12	63	2	2	4	3	11	56
3084	0	0	1	0	0	14	0	0	0	0	0	16
NAS												
All Models	0	0	0	1	4	0	0	1	1	0	0	3
NCR												
8500/8600	1	12	45	44	19	10	30	21	29	12	13	23
Sperry												
1100/60 & 1100/70	0	0	1	5	5	5	1	1	7	2	3	2
1100/80	0	2	0	0	2	10	1	0	1	0	1	11
Other	2	5	4	2	1	3	5	1	2	3	1	5
All Mainframes	5	36	111	170	242	364	144	107	125	88	107	355

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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, followed distantly by PL/1, Assembler, and Fortran.

We also asked the respondents if they were using a data base management system or a data communications monitor. Fifty-eight percent were using a DBMS, while 67 percent were using a communications monitor.

Acquisition Plans

We asked how users were planning to spend their enhancement/acquisition dollars in 1985. 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, followed closely by expansions to their data communications facilities and additions to their proprietary software.

Disaster recovery is of critical importance to computer installations, so we asked the users if they had implemented a disaster recovery plan. Over 50 percent said they had done so, and 22 percent reported that a disaster recovery plan was on their agenda.

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.

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. Only two systems met these criteria:

	Overall Satisfaction	Lowest Score	No. of Responses
IBM 4381	3.21	2.81	92
IBM 3083	3.31	2.84	79

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 6 shows the systems that met these criteria for ease of operation, reliability of mainframe, reliability of peripherals, and operating system. In the ease of programming and ease of conversion categories, none of the systems met the criteria.

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. The 1985 survey shows a decrease in user satisfaction with service and support.

In 1984, we listed those vendors that 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.

Last year, one vendor met our criteria for both maintenance and technical support, and two other vendors made the list for troubleshooting. This year, however, *none* of the

Acquisition Plans—1985	Acquisition Plans—1984
1. Expansions to Present Hardware (67%)	1. Expansions to Data Communications Facilities (65%)
2. Expansions to Data Communications Facilities (65%)	2. Expansions to Present Hardware (64%)
3. Additional Proprietary Software (61%)	3. Additional Proprietary Software (59%)
4. Additional Software from Mfgr. (52%)	4. Additional Software from Mfgr. (49%)
5. Business Graphics (14%)	5. Distributed Processing (25%)

Chart 5. User rankings of planned acquisitions.

	Weighted Average	No. of Responses
Ease of Operation		
Burroughs B 2900	3.70	46
Reliability of Mainframe		
IBM 4341	3.70	250
IBM 4361	3.78	61
IBM 4381	3.80	92
IBM 3081	3.63	60
IBM 3083	3.68	79
Reliability of Peripherals		
IBM 4361	3.62	61
Operating System		
Burroughs B 2900	3.78	46

Chart 6. Systems with the highest ratings in key categories.

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vendors met our requirements for maintenance, although IBM came close with a weighted average of 3.47 for both maintenance responsiveness and maintenance effectiveness. In the area of technical support, IBM had a weighted average of 3.14 for troubleshooting and 3.05 for education. None of the other vendors met the criteria for these categories. What's more, not one vendor received good marks for documentation.

Expectations and Recommendations

We asked the computer system users "Did the system do what you expected it to do?" As in 1984, 96 percent answered "Yes," 2 percent said "No," and 2 percent said "Haven't decided.

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," four percent answered "No," and four percent said they "Haven't decided." These responses were identical to those in the 1984 survey.

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

Amdahl	100%
NAS	100%
Sperry	100%
IBM	98%
Burroughs	95%

THANK YOU

Datapro extends a sincere thanks to all for responding to our 1985 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. □

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TABLE 1. MAINFRAMES BY VENDOR AND MODEL

Survey Item \ Manufacturer and Model	Amdahl 470/580 Series	Burroughs A 9	Burroughs B 2900	Burroughs B 3900	Burroughs B 4900	Burroughs B 5900	Burroughs B 6900 & B 7900	Honeywell DPS 7
No. of User Responses	11	5	46	16	7	17	15	21
Average Life of System (months)	9.8	5.8	10.6	9.6	7.0	8.9	10.1	9.4
Acquisition Method (%)								
Purchase	54.55	80.00	56.52	68.75	57.14	64.71	66.67	61.90
Rental or Lease from Manufacturer	36.36	0.00	30.43	12.50	0.00	5.88	20.00	14.29
Lease from Third Party	9.09	20.00	13.04	18.75	42.86	29.41	13.33	23.81
Principal Applications (%)								
Accounting/Billing	72.73	80.00	63.04	75.00	42.86	94.12	73.33	85.71
Banking—Check Processing/Loans/Savings	0.00	0.00	43.48	12.50	71.43	11.76	20.00	0.00
Construction/Architecture	9.09	0.00	0.00	0.00	0.00	5.88	0.00	0.00
Education—Scheduling/Administration	18.18	20.00	8.70	12.50	0.00	17.65	20.00	4.76
Engineering/Scientific	9.09	40.00	0.00	6.25	0.00	5.88	6.67	0.00
Health Care/Medical	18.18	40.00	6.52	6.25	0.00	11.76	0.00	4.76
Insurance	9.09	0.00	8.70	12.50	0.00	11.76	6.67	4.76
Manufacturing	27.27	0.00	13.04	6.25	0.00	11.76	20.00	19.05
Mathematics/Statistics	9.09	20.00	4.35	0.00	0.00	5.88	0.00	4.76
Order Processing/Inventory Control	54.55	40.00	41.30	37.50	0.00	52.94	46.67	66.67
Payroll/Personnel	63.64	80.00	63.04	50.00	85.71	76.47	80.00	76.19
Petroleum/Fuel Analysis	0.00	0.00	0.00	0.00	0.00	5.88	6.67	0.00
Process Control	18.18	0.00	4.35	0.00	0.00	0.00	6.67	4.76
Purchasing	36.36	80.00	30.43	12.50	0.00	35.29	26.67	33.33
Sales/Distribution	54.55	0.00	30.43	12.50	0.00	29.41	20.00	47.62
Other	27.27	0.00	2.17	31.25	14.29	11.76	13.33	9.52
Source of Applications Programs (%)								
In-house Personnel	100.00	100.00	91.30	93.75	100.00	94.12	100.00	100.00
Contract Programming	54.55	20.00	26.09	62.50	14.29	29.41	40.00	38.10
Manufacturer's Personnel	27.27	0.00	2.17	12.50	14.29	17.65	13.33	19.05
"Packaged" Programs from Manufacturer	45.45	20.00	21.74	31.25	57.14	29.41	40.00	23.81
Independent Suppliers	27.27	40.00	52.17	43.75	71.43	23.53	46.67	28.57
Using Data Base Management System (%)	81.82	100.00	36.36	66.67	42.86	75.00	93.33	25.00
Planning a Data Base Management System in 1985	9.09	0.00	22.73	0.00	28.57	12.50	0.00	25.00
Using Communications Monitor (%)	80.00	40.00	29.27	38.46	42.86	33.33	42.86	60.00
Planning Communications Monitor in 1985	10.00	20.00	4.88	0.00	0.00	6.67	14.29	0.00
Using Integrated Office Automation Functions (%)	22.22	0.00	6.52	37.50	0.00	11.76	26.67	4.76
Planning Office Automation Functions in 1985	44.44	20.00	10.87	12.50	14.29	23.53	20.00	4.76
Have a Disaster Recovery Plan (%)	72.73	60.00	45.65	31.25	71.43	23.53	46.67	47.62
Plan to in 1985	9.09	0.00	17.39	12.50	14.29	29.41	13.33	14.29
Have an Information Center (%)	81.82	0.00	15.22	25.00	14.29	41.18	26.67	4.76
Plan to in 1985	0.00	0.00	6.52	0.00	14.29	5.88	6.67	4.76
Planned Acquisitions/Implementations for 1985 (%)								
Additional Software from the Manufacturer	36.36	60.00	23.91	43.75	28.57	29.41	66.67	33.33
Proprietary Software from Other Suppliers	72.73	60.00	43.48	68.75	28.57	35.29	60.00	28.57
Expansions to Present Hardware	63.64	40.00	47.83	68.75	71.43	58.82	66.67	71.43
Expansions to Data Communications Facilities	63.64	60.00	56.52	87.50	57.14	52.94	60.00	76.19
Unix-Based Operating System	18.18	0.00	0.00	0.00	0.00	5.88	0.00	0.00
Business Graphics	27.27	20.00	6.52	12.50	14.29	5.88	26.67	4.76
Power Conditioning Systems	0.00	0.00	4.35	6.25	0.00	0.00	20.00	4.76
Optical Disk Devices	0.00	0.00	2.17	0.00	0.00	5.88	6.67	0.00

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TABLE 1. MAINFRAMES BY VENDOR AND MODEL

Amdahl 470/580 Series	Burroughs A 9	Burroughs B 2900	Burroughs B 3900	Burroughs B 4900	Burroughs B 5900	Burroughs B 6900 & B 7900	Honeywell DPS 7	Manufacturer and Model / Survey Item
								System Ratings (4.0-1.0)
3.44	3.80	3.70	3.81	3.57	3.38	3.50	3.47	Ease of Operation
3.55	3.60	3.49	3.81	3.71	3.25	3.43	3.42	Reliability of Mainframe
3.00	3.00	3.05	3.31	3.14	3.06	3.00	3.26	Reliability of Peripherals
								Manufacturer's Maintenance Service:
3.55	3.20	3.33	3.50	3.57	3.29	3.43	3.24	Responsiveness
3.36	3.00	3.02	3.25	3.29	3.00	3.21	3.05	Effectiveness
								Manufacturer's Technical Support:
3.27	2.60	2.71	3.00	2.71	2.76	2.79	3.05	Troubleshooting
3.27	3.00	2.78	2.75	3.00	2.71	2.71	2.71	Education
2.91	2.20	2.49	2.73	2.71	2.18	2.36	2.71	Documentation
								Manufacturer's Software:
3.11	3.80	3.78	3.94	3.71	3.53	3.71	3.43	Operating System
3.00	3.80	3.36	3.38	3.14	3.24	3.36	3.43	Compilers & Assemblers
2.86	2.50	2.65	2.67	2.67	2.46	2.36	2.44	Applications Programs
2.50	3.60	3.42	3.38	3.14	3.18	3.14	3.14	Ease of Programming
2.63	3.20	3.25	3.27	3.29	3.12	3.15	2.95	Ease of Conversion
3.22	3.40	3.36	3.50	3.43	3.18	3.29	3.33	Overall Satisfaction
								Additional Ratings (4.0-1.0)
3.55	3.80	3.55	3.44	3.71	3.47	3.47	3.62	Ease of Expansion
3.55	3.20	3.47	3.31	2.71	3.06	2.93	2.81	Compatibility of Hardware Carried over from Other Systems
3.55	3.20	3.44	3.25	3.00	2.94	2.93	3.00	Compatibility of Programs/Data Carried over from Other Systems
3.45	3.60	3.27	3.56	3.29	3.06	3.00	3.20	Power/Energy Efficiency
2.90	3.20	2.87	2.69	2.57	2.71	3.00	2.75	Productivity Aids Help Keep Programming Costs Low
3.00	2.60	2.64	2.63	2.43	2.59	2.73	2.60	Software Support Delivered by Vendor
2.91	3.20	3.17	3.19	3.29	3.00	3.00	3.05	Keeping up with & Implementing Vendor Changes to Hardware/Software (Very Easy=4.0; Very Difficult=1.0)
3.36	3.40	2.78	2.94	3.29	2.94	3.00	3.10	Delivery/Installation of Equipment (Ahead of Schedule=4.0; Very Late=1.0)
3.10	3.20	2.89	3.25	3.29	3.06	2.80	3.05	Delivery of Required Software (Ahead of Schedule=4.0; Very Late=1.0)
								Did the system do what you expected it to do? (%)
100.00	100.00	97.83	93.75	100.00	94.12	86.67	100.00	Yes
0.00	0.00	2.17	6.25	0.00	5.88	6.67	0.00	No
0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	Undecided
								Would you recommend system to another user? (%)
90.91	100.00	86.96	93.75	100.00	88.24	86.67	80.95	Yes
0.00	0.00	4.35	6.25	0.00	0.00	6.67	4.76	No
9.09	0.00	8.70	0.00	0.00	11.76	6.67	14.29	Undecided

User Ratings of Mainframes

TABLE 1. MAINFRAMES BY VENDOR AND MODEL

Survey Item / Manufacturer and Model	Honeywell DPS 8	IBM 4331	IBM 4341	IBM 4361	IBM 4381	IBM 303X Series	IBM 3081	IBM 3083
No. of User Responses	34	9	250	61	92	14	60	79
Average Life of System (months)	9.8	11.4	10.8	8.3	6.9	8.8	8.7	8.3
Acquisition Method (%)								
Purchase	44.12	66.67	51.60	67.21	50.00	35.71	48.33	48.10
Rental or Lease from Manufacturer	29.41	11.11	11.20	4.92	14.13	0.00	11.67	10.13
Lease from Third Party	26.47	22.22	37.20	27.87	35.87	64.29	38.33	41.77
Principal Applications (%)								
Accounting/Billing	76.47	66.67	79.20	90.16	82.61	71.43	78.33	75.95
Banking—Check Processing/Loans/Savings	0.00	11.11	12.80	6.56	9.78	7.14	10.00	11.39
Construction/Architecture	2.94	11.11	3.20	1.64	5.43	0.00	5.00	5.06
Education—Scheduling/Administration	26.47	33.33	11.20	8.20	15.22	21.43	21.67	11.39
Engineering/Scientific	17.65	0.00	18.80	16.39	18.48	35.71	40.00	26.58
Health Care/Medical	8.82	0.00	8.80	6.56	8.70	7.14	20.00	12.66
Insurance	5.88	22.22	10.80	8.20	11.96	21.43	11.67	12.66
Manufacturing	23.53	33.33	30.40	45.90	23.91	28.57	25.00	26.58
Mathematics/Statistics	23.53	11.11	12.80	13.11	9.78	7.14	26.67	13.92
Order Processing/Inventory Control	55.88	55.56	50.80	60.66	52.17	42.86	51.67	55.70
Payroll/Personnel	64.71	55.56	66.00	72.13	61.96	50.00	80.00	65.82
Petroleum/Fuel Analysis	2.94	0.00	1.60	8.20	5.43	0.00	6.67	5.06
Process Control	0.00	11.11	4.00	3.28	7.61	0.00	5.00	2.53
Purchasing	29.41	55.56	41.60	47.54	46.74	35.71	51.67	45.57
Sales/Distribution	23.53	44.44	35.20	49.18	34.78	28.57	23.33	34.18
Other	17.65	11.11	12.40	6.56	16.30	14.29	10.00	16.46
Source of Applications Programs (%)								
In-house Personnel	100.00	77.78	94.40	98.36	94.57	92.86	93.33	97.47
Contract Programming	26.47	22.22	32.80	26.23	26.09	42.86	43.33	55.70
Manufacturer's Personnel	17.65	11.11	2.80	1.64	2.17	7.14	5.00	3.80
"Packaged" Programs from Manufacturer	29.41	22.22	39.60	39.34	35.87	64.29	56.67	55.70
Independent Suppliers	50.00	44.44	55.60	54.10	59.78	78.57	65.00	51.90
Using Data Base Management System (%)	87.50	37.50	47.76	55.93	62.92	71.43	87.72	84.21
Planning a Data Base Management System in 1985	3.13	0.00	12.65	11.86	15.73	7.14	7.02	6.58
Using Communications Monitor (%)	48.28	66.67	75.52	65.45	84.09	85.71	75.44	85.92
Planning Communications Monitor in 1985	6.90	11.11	6.22	9.09	5.68	7.14	8.77	4.23
Using Integrated Office Automation Functions (%)	6.25	25.00	12.30	6.90	16.67	30.77	27.12	22.78
Planning Office Automation Functions in 1985	21.88	0.00	18.44	17.24	28.89	7.69	32.20	21.52
Have a Disaster Recovery Plan (%)	26.47	33.33	48.00	49.18	43.48	42.86	66.67	64.56
Plan to in 1985	41.18	33.33	24.40	27.87	22.83	7.14	18.33	20.25
Have an Information Center (%)	26.47	0.00	27.20	14.75	40.22	78.57	66.67	56.96
Plan to in 1985	11.76	11.11	14.00	18.03	15.22	0.00	16.67	11.39
Planned Acquisitions/Implementations for 1985 (%)								
Additional Software from the Manufacturer	47.06	22.22	49.60	47.54	61.96	64.29	85.00	68.35
Proprietary Software from Other Suppliers	26.47	22.22	62.00	59.02	77.17	85.71	90.00	79.75
Expansions to Present Hardware	55.88	55.56	65.60	67.21	68.48	78.57	75.00	77.22
Expansions to Data Communications Facilities	70.59	33.33	56.80	54.10	71.74	71.43	88.33	77.22
Unix-Based Operating System	0.00	11.11	1.60	1.64	1.09	0.00	3.33	3.80
Business Graphics	5.88	0.00	12.00	9.84	19.57	35.71	28.33	18.99
Power Conditioning Systems	5.88	0.00	10.40	9.84	15.22	28.57	16.67	11.39
Optical Disk Devices	0.00	0.00	0.80	1.64	1.09	0.00	0.00	1.27

User Ratings of Mainframes

TABLE 1. MAINFRAMES BY VENDOR AND MODEL

Honeywell DPS 8	IBM 4331	IBM 4341	IBM 4361	IBM 4381	IBM 303X Series	IBM 3081	IBM 3083	Manufacturer and Model / Survey Item
								System Ratings (4.0-1.0)
3.28	3.00	3.16	3.12	3.29	3.25	3.23	3.31	Ease of Operation
3.48	3.67	3.70	3.78	3.80	3.50	3.63	3.68	Reliability of Mainframe
2.97	3.56	3.41	3.62	3.44	3.25	3.48	3.49	Reliability of Peripherals
								Manufacturer's Maintenance Service:
3.35	3.33	3.45	3.53	3.58	3.29	3.41	3.46	Responsiveness
3.00	3.22	3.47	3.48	3.57	3.29	3.33	3.56	Effectiveness
								Manufacturer's Technical Support:
2.79	2.63	3.10	3.15	3.30	3.08	3.08	3.17	Troubleshooting
2.68	2.75	3.00	2.95	3.13	3.00	3.09	3.18	Education
2.47	2.50	2.89	2.91	3.00	3.08	2.98	3.01	Documentation
								Manufacturer's Software:
3.39	2.89	3.20	3.17	3.21	3.43	3.34	3.38	Operating System
3.27	3.22	3.28	3.21	3.30	3.57	3.28	3.37	Compilers & Assemblers
2.21	2.71	2.79	2.70	2.81	3.00	2.89	2.84	Applications Programs
3.00	3.00	2.94	2.84	2.90	3.00	2.98	2.99	Ease of Programming
2.77	2.67	2.81	2.78	2.83	3.18	2.76	2.93	Ease of Conversion
3.03	3.00	3.18	3.10	3.21	3.29	3.16	3.31	Overall Satisfaction
								Additional Ratings (4.0-1.0)
3.47	3.00	3.17	3.20	3.59	2.50	3.32	3.64	Ease of Expansion
2.60	3.00	3.23	3.16	3.44	3.29	3.38	3.43	Compatibility of Hardware Carried over from Other Systems
2.50	2.56	3.15	3.12	3.41	3.23	3.29	3.35	Compatibility of Programs/Data Carried over from Other Systems
2.83	2.89	3.18	3.22	3.53	2.14	3.36	3.34	Power/Energy Efficiency
2.38	2.56	2.68	2.55	2.69	2.92	2.67	2.72	Productivity Aids Help Keep Programming Costs Low
2.59	2.11	2.83	2.83	3.03	2.93	2.88	2.97	Software Support Delivered by Vendor
2.85	2.67	2.76	2.75	2.81	2.62	2.69	2.76	Keeping up with & Implementing Vendor Changes to Hardware/Software (Very Easy=4.0; Very Difficult=1.0)
2.91	2.89	3.00	3.03	3.14	3.00	3.19	3.05	Delivery/Installation of Equipment (Ahead of Schedule=4.0; Very Late=1.0)
2.91	2.78	3.00	3.00	3.00	2.93	3.05	3.00	Delivery of Required Software (Ahead of Schedule=4.0; Very Late=1.0)
								Did the system do what you expected it to do? (%)
88.24	100.00	98.00	100.00	96.74	92.86	98.33	100.00	Yes
5.88	0.00	0.80	0.00	1.09	0.00	0.00	0.00	No
2.94	0.00	1.20	0.00	2.17	7.14	1.67	0.00	Undecided
								Would you recommend system to another user? (%)
82.35	88.89	95.60	96.72	97.83	71.43	95.00	98.73	Yes
8.82	0.00	1.60	1.64	0.00	28.57	1.67	0.00	No
8.82	11.11	2.40	1.64	2.17	0.00	3.33	1.27	Undecided

User Ratings of Mainframes

TABLE 1. MAINFRAMES BY VENDOR AND MODEL

Survey Item / Manufacturer and Model	IBM 3084	NAS All Models	NCR 8500/8600	Sperry 1100/60 & 1100/70	Sperry 1100/80	Other Mainframes		
No. of User Responses	16	5	132	16	14	17		
Average Life of System (months)	8.3	6.2	9.9	9.3	12.4	12.9		
Acquisition Method (%)								
Purchase	62.50	40.00	71.97	50.00	42.86	58.82		
Rental or Lease from Manufacturer	25.00	0.00	12.12	31.25	57.14	29.41		
Lease from Third Party	12.50	60.00	15.91	18.75	0.00	5.88		
Principal Applications (%)								
Accounting/Billing	68.75	60.00	67.42	81.25	71.43	35.29		
Banking—Check Processing/Loans/Savings	12.50	0.00	27.27	0.00	0.00	5.88		
Construction/Architecture	6.25	0.00	1.52	6.25	0.00	5.88		
Education—Scheduling/Administration	6.25	20.00	13.64	12.50	0.00	29.41		
Engineering/Scientific	25.00	20.00	3.03	12.50	14.29	17.65		
Health Care/Medical	31.25	0.00	12.12	12.50	7.14	5.88		
Insurance	37.50	20.00	3.79	0.00	0.00	5.88		
Manufacturing	6.25	0.00	14.39	25.00	28.57	0.00		
Mathematics/Statistics	25.00	40.00	3.03	25.00	0.00	17.65		
Order Processing/Inventory Control	50.00	40.00	41.67	75.00	50.00	29.41		
Payroll/Personnel	62.50	20.00	65.91	75.00	50.00	29.41		
Petroleum/Fuel Analysis	6.25	20.00	2.27	6.25	0.00	0.00		
Process Control	6.25	0.00	0.76	6.25	0.00	0.00		
Purchasing	43.75	20.00	28.03	62.50	57.14	23.53		
Sales/Distribution	18.75	0.00	22.73	37.50	28.57	11.76		
Other	6.25	40.00	15.91	31.25	35.71	47.06		
Source of Applications Programs (%)								
In-house Personnel	93.75	80.00	87.12	93.75	100.00	76.47		
Contract Programming	68.75	20.00	25.76	37.50	42.86	23.53		
Manufacturer's Personnel	12.50	20.00	8.33	56.25	21.43	5.88		
"Packaged" Programs from Manufacturer	68.75	40.00	50.76	43.75	14.29	29.41		
Independent Suppliers	56.25	80.00	49.24	50.00	21.43	47.06		
Using Data Base Management System (%)	87.50	80.00	33.61	93.75	100.00	41.18		
Planning a Data Base Management System in 1985	6.25	0.00	7.38	6.25	0.00	5.88		
Using Communications Monitor (%)	93.33	60.00	55.17	53.33	58.33	37.50		
Planning Communications Monitor in 1985	0.00	20.00	13.79	6.67	8.33	18.75		
Using Integrated Office Automation Functions (%)	31.25	20.00	11.90	46.67	50.00	0.00		
Planning Office Automation Functions in 1985	37.50	0.00	23.02	26.67	28.57	0.00		
Have a Disaster Recovery Plan (%)	87.50	20.00	53.79	37.50	64.29	64.71		
Plan to in 1985	12.50	60.00	23.48	18.75	28.57	17.65		
Have an Information Center (%)	81.25	60.00	19.70	18.75	50.00	23.53		
Plan to in 1985	12.50	20.00	5.30	0.00	21.43	11.76		
Planned Acquisitions/Implementations for 1985 (%)								
Additional Software from the Manufacturer	75.00	0.00	40.15	56.25	78.57	52.94		
Proprietary Software from Other Suppliers	81.25	60.00	58.33	37.50	35.71	23.53		
Expansions to Present Hardware	87.50	60.00	62.12	87.50	92.86	47.06		
Expansions to Data Communications Facilities	87.50	80.00	60.61	75.00	85.71	35.29		
Unix-Based Operating System	6.25	20.00	1.52	0.00	7.14	0.00		
Business Graphics	43.75	0.00	3.79	31.25	50.00	0.00		
Power Conditioning Systems	6.25	40.00	16.67	31.25	42.86	0.00		
Optical Disk Devices	0.00	0.00	0.76	0.00	0.00	11.76		

User Ratings of Mainframes

TABLE 1. MAINFRAMES BY VENDOR AND MODEL

IBM 3084	NAS All Models	NCR 8500/8600	Sperry 1100/60 & 1100/70	Sperry 1100/80	Other Mainframes			Manufacturer and Model / Survey Item
								System Ratings (4.0-1.0)
3.19	3.60	3.24	3.25	3.42	2.94			Ease of Operation
3.50	3.80	3.39	3.44	3.25	2.71			Reliability of Mainframe
3.56	3.60	3.39	3.07	2.83	2.71			Reliability of Peripherals
								Manufacturer's Maintenance Service:
3.44	3.60	3.31	3.50	3.21	2.71			Responsiveness
3.38	3.40	3.19	3.44	3.21	2.41			Effectiveness
								Manufacturer's Technical Support:
3.13	3.20	2.85	2.88	2.64	2.65			Troubleshooting
3.00	3.50	2.95	2.63	2.50	2.44			Education
2.94	2.25	2.68	2.44	2.29	2.24			Documentation
								Manufacturer's Software:
3.44	3.50	3.20	3.44	3.43	2.76			Operating System
3.25	3.00	3.15	3.31	3.29	2.71			Compilers & Assemblers
2.86	0.00	2.56	2.62	2.23	2.46			Applications Programs
3.00	3.00	2.92	3.13	3.14	2.59			Ease of Programming
3.07	3.50	3.09	2.93	2.79	2.50			Ease of Conversion
3.25	3.50	3.05	3.25	3.07	2.41			Overall Satisfaction
								Additional Ratings (4.0-1.0)
3.31	3.60	3.60	3.80	3.36	2.35			Ease of Expansion
3.40	3.60	3.22	2.73	2.67	2.57			Compatibility of Hardware Carried over from Other Systems
3.33	3.80	3.36	2.38	2.64	2.35			Compatibility of Programs/Data Carried over from Other Systems
3.60	3.40	3.02	2.81	2.71	2.43			Power/Energy Efficiency
2.79	3.33	2.71	2.81	2.50	2.18			Productivity Aids Help Keep Programming Costs Low
3.00	2.80	2.55	2.88	2.64	2.31			Software Support Delivered by Vendor
2.88	3.00	2.95	2.88	2.71	2.60			Keeping up with & Implementing Vendor Changes to Hardware/Software (Very Easy=4.0; Very Difficult=1.0)
3.07	3.00	2.95	3.25	3.07	2.94			Delivery/Installation of Equipment (Ahead of Schedule=4.0; Very Late=1.0)
3.07	3.00	2.82	3.13	2.93	2.75			Delivery of Required Software (Ahead of Schedule=4.0; Very Late=1.0)
								Did the system do what you expected it to do? (%)
87.50	100.00	93.94	100.00	100.00	88.24			Yes
0.00	0.00	4.55	0.00	0.00	5.88			No
12.50	0.00	1.52	0.00	0.00	5.88			Undecided
								Would you recommend system to another user? (%)
100.00	80.00	84.09	100.00	85.71	41.18			Yes
0.00	0.00	9.85	0.00	0.00	23.53			No
0.00	20.00	6.06	0.00	14.29	35.29			Undecided

User Ratings of Mainframes

TABLE 2. MAINFRAME VENDOR SUMMARIES

Survey Item / Manufacturer and Model	Amdahl	Burroughs	Honeywell	IBM	NAS	NCR	Sperry	Other Mainframes
No. of User Responses	11	106	55	581	5	132	30	17
Average Life of System (months)	9.8	9.6	9.7	9.3	6.2	9.9	10.7	12.9
Acquisition Method (%)								
Purchase	54.55	62.26	50.91	52.32	40.00	71.97	46.67	58.82
Rental or Lease from Manufacturer	36.36	18.87	23.64	11.02	0.00	12.12	43.33	29.41
Lease from Third Party	9.09	18.87	25.45	36.49	60.00	15.91	10.00	5.88
Principal Applications (%)								
Accounting/Billing	72.73	70.75	80.00	79.69	60.00	67.42	76.67	35.29
Banking—Check Processing/Loans/Savings	0.00	30.19	0.00	11.02	0.00	27.27	0.00	5.88
Construction/Architecture	9.09	0.94	1.82	3.96	0.00	1.52	3.33	5.88
Education—Scheduling/Administration	18.18	12.26	18.18	13.08	20.00	13.64	6.67	29.41
Engineering/Scientific	9.09	4.72	10.91	22.03	20.00	3.03	13.33	17.65
Health Care/Medical	18.18	7.55	7.27	10.67	0.00	12.12	10.00	5.88
Insurance	9.09	8.49	5.45	12.22	20.00	3.79	0.00	5.88
Manufacturing	27.27	11.32	21.82	29.26	0.00	14.39	26.67	0.00
Mathematics/Statistics	9.09	3.77	16.36	14.11	40.00	3.03	13.33	17.65
Order Processing/Inventory Control	54.55	40.57	60.00	52.67	40.00	41.67	63.33	29.41
Payroll/Personnel	63.64	67.92	69.09	66.78	20.00	65.91	63.33	29.41
Petroleum/Fuel Analysis	0.00	1.89	1.82	3.96	20.00	2.27	3.33	0.00
Process Control	18.18	2.83	1.82	4.48	0.00	0.76	3.33	0.00
Purchasing	36.36	28.30	30.91	44.75	20.00	28.03	60.00	23.53
Sales/Distribution	54.55	22.64	32.73	34.77	0.00	22.73	33.33	11.76
Other	27.27	10.38	14.55	12.56	40.00	15.91	33.33	47.06
Source of Applications Programs (%)								
In-house Personnel	100.00	94.34	100.00	94.84	80.00	87.12	96.67	76.47
Contract Programming	54.55	33.02	30.91	36.32	20.00	25.76	40.00	23.53
Manufacturer's Personnel	27.27	8.49	18.18	3.44	20.00	8.33	40.00	5.88
"Packaged" Programs from Manufacturer	45.45	29.25	27.27	44.06	40.00	50.76	30.00	29.41
Independent Suppliers	27.27	46.23	41.82	56.97	80.00	49.24	36.67	47.06
Using Data Base Management System (%)	81.82	58.82	63.46	61.52	80.00	33.61	96.67	41.18
Planning a Data Base Management System in 1985	9.09	13.73	11.54	11.17	0.00	7.38	3.33	5.88
Using Communications Monitor (%)	80.00	34.74	52.27	77.82	60.00	55.17	55.56	37.50
Planning Communications Monitor in 1985	10.00	6.32	4.55	6.36	20.00	13.79	7.41	18.75
Using Integrated Office Automation Functions (%)	22.22	14.15	5.66	16.58	20.00	11.90	48.28	0.00
Planning Office Automation Functions in 1985	44.44	15.09	15.09	21.87	0.00	23.02	27.59	0.00
Have a Disaster Recovery Plan (%)	72.73	42.45	34.55	52.32	20.00	53.79	50.00	64.71
Plan to in 1985	9.09	16.98	30.91	22.72	60.00	23.48	23.33	17.65
Have an Information Center (%)	81.82	21.70	18.18	38.38	60.00	19.70	33.33	23.53
Plan to in 1985	0.00	5.66	9.09	14.11	20.00	5.30	10.00	11.76
Planned Acquisitions/Implementations for 1985 (%)								
Additional Software from the Manufacturer	36.36	35.85	41.82	58.18	0.00	40.15	66.67	52.94
Proprietary Software from Other Suppliers	72.73	48.11	27.27	69.88	60.00	58.33	36.67	23.53
Expansions to Present Hardware	63.64	56.60	61.82	69.54	60.00	62.12	90.00	47.06
Expansions to Data Communications Facilities	63.64	61.32	72.73	65.75	80.00	60.61	80.00	35.29
Unix-Based Operating System	18.18	0.94	0.00	2.24	20.00	1.52	3.33	0.00
Business Graphics	27.27	11.32	5.45	16.87	0.00	3.79	40.00	0.00
Power Conditioning Systems	0.00	5.66	5.45	12.05	40.00	16.67	36.67	0.00
Optical Disk Devices	0.00	2.83	0.00	0.86	0.00	0.76	0.00	11.76

User Ratings of Mainframes

TABLE 2. MAINFRAME VENDOR SUMMARIES

Amdahl	Burroughs	Honeywell	IBM	NAS	NCR	Sperry	Other Mainframes	Manufacturer and Model / Survey Item
								System Ratings (4.0-1.0)
3.44	3.63	3.35	3.21	3.60	3.24	3.32	2.94	Ease of Operation
3.55	3.51	3.46	3.70	3.80	3.39	3.36	2.71	Reliability of Mainframe
3.00	3.09	3.08	3.46	3.60	3.39	2.96	2.71	Reliability of Peripherals
								Manufacturer's Maintenance Service:
3.55	3.38	3.31	3.47	3.60	3.31	3.37	2.71	Responsiveness
3.36	3.10	3.02	3.47	3.40	3.19	3.33	2.41	Effectiveness
								Manufacturer's Technical Support:
3.27	2.77	2.89	3.14	3.20	2.85	2.77	2.65	Troubleshooting
3.27	2.78	2.69	3.05	3.50	2.95	2.57	2.44	Education
2.91	2.46	2.56	2.94	2.25	2.68	2.37	2.24	Documentation
								Manufacturer's Software:
3.11	3.75	3.41	3.25	3.50	3.20	3.43	2.76	Operating System
3.00	3.35	3.33	3.29	3.00	3.15	3.30	2.71	Compilers & Assemblers
2.86	2.58	2.30	2.81	0.00	2.56	2.42	2.46	Applications Programs
2.50	3.33	3.06	2.94	3.00	2.92	3.13	2.59	Ease of Programming
2.63	3.22	2.84	2.83	3.50	3.09	2.86	2.50	Ease of Conversion
3.22	3.35	3.15	3.19	3.50	3.05	3.17	2.41	Overall Satisfaction
								Additional Ratings (4.0-1.0)
3.55	3.53	3.53	3.30	3.60	3.60	3.59	2.35	Ease of Expansion
3.55	3.23	2.69	3.30	3.60	3.22	2.70	2.57	Compatibility of Hardware Carried over from Other Systems
3.55	3.22	2.69	3.23	3.80	3.36	2.50	2.35	Compatibility of Programs/Data Carried over from Other Systems
3.45	3.26	2.98	3.26	3.40	3.02	2.77	2.43	Power/Energy Efficiency
2.90	2.83	2.52	2.68	3.33	2.71	2.67	2.18	Productivity Aids Help Keep Programming Costs Low
3.00	2.63	2.59	2.88	2.80	2.55	2.77	2.31	Software Support Delivered by Vendor
2.91	3.13	2.93	2.76	3.00	2.95	2.80	2.60	Keeping up with & Implementing Vendor Changes to Hardware/Software (Very Easy=4.0; Very Difficult=1.0)
3.36	2.92	2.98	3.05	3.00	2.95	3.17	2.94	Delivery/Installation of Equipment (Ahead of Schedule=4.0; Very Late=1.0)
3.10	3.00	2.96	3.00	3.00	2.82	3.03	2.75	Delivery of Required Software (Ahead of Schedule=4.0; Very Late=1.0)
								Did the system do what you expected it to do? (%)
100.00	95.28	92.73	97.93	100.00	93.94	100.00	88.24	Yes
0.00	3.77	3.64	0.52	0.00	4.55	0.00	5.88	No
0.00	0.94	1.82	1.55	0.00	1.52	0.00	5.88	Undecided
								Would you recommend system to another user? (%)
90.91	89.62	81.82	95.87	80.00	84.09	93.33	41.18	Yes
0.00	3.77	7.27	1.72	0.00	9.85	0.00	23.53	No
9.09	6.60	10.91	2.24	20.00	6.06	6.67	35.29	Undecided