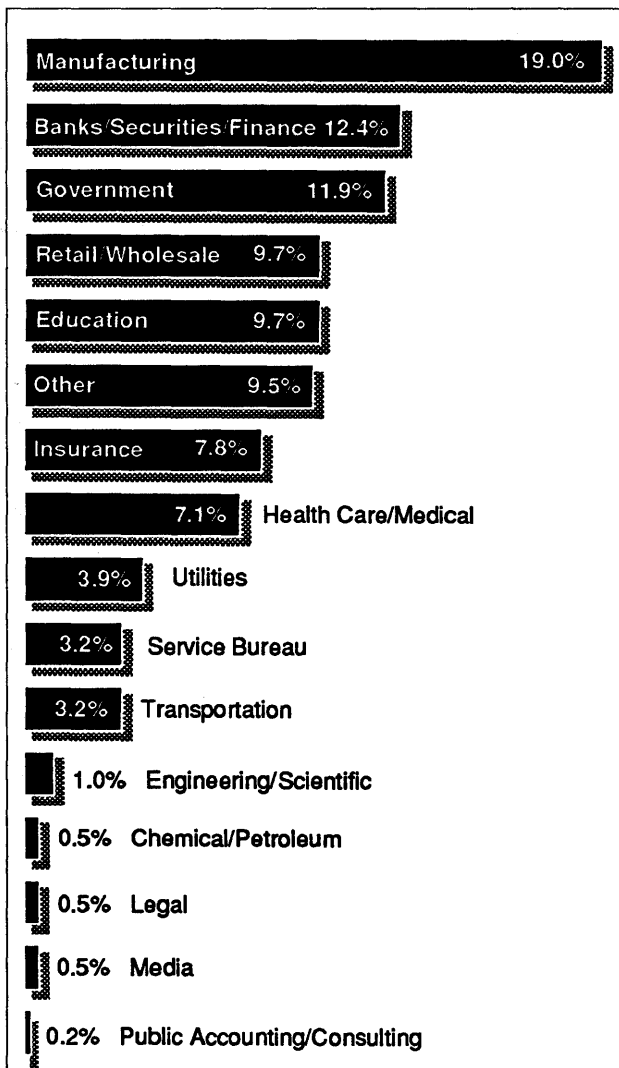# U.S. User Ratings of Mainframes

Every year since the mid-1970s, *Datapro 70* has asked selected users what they think of their mainframes and midrange systems. Since the inception of the Datapro Computer Users Survey, the large-system environment has undergone quite a few technological and economic upheavals. Top-end mainframes can now process more than 120 million instructions and hundreds of on-line transactions per second.

While technological innovation has been impressive, large-systems' growth slowed to single digits during the mid-1980s, signaling the beginning of a maturing industry at the upper end of the market. Slower growth has forced IBM, still the dominant large-systems vendor, to revise its long-term growth strategies and has forced weaker competitors to consolidate holdings, sell off less profitable operations, or merge with other companies.

CHART 1.
1989 SURVEY RESPONDENTS BY INDUSTRY

Industry	Percent
Manufacturing	19.0%
Banks/Securities/Finance	12.4%
Government	11.9%
Retail/Wholesale	9.7%
Education	9.7%
Other	9.5%
Insurance	7.8%
Health Care/Medical	7.1%
Utilities	3.9%
Service Bureau	3.2%
Transportation	3.2%
Engineering/Scientific	1.0%
Chemical/Petroleum	0.5%
Legal	0.5%
Media	0.5%
Public Accounting/Consulting	0.2%

This report presents the results of Datapro's 1989 survey of computer users. More than 400 mainframe system users, including those of most popular mainframes, detailed their system environment and usage. They also shared their assessment of the systems and of vendor support. This information should be of great value to prospective users who are evaluating computer systems.

Naturally, such industry realignments have impacted our survey over the years. In 1980, for instance, the survey included 11 large-systems vendors. These consisted of IBM and IBM-compatible vendors and the old BUNCH companies (Burroughs, Univac, NCR, Control Data, and Honeywell). Since then, some BUNCH companies have merged with other companies, and others play diminished roles at the high end of the market.

This year, four large-systems vendors are examined in depth: Amdahl Corporation, Bull HN Worldwide Information Systems, IBM Corporation, and Unisys Corporation. Scant responses from Control Data, National Advanced Systems (NAS), and NCR users forced us to combine these vendors in a category called "Other Mainframes."

Of the vendors considered in this survey, IBM now commands about 68 percent of the worldwide large-systems market, according to International Data Corporation (IDC), the Framingham, Massachusetts market research firm. Unisys ranks a distant second with a 9.6 percent market share, followed by Amdahl (6.2 percent), Bull HN (5.4 percent), NAS (4.9 percent), and Control Data (3.3 percent).

IBM and Unisys lead the U.S. large-systems vendors in size and relative influence. IBM and its family of MVS operating systems represent the proprietary large-systems standard, while Unisys has emerged as the strong non-IBM/MVS alternative.
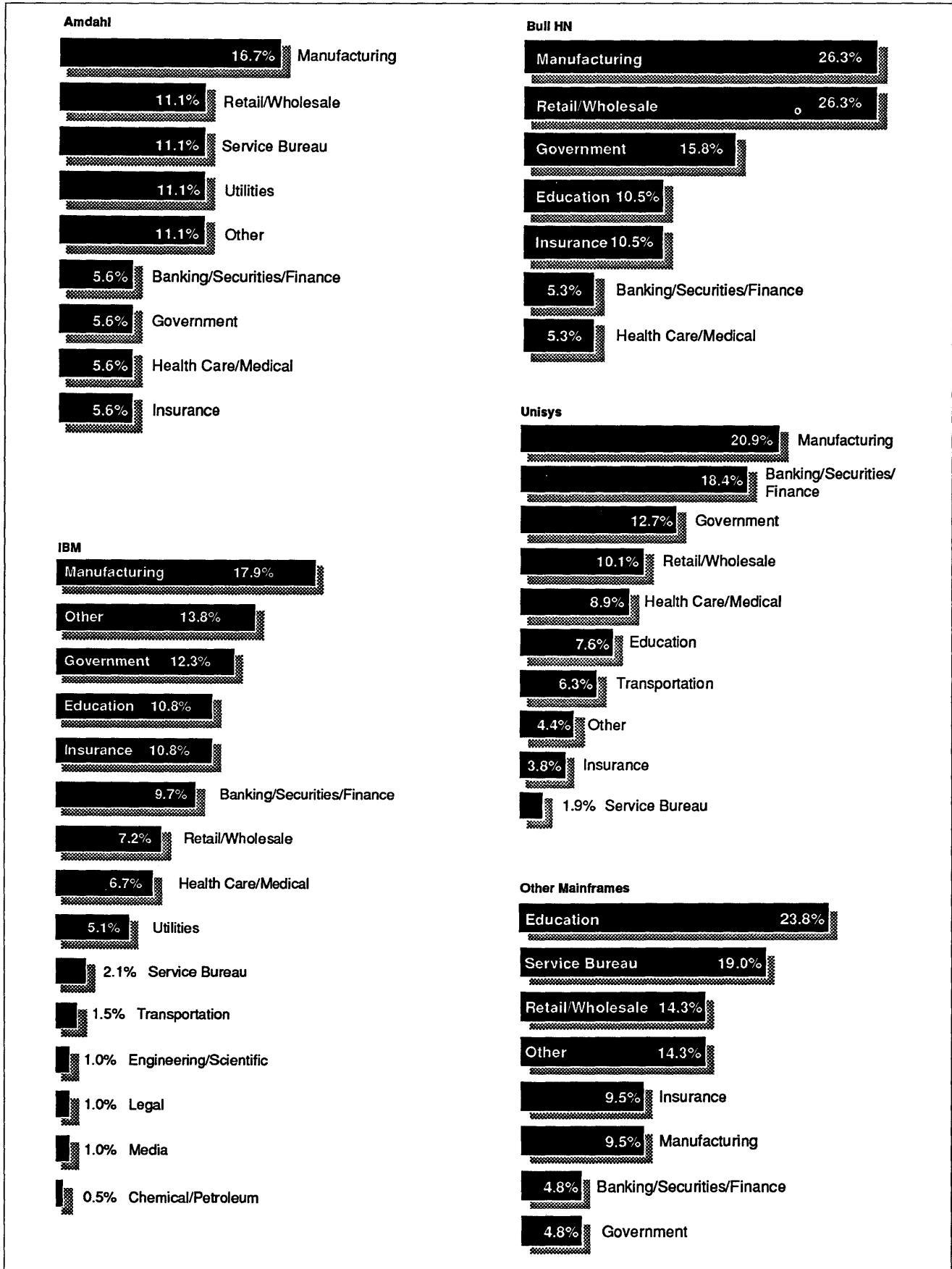
Amdahl and NAS, two vendors that have successfully exploited the IBM/MVS compatible market, sell systems in alliance with their Japanese partners, Fujitsu and Hitachi, respectively. In addition to selling IBM price/performance alternatives, Amdahl and NAS have also attempted to develop value-added features for their product lines. Amdahl, for instance, offers a native implementation of UNIX.

Unisys has remained competitive through acquisitions, strategic alliances, and OEM agreements, allowing the company to quickly enter new markets, such as UNIX, open systems, system integration, and networking. Unisys ▷

U.S. User Ratings of Mainframes

CHART 2. 1989 SURVEY RESPONDENTS BY INDUSTRY AND VENDOR

Amdahl

16.7%	Manufacturing
11.1%	Retail/Wholesale
11.1%	Service Bureau
11.1%	Utilities
11.1%	Other
5.6%	Banking/Securities/Finance
5.6%	Government
5.6%	Health Care/Medical
5.6%	Insurance

IBM

Manufacturing	17.9%
Other	13.8%
Government	12.3%
Education	10.8%
Insurance	10.8%
9.7%	Banking/Securities/Finance
7.2%	Retail/Wholesale
6.7%	Health Care/Medical
5.1%	Utilities
2.1%	Service Bureau
1.5%	Transportation
1.0%	Engineering/Scientific
1.0%	Legal
1.0%	Media
0.5%	Chemical/Petroleum

Bull HN

Manufacturing	26.3%
Retail/Wholesale	26.3%
Government	15.8%
Education	10.5%
Insurance	10.5%
5.3%	Banking/Securities/Finance
5.3%	Health Care/Medical

Unisys

20.9%	Manufacturing
18.4%	Banking/Securities/Finance
12.7%	Government
10.1%	Retail/Wholesale
8.9%	Health Care/Medical
7.6%	Education
6.3%	Transportation
4.4%	Other
3.8%	Insurance
1.9%	Service Bureau

Other Mainframes

Education	23.8%
Service Bureau	19.0%
Retail/Wholesale	14.3%
Other	14.3%
9.5%	Insurance
9.5%	Manufacturing
4.8%	Banking/Securities/Finance
4.8%	Government

U.S. User Ratings of Mainframes

CHART 3. TOP 10 APPLICATIONS IN 1989

Application	Percent
Accounting Billing	68.4%
Payroll Personnel	52.3%
Order Processing Inventory	48.2%
Purchasing	39.7%
Sales/Distribution	30.4%
Manufacturing	20.4%
Other	17.0%
Education/Scheduling/Administration	14.8%
Banking/Check Processing	13.4%
Insurance	11.9%
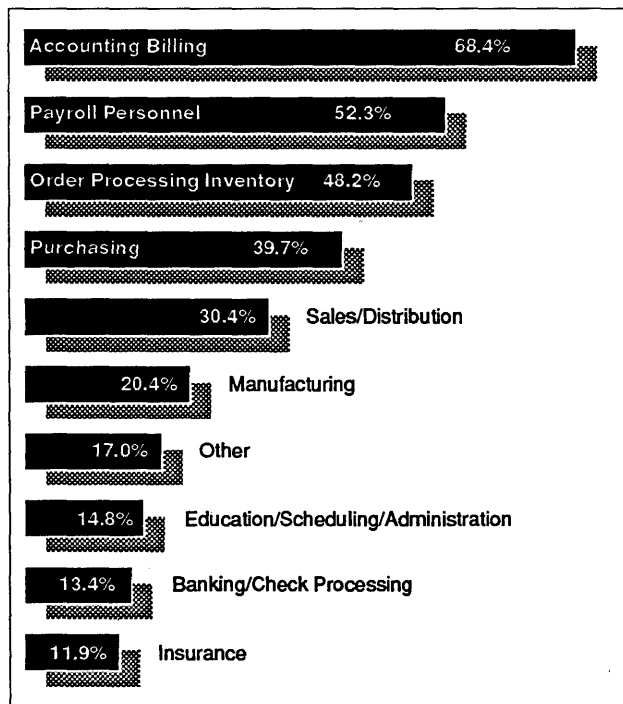
CHART 4. TOP 10 APPLICATIONS IN 1988

Application	Percent
Accounting Billing	67.4%
Payroll Personnel	54.5%
Order Processing	42.1%
Purchasing	39.7%
Sales/Distribution	26.5%
Manufacturing	20.7%
Other	16.1%
Education	15.8%
Banking	14.4%
Insurance	11.9%
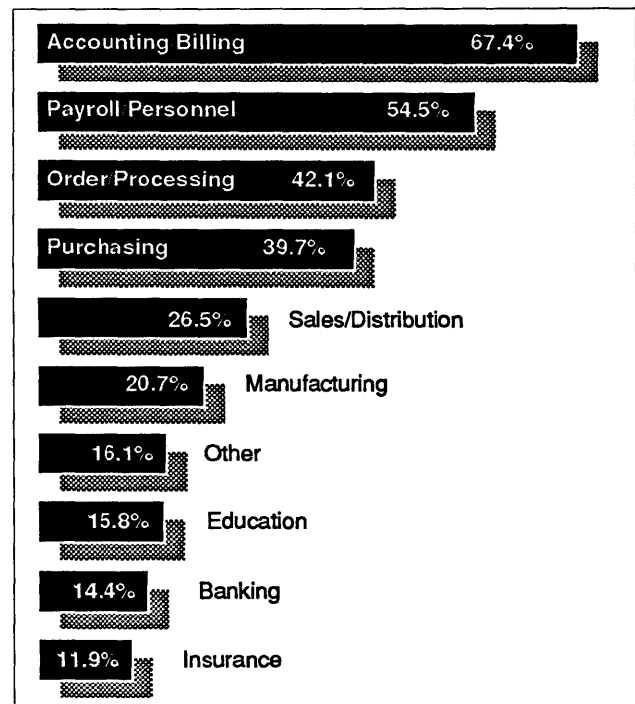
▷ Chairman W. Michael Blumenthal embarked on the merger strategy, believing his company could not be taken seriously as an IBM alternative without developing IBM-scale resources.

Bull HN (formerly Honeywell Bull Inc.) is composed largely of former Honeywell Information Systems users. Honeywell Inc. began slowly withdrawing from the computer business in 1987 when it formalized an alliance with Groupe Bull of France and NEC of Japan and renamed the company Honeywell Bull Inc. In 1989, Groupe Bull acquired a larger share of the company from Honeywell, renamed the company to reflect the realignment, and is now firmly in control. Groupe Bull owns 65.1 percent of the company, Honeywell owns 19.9 percent, and NEC owns 15 percent.

Of the surviving BUNCH companies, Control Data appears the least stable. To cut costs and revive its mainframe business, Control Data has sold off Imprimis, its data storage division, and several other businesses. CDC also killed off ETA Systems, its supercomputer subsidiary.

Before examining this year's survey results, a word about operating systems is in order. A critical issue among IBM, Unisys, and the remaining large-systems participants revolves around open versus proprietary systems. While virtually all survey respondents continue to use proprietary systems, such systems have somewhat fallen out of fashion during the last few years. It is difficult to port applications written for one such system to another and equally difficult to integrate hardware platforms using proprietary systems. To a great extent, proprietary systems have made it difficult for the old BUNCH companies such as Control

Data to expand their customer bases and inject new life into their mainframe businesses. This has forced all the remaining mainframe vendors to embrace open systems and UNIX. Except for Amdahl, which has marketed a UNIX-based operating system for the mainframe for some time, however, UNIX has had little impact at the mainframe level thus far. IBM and Control Data, for instance, have yet to deliver long-awaited, mainframe-level UNIX products. Subsequently, respondents could only rate proprietary systems.

THE 1989 QUESTIONNAIRE

This report summarizes screened survey responses from 411 mainframe users. (For results of our minicomputer users survey, see *Datapro Reports on Minicomputers*.)

In multiple-part questions, Datapro asked users to describe their system and model, configuration, technological and organizational environment, budget, and plans.

Another group of questions asked users to rate 23 specific aspects of their computer systems. Categories rated include 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 applications programs); ease of programming; ease of conversion; and overall satisfaction. Additional ratings include 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; vendor soft- ▷

U.S. User Ratings of Mainframes

CHART 5. MAIN MEMORY (MEGABYTES)—RANGES REPORTED BY ≥20% of RESPONDENTS

	4 < 8	8 < 16	16 < 32	32 < 64	64 < 128	128+
Amdahl				✓	✓	✓
Bull HN		✓				
IBM			✓	✓		
Unisys		✓	✓			
Other Mainframes		✓				

CHART 6. MAIN MEMORY (MEGABYTES) FOR SELECTED HIGH-END MODELS— RANGES REPORTED BY ≥20% OF RESPONDENTS

	4 < 8	8 < 16	16 < 32	32 < 64	64 < 128	128+
Amdahl				✓	✓	✓
IBM 3090 Single Processors				✓	✓	
IBM 3090 Multiprocessors					✓	✓
Unisys A12/A15/A17				✓	✓	

ware support; and ease of keeping up with and implementing vendor changes to hardware/software.

We also asked users if they run certain software packages in the following categories: database management systems, data management systems, application development tools, performance monitors, security systems, and communications software. Detailed user ratings of mainframe software will be described by individual product reports in Volume 3 of *Datapro 70* throughout the coming year.

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

METHODOLOGY AND SURVEY RESPONSE RATE

The 1989 survey results are based on results received from 6,925 questionnaires mailed to U.S. mainframe and minicomputer users. As in years past, most of the mailing addresses were obtained from the computer database of International Data Corporation (IDC). Mailing addresses for Amdahl and NAS sites came directly from each of these vendors. To improve the response rate and statistical validity, users who did not respond to the first mailing received a second mailing some weeks later.

The size of the mailing is admittedly smaller than previous years. In 1987, for instance, Datapro mailed 15,026 questionnaires. The smaller mailing can be attributed to two factors. First, Datapro senior editors were more selective this year. We asked IDC to supply us with users who installed the newest mainframe and mini systems. With some notable exceptions, older systems no longer mar-

keted were eliminated from consideration. We continue, however, to include responses from IBM 308X users even though the model line was recently discontinued. Since the 308X has remained popular, it is interesting to compare how users rated 308X models versus IBM 3090 models, the follow-on line.
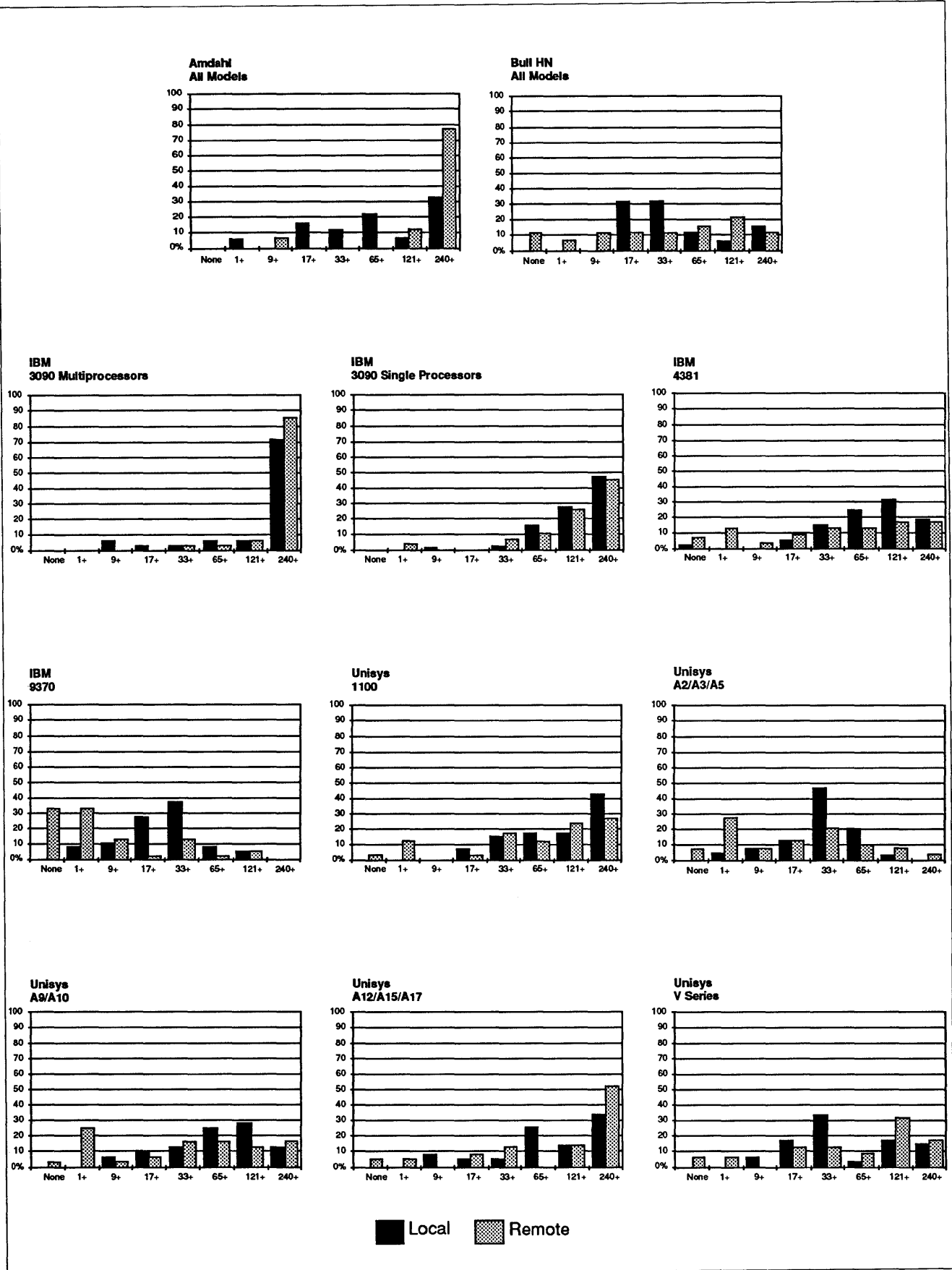
Second, protracted delivery dates for new models have impacted the survey. For instance, Unisys 1100 mainframe customers (the old Sperry base) are now migrating to the long-awaited Unisys 2200/600 follow-on series. This newest model line was delivered about the same time our survey was mailed, the second quarter of this year. Too few 2200/600s were delivered at the time to generate any responses for these newest models. Subsequently, most former Sperry users could only rate their existing 1100 models, which appear once again in this year's survey.

Each questionnaire allowed users to rate one computer system. Recipients were encouraged to reproduce the form to rate additional systems. Senior Datapro staffers analyzed the returns and judged some 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

• rating section of the questionnaire was not completed

• systems rated were not mainframes or minis, or

U.S. User Ratings of Mainframes

CHART 7. LOCAL AND REMOTE WORKSTATIONS/TERMINALS

Amdahl All Models

Bull HN All Models

IBM 3090 Multiprocessors

IBM 3090 Single Processors

IBM 4381

IBM 9370

Unisys 1100

Unisys A2/A3/A5

Unisys A9/A10

Unisys A12/A15/A17

Unisys V Series

■ Local   ▨ Remote

U.S. User Ratings of Mainframes

CHART 8. TOTAL ANNUAL BUDGETS FOR INFORMATION SYSTEMS
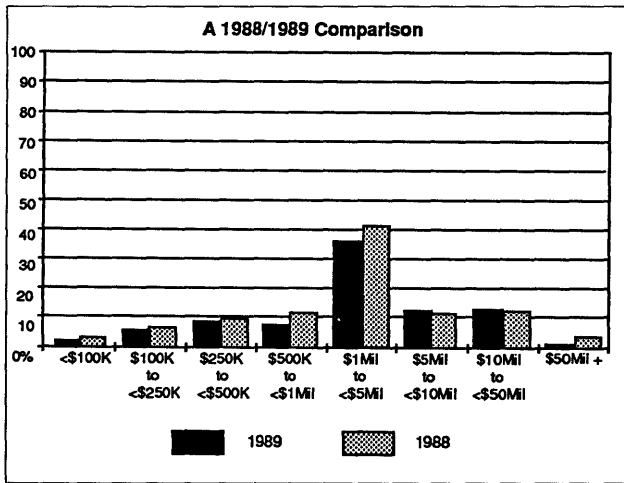
• response revealed a vested interest on the part of the respondent.

In addition, system models receiving fewer than 18 valid responses were grouped together under "Other Mainframes" or "Other Minicomputers."

Of the 6,925 questionnaires mailed, Datapro received 1,156 responses, or about a 17 percent response rate. Of the 1,156 responses, 132 were judged invalid, giving us 1,024 valid responses. Of these valid responses, 411 rated mainframe systems, while the balance rated minicomputers.

Datapro batched the valid returns by manufacturer and model and sent the returns to Datavision Research of Princeton, New Jersey for tabulation of the results. Information related to mainframe characteristics and user demographics is stated as percentages, while user rating questions were tabulated as weighted averages. Users were asked to rate systems using a 10-point scale. A rating of 10 represents "excellent" and a rating of 1 represents "poor." Tallied numbers for each value are multiplied by the corresponding weight. The average is then taken by dividing the sum of the products by the total number of responses for that category.

GUIDE TO 1989 SURVEY RESULTS

Most of the collected data appears in reference tables at the end of the report under the following headings:

Table 1. Mainframe Characteristics and Ratings—by Vendor and Model

Table 2. Mainframe Characteristics and Ratings—Recap by Vendor

Table 3. Mainframe Plans for 1989-90—by Vendor and Model

Table 4. Mainframe Plans for 1989-1990—Recap by Vendor

Tables 1 and 2 are each formatted as pairs of facing pages: characteristics on the left and ratings of the same systems or vendors on the right.

To further explore the implications of this year's survey results and how they compared to results from previous years, additional charts and graphs have been prepared. The charts and graphs provide profiles of this year's respondents by industry, application mix, and information system budget allocations. Other charts illustrate system configuration characteristics and analyze buying plans. Finally, Charts 11 and 12 present overall ratings comparisons by vendor and summarize key ratings categories by specific models.

Industry and Applications

Users were asked to identify the industry that best describes their organization and their principal application mix. Another question asked users to state the size of their total annual information systems budget for equipment, software, services, and staffing.

Chart 1 summarizes the industries represented in the survey by rank. Chart 2 summarizes industry distribution by each vendor. Charts 3 and 4 summarize the top 10 applications for 1989 and 1988, respectively.

The industry-related charts profile the types of respondents who answered this year's survey. The charts should not be construed to reflect true market penetrations for each vendor.

Industry data does reveal certain consistencies across vendors. As illustrated in a series of bar graphs, manufacturing ranks as the most popular industry type among all the vendors and in the overall mainframe results. The top five mainframe markets continue to be manufacturing, banking/securities/finance, government, retail/wholesale, and education, the same as last year's survey but in a different order. At least two or three of these top-ranked industry types also appear within the top five industries by vendor as shown in the bar graphs within Chart 2.

In addition to industry rankings, Charts 3 and 4 show the most popular user applications by rank. Note that the current applications appear in order, starting with the most popular (accounting/billing). Remarkably, the first six items on the list have kept their exact rank for several years, and the next four have kept their approximate rank. ▷

Method of Acquisition	1989	1988	1987
Purchase (%)	53.8	58.6	52
Rent/Lease from Mfgr. (%)	13.6	17.5	15
Lease from 3rd Party (%)	26.0	23.4	32

Figure 1. Acquisition trends.

U.S. User Ratings of Mainframes

CHART 9. ACQUISITION PLANS

Hardware Acquisition Plans—1989	Hardware Acquisition Plans—1988
1. Expand Current Hardware (55.7%)	1. Expand Data Communication Facilities (63.7%)
2. Expand Data Communication Facilities (50.6%)	2. Expand Current Hardware (63.3%)
3. Laser Printers (34.8%)	3. Laser Printers (34.8%)
4. Power Conditioning Equipment (15.8%)	4. Power Conditioning Equipment (17.3%)
5. Optical Disk Devices (13.4%)	5. Image Processing (10.2%)
6. Image Processing (12.2%)	6. Optical Disk Devices (6.3%)

▷ Chart 8 graphically illustrates information systems annual budgets and compares last year's budget allocations to this year's. Similar to 1988, many MIS budgets fall within the $1 million to $5 million range.

System Acquisition Alternatives

We asked how users acquired their systems: outright purchase, rental/lease from the manufacturer, or third-party lease. This is a major and complex user choice, affected by system availability, predicted residual values, tax considerations, and intangibles such as confidence in the financial health of the alternative suppliers.

The response breakdown between the three options has shifted dramatically since *Datapro 70* first posed this question back in the mid-1970s. With some variation from year to year, the acquisition method remained fairly evenly divided among the three from 1974 to 1983. But after 1984, the trend clearly shifted to outright purchase at the expense of leasing systems from the vendor. Since 1984, purchase percentages have stayed within the 50-plus range, while vendor leasing percentages have remained in the teens. Interestingly, third-party leasing has remained within the mid-20 to low-30 percent ranges every year since 1974. Figure 1 shows acquisition trends for the last three years.

The reason for the shift to outright purchase has been quite apparent to large-systems watchers. IBM, in particular, has been encouraging its user base to purchase rather than lease. Outright sales give vendors substantial revenues and profits the first year after a new product introduction rather than incremental revenues stretched out over an extended leasing period. To ensure consistent purchase revenues, vendors regularly announce product-wide performance enhancements—so-called midlife kickers—designed to encourage the customer base to trade up to more powerful models. In 1985, for instance, IBM announced the 3090 Series, a follow-on to the highly successful 308X Series. In 1987, IBM announced the 3090 E models, more powerful versions of the original base models. Then, in 1988, IBM announced still more powerful

3090 S models and a new version of the MVS operating system, MVS/Enterprise Systems Architecture (ESA).

Hardware Configurations

Typical size of system main memory continues to grow as vendors continue to raise maximum memory ceilings. With the announcement of IBM's ESA/370 architecture, for instance, IBM raised the virtual storage limit from 2 gigabytes to a possible 16 trillion bytes. Of course, the memory needs of most users are a bit more modest than that. Chart 5 illustrates the most commonly reported range for each vendor's respondents. Chart 6 shows the most common ranges for selected high-end systems.

Configuration data from previous Datapro surveys shows users have been gradually increasing memory capacity over the years. Four years ago, only 2 percent of the respondents had more than 32 megabytes of main memory. In 1987, 7 percent had more than 64 megabytes. In 1988, 10 percent reported having more than 64 megabytes, and 4 percent reported having more than 128 megabytes. This year, 12 percent reported having more than 64 megabytes, and 6 percent had more than 128 megabytes.

Disk capacity for most respondents falls between 1.2 gigabytes and 150 gigabytes, about the same as last year. About 17 percent of both Amdahl and IBM users, however, report capacities greater than 150 gigabytes. Amdahl, IBM, and several others now offer triple-capacity disk products. ▷

CHART 10. SOFTWARE ACQUISITION/IMPLEMENTATION

Software Acquisition/ Implementation Plans—1989	Software Acquisition/ Implementation Plans—1988
1. Additional Software from Manufacturer (46.7%)	1. Additional Software from Manufacturer (50.6%)
2. Additional Proprietary Software from Other Suppliers (45.7%)	2. Additional Proprietary Software from Other Suppliers (49.4%)
3. Application Development Tools (29.0%)	3. Application Development Tools (32.1%)
4. Performance Monitors (26.8%)	4. Query/Report Systems (27.3%)
5. Electronic Mail (25.3%)	5. Performance Monitors (25.1%)
6. Query/Report Systems (23.8%)	6. Executive Info. Systems (22.9%)
7. Executive Info. Systems (22.9%)	7. Electronic Mail (21.9%)
8. Database Management Systems (19.0%)	8. Database Management Systems (21.4%)
9. CASE Tools (19.0%)	9. Payroll/Human Resources (18.5%)
10. General Accounting Systems (17.8%)	10. General Accounting Systems (18.0%)

U.S. User Ratings of Mainframes

▷ The survey also reveals that respondents, by overwhelming numbers, purchase their disk products from their mainframe computer vendor. Of the relatively small number of respondents that purchase disk devices from IBM plug-compatible vendors, about 6 percent purchased them from Memorex, making the company the front-runner among such vendors.

We also asked users how many local and remote workstations/terminals they were using. Chart 7 shows the usage of local and remote terminals by manufacturer and model.

Planned Extensions/Acquisitions

We asked how users were planning to spend their enhancement/acquisition dollars in 1988-89. Charts 9 and 10 show approximate user rankings of the most popular hardware and software plans, respectively, and how these plans compared to last year's.

Additional data communications facilities and hardware expansion top the hardware list as they have for several years. On the software side, most plan to purchase more software from the manufacturer and more software from other suppliers, the same as last year.

Compared to last year, there appears to be more interest in optical disk devices among respondents. Overall, 13.4 percent said they planned to acquire such devices, compared to 6 percent last year. Amdahl respondents (28 percent) and IBM 3090 multiprocessor respondents (38 percent) appeared to show the highest interest in optical devices this year.

Relatively higher percentages of IBM mainframe respondents also plan to look into image processing. This could be attributed to IBM's aggressive plans in this area, al- ▷

CHART 11. OVERALL VENDOR RATINGS BY 1989 RESPONDENTS

	Avg. of All Mainframes	Amdahl	Bull HN	IBM	Unisys
Rating:					
Excellent (10)-Poor (1)					
Ease of Operation	8.0	★	+	—	★
Reliability of Mainframe	9.2	+	O	O	O
Reliability of Peripherals	8.3	+	O	+	—
Maintenance Service (MFR):					
Responsiveness	8.5	★	—	+	O
Effectiveness	8.4	★	—	+	O
Technical Support:					
Troubleshooting	7.7	★	O	+	O
Education	7.3	★	—	+	O
Documentation	6.9	★	—	+	—
Manufacturer's Software:					
Operating System	8.3	★	—	O	★
Compilers & Assemblers	8.3	+	O	O	+
Application Programs	6.8	+	—	+	O
Ease of Programming	7.6	★	+	—	★
Ease of Conversion	7.4	★	+	—	★
Overall Satisfaction	8.4	★	O	O	+
Additional Ratings:					
Excellent (10)-Poor (1)					
Timely Hardware Installation	8.3	★	+	O	O
Timely Software Installation	7.9	★	★	O	O
Ease of Expansion	8.3	★	★	—	★
Compatibility of Peripherals from Other Systems	8.3	★	—	O	O
Compatibility of Programs/Data from Other Systems	8.0	★	O	O	+
Power/Energy Efficiency	7.8	★	★	O	O
Productivity Aids to Reduce Programming Costs	6.7	★	★	O	★
Software Support	7.0	★	+	+	O

Key: ★ 0.5 or more above average for all mainframes.
    + Above average.
    O Average or slightly below average.
    — 0.5 or more below average.

U.S. User Ratings of Mainframes

CHART 12. SYSTEM/MODEL ASSESSMENTS— THREE SUMMARY RATINGS

System/Model	Survey Respondents	Overall Satisfaction (1-10)	System Performs as Expected (% Yes)	Would Recommend to Other Users (% Yes)
Amdahl All Models	18	9.1	100.0	100.0
Bull HN	19	8.2	89.5	78.9
IBM				
308X	37	8.0	97.3	91.9
3090 Multiprocessors	29	8.4	89.7	93.1
3090 Single Processors	42	8.3	97.6	95.2
4381	51	8.4	98.0	96.1
9370	36	8.2	86.1	86.1
Unisys				
A2/A3/A5	39	8.8	92.3	92.3
A9/A10	31	8.6	100.0	93.5
A12/A15/A17	23	8.5	95.7	100.0
V Series	32	8.3	96.9	93.8
1100	33	8.2	100.0	90.9
Other Mainframes	21	8.2	90.5	81.0

▷ though it must be noted the survey does not ask users to state what specific products they plan to buy or from whom. In 1988, IBM introduced an integrated image processing line using scanners and an optical disk jukebox device obtained from other vendors.

On the software side, respondents continue to express strong interest in software applications that will help them reduce programming backlogs or which make systems more accessible to users who are not DP professionals or experienced programmers.

Respondents also appear to be showing modest interest in a UNIX operating system, particularly since several mainframe vendors now offer or plan to offer UNIX options at the mainframe level. About 8 percent of all respondents said they planned to acquire a UNIX system. Among Amdahl, Bull HN, IBM 3090, and Unisys respondents, interest was slightly higher, typically 10 or 11 percent. IBM's version of UNIX for the mainframe, AIX/370, is now scheduled for availability in 1990.

User Satisfaction Ratings

Consistent with our belief that what users think is extremely important, we asked them to rate their computer systems, associated software, and vendor support using the 10-point scale explained earlier. User ratings for 23 specific categories are summarized in Tables 1 and 2 at the end of this report.

For an enhanced contrast overview of the summary vendor ratings, Chart 11 distinguishes above- and below-average ratings.

This year, as in previous years, users were asked to rate their overall satisfaction, whether their system performed as expected, and whether they would recommend their system to other users. Chart 12 summarizes these three key rating categories by model in snapshot fashion.

Several listed systems received comparatively lower ratings in one or more of the categories, probably because they have reached the end of a product cycle or have been discontinued. Discontinued systems include the IBM 308X and the Unisys A2/A3/A5. The Unisys 1100 Series, although still available on a limited basis, has been replaced by the recently delivered Unisys 2200/600.

This leaves three remaining systems with relatively low ratings, the IBM 9370 and the Bull HN systems. Bull HN respondents rated the DPS 7000 and DPS 8000s. As the chart discloses, 89.5 percent of Bull respondents said the systems performed as expected, but only 78.9 percent would recommend the systems, the lowest for any vendor in this year's survey. The relatively low level of recommendation may be attributable to customer uncertainties regarding Groupe Bull, the company's new majority owner.

Finally, there's the much maligned IBM 9370, a midrange system first announced in 1986. Originally, IBM marketed the 9370 as a competitive response to the popular Digital Equipment VAX machines, but because of several well-publicized shortcomings—mostly software related—the machine never lived up to IBM sales expectations. Relatively low user assessments as shown on the chart reflect these problems.

THANK YOU

Datapro extends a sincere thanks to everyone who responded to our 1989 Computer Users Survey. We hope that this compendium of users' opinions will be of significant value to you, and we look forward to hearing from you again next year. ▷

U.S. User Ratings of Mainframes

TABLE 1. MAINFRAME CHARACTERISTICS AND RATINGS
—BY VENDOR AND MODEL

	Amdahl All Models	Bull HN All Models	IBM 308X	IBM 3090 Multiple Processors	IBM 3090 Single Processors	IBM 4381	IBM 9370
Number of User Responses	18	19	37	29	42	51	36
Avg. Life of System (months)	9.2	20.2	23.3	12.0	11.8	22.1	13.9
Acquisition Method (%)							
Purchase	44.4	47.4	56.8	24.1	21.4	54.9	58.3
Rent/Lease from Manufacturer	5.6	0.0	2.7	24.1	19.0	13.7	11.1
Lease from Third Party	27.8	10.5	37.8	31.0	57.1	31.4	30.6
Principal Applications (%)							
Accounting/Billing	61.1	73.7	70.3	55.2	85.7	62.7	52.8
Banking-Check Processing	5.6	0.0	2.7	24.1	9.5	11.8	8.3
Construction/Architecture	5.6	0.0	2.7	0.0	0.0	0.0	2.8
Education/Sched./Adminis.	0.0	10.5	24.3	10.3	14.3	19.6	16.7
Engineering/Scientific	33.3	0.0	5.4	27.6	9.5	7.8	5.6
Health Care/Medical	11.1	10.5	10.8	6.9	11.9	9.8	2.8
Insurance	16.7	21.1	13.5	34.5	9.5	9.8	13.9
Manufacturing	11.1	21.1	24.3	13.8	19.0	27.5	19.4
Mathematics/Statistics	5.6	0.0	21.6	17.2	7.1	7.8	5.6
Order Processing/Inventory	50.0	57.9	37.8	31.0	57.1	51.0	44.4
Payroll/Personnel	55.6	31.6	51.4	58.6	73.8	49.0	30.6
Petroleum/Fuel Analysis	5.6	0.0	0.0	3.4	2.4	2.0	0.0
Process Control	16.7	0.0	5.4	6.9	4.8	0.0	8.3
Purchasing	38.9	52.6	32.4	34.5	59.5	47.1	27.8
Sales/Distribution	27.8	31.6	24.3	24.1	40.5	23.5	25.0
Other	11.1	5.3	21.6	6.9	19.0	19.6	25.0
Source of Application Programs (%)							
Developed Internally	66.7	57.9	86.5	72.4	85.7	86.3	77.8
Contract Programmers	22.2	10.5	32.4	37.9	23.8	25.5	16.7
Packaged from Manufacturer	22.2	21.1	32.4	41.4	40.5	37.3	25.0
Independent Suppliers	44.4	15.8	59.5	51.7	66.7	56.9	30.6
Type of System (%)							
Departmental	0.0	0.0	5.4	0.0	0.0	5.9	13.9
Organizational	72.2	57.9	94.6	72.4	97.6	92.2	83.3
Use Third-Party Maintenance (%)	0.0	10.5	13.5	0.0	7.1	13.7	5.6

U.S. User Ratings of Mainframes

TABLE 1. MAINFRAME CHARACTERISTICS AND RATINGS
—BY VENDOR AND MODEL (Continued)

	Amdahl All Models	Bull HN All Models	IBM 308X	IBM 3090 Multiple Processors	IBM 3090 Single Processors	IBM 4381	IBM 9370
System Ratings:							
Excellent (10) - Poor (1)							
Ease of Operation	8.8	8.4	7.2	7.4	7.7	7.4	7.5
Reliability of Mainframe	9.6	8.9	9.1	9.1	9.3	9.4	9.1
Reliability of Peripherals	8.5	8.3	8.4	8.4	8.9	8.5	8.6
Maintenance Service (Mfr.):							
Responsiveness	9.2	7.6	8.3	8.5	8.8	8.7	9.0
Effectiveness	9.2	7.9	8.4	8.6	8.7	8.6	9.0
Technical Support:							
Troubleshooting	8.9	7.3	7.6	8.4	8.0	7.7	7.5
Education	8.8	6.4	7.6	7.8	8.0	7.4	7.3
Documentation	8.2	6.2	6.9	7.6	7.5	7.4	6.9
Manufacturer's Software:							
Operating System	8.9	7.8	7.7	8.6	8.0	7.5	7.9
Compilers & Assemblers	8.4	8.2	7.9	8.3	8.2	7.8	8.0
Application Programs	7.0	6.2	6.9	7.1	6.7	7.0	7.0
Ease of Programming	8.3	7.8	6.3	6.7	7.0	7.2	7.8
Ease of Conversion	8.2	7.8	6.0	7.0	7.0	6.3	7.3
Overall Satisfaction	9.1	8.2	8.0	8.4	8.3	8.4	8.2
Additional Ratings:							
Excellent (10) - Poor (1)							
Timely Hardware Installation	9.4	8.7	8.4	8.3	8.6	8.7	7.9
Timely Software Installation	8.9	8.7	7.8	7.4	8.1	7.9	7.6
Ease of Expansion	9.1	9.2	7.5	7.8	8.2	7.8	7.8
Compatibility of Peripherals from Other Systems	9.6	7.7	7.4	8.3	8.4	8.2	8.4
Compatibility of Programs/Data from Other Systems	9.6	7.9	7.5	8.0	8.4	7.8	7.7
Power/Energy Efficiency	9.0	8.4	6.4	7.4	7.9	8.0	8.4
Productivity Aids to Reduce Programming Costs	7.5	7.3	5.7	6.3	6.7	6.3	6.4
Software Support by Vendor	8.1	7.1	6.9	7.3	7.5	7.0	6.7
Keeping Up with and Implementing Vendor Hardware/Software Changes:							
Difficult (10) - Easy (1)	3.4	4.1	4.9	3.6	4.8	4.8	4.1
System Performed as Expected (%)							
Yes	100.0	89.5	97.3	89.7	97.6	98.0	86.1
No	0.0	10.5	0.0	0.0	0.0	2.0	2.8
Undecided	0.0	0.0	0.0	6.9	2.4	0.0	8.3
Would Recommend System to Another User (%)							
Yes	100.0	78.9	91.9	93.1	95.2	96.1	86.1
No	0.0	0.0	5.4	0.0	4.8	2.0	2.8
Undecided	0.0	15.8	0.0	3.4	0.0	2.0	5.6

U.S. User Ratings of Mainframes

TABLE 1. MAINFRAME CHARACTERISTICS AND RATINGS
—BY VENDOR AND MODEL (Continued)

	Unisys 1100	Unisys A2/A3/A5	Unisys A9/A10	Unisys A12/A15/A17	Unisys V-Series	Other Mainframes
Number of User Responses	33	39	31	23	32	21
Avg. Life of System (months)	42.8	25.4	31.4	16.0	27.9	30.4
Acquisition Method (%)						
Purchase	66.7	74.4	67.7	30.4	65.6	85.7
Rent/Lease from Manufacturer	9.1	15.4	12.9	26.1	25.0	4.8
Lease from Third Party	24.2	10.3	19.4	13.0	9.4	9.5
Principal Applications (%)						
Accounting/Billing	75.8	84.6	87.1	60.9	50.0	57.1
Banking-Check Processing	0.0	15.4	9.7	8.7	62.5	9.5
Construction/Architecture	0.0	0.0	0.0	8.7	0.0	0.0
Education/Sched./Adminis.	9.1	15.4	25.8	8.7	0.0	28.6
Engineering/Scientific	15.2	0.0	6.5	8.7	9.4	9.5
Health Care/Medical	0.0	7.7	16.1	26.1	0.0	0.0
Insurance	3.0	2.6	6.5	13.0	6.3	19.0
Manufacturing	27.3	30.8	12.9	26.1	6.3	14.3
Mathematics/Statistics	3.0	2.6	9.7	8.7	3.1	14.3
Order Processing/Inventory	60.6	56.4	51.6	52.2	28.1	47.6
Payroll/Personnel	42.4	56.4	67.7	60.9	37.5	61.9
Petroleum/Fuel Analysis	0.0	0.0	3.2	0.0	0.0	0.0
Process Control	9.1	2.6	6.5	4.3	0.0	9.5
Purchasing	45.5	43.6	32.3	39.1	21.9	33.3
Sales/Distribution	45.5	35.9	32.3	34.8	21.9	28.6
Other	33.3	12.8	19.4	17.4	6.3	9.5
Source of Application Programs (%)						
Developed Internally	97.0	71.8	77.4	47.8	81.3	90.5
Contract Programmers	33.3	0.0	16.1	21.7	25.0	4.8
Packaged from Manufacturer	39.4	35.9	38.7	34.8	34.4	33.3
Independent Suppliers	45.5	48.7	45.2	47.8	62.5	47.6
Type of System (%)						
Departmental	9.1	2.6	3.2	0.0	3.1	14.3
Organizational	90.9	97.4	96.8	69.6	96.9	85.7
Use Third-Party Maintenance (%)	3.0	5.1	6.5	4.3	0.0	9.5

U.S. User Ratings of Mainframes

TABLE 1. MAINFRAME CHARACTERISTICS AND RATINGS
—BY VENDOR AND MODEL (Continued)

	Unisys 1100	Unisys A2/A3/A5	Unisys A9/A10	Unisys A12/A15/A17	Unisys V Series	Other Mainframes
System Ratings:						
Excellent (10) - Poor (1)						
Ease of Operation	7.8	8.9	8.8	9.0	8.7	8.1
Reliability of Mainframe	9.0	9.6	8.9	9.2	9.0	8.9
Reliability of Peripherals	8.0	8.0	7.7	8.0	7.3	8.6
Maintenance Service (Mfr.):						
Responsiveness	8.0	8.4	8.5	8.8	8.7	8.0
Effectiveness	7.9	8.2	8.3	8.4	8.1	8.1
Technical Support:						
Troubleshooting	6.9	7.8	7.5	7.1	7.2	8.0
Education	6.2	7.1	7.5	7.0	6.9	7.1
Documentation	6.2	5.9	6.6	6.5	6.3	7.3
Manufacturer's Software:						
Operating System	8.3	9.1	9.4	9.3	8.7	8.3
Compilers & Assemblers	8.0	8.9	9.0	8.9	8.3	8.0
Application Programs	6.3	7.0	6.6	7.3	6.6	7.5
Ease of Programming	7.6	8.7	8.7	8.6	8.3	7.6
Ease of Conversion	6.4	8.4	8.7	8.4	8.4	8.1
Overall Satisfaction	8.2	8.8	8.6	8.5	8.3	8.2
Additional Ratings:						
Excellent (10) - Poor (1)						
Timely Hardware Installation	7.8	8.2	8.0	8.6	7.8	8.3
Timely Software Installation	7.7	7.8	7.6	8.6	7.7	8.0
Ease of Expansion	8.2	9.0	9.0	9.3	8.8	8.0
Compatibility of Peripherals from Other Systems	6.8	8.5	8.9	8.9	8.9	8.4
Compatibility of Programs/Data from Other Systems	6.8	7.9	8.5	8.8	8.7	8.2
Power/Energy Efficiency	6.3	8.2	8.0	9.0	7.8	8.1
Productivity Aids to Reduce Programming Costs	6.3	7.4	7.9	7.9	6.7	6.6
Software Support by Vendor	6.2	7.2	6.7	7.0	6.6	7.0
Keeping Up with and Implementing Vendor Hardware/Software Changes:						
Difficult (10) - Easy (1)	5.0	4.2	4.1	2.6	3.7	4.0
System Performed as Expected (%)						
Yes	100.0	92.3	100.0	95.7	96.9	90.5
No	0.0	2.6	0.0	0.0	0.0	4.8
Undecided	0.0	5.1	0.0	4.3	3.1	4.8
Would Recommend System to Another User (%)						
Yes	90.9	92.3	93.5	100.0	93.8	81.0
No	3.0	0.0	0.0	0.0	3.1	9.5
Undecided	6.1	7.7	6.5	0.0	3.1	0.0

U.S. User Ratings of Mainframes

TABLE 2. MAINFRAME CHARACTERISTICS AND RATINGS —RECAP BY VENDOR

	Total Mainframes	Amdahl	Bull HN	IBM	Unisys	Other Mainframes
Number of User Responses	411	18	19	195	158	21
Avg. Life of System (months)	22.3	9.2	20.2	17.2	29.3	30.4
Acquisition Method (%)						
Purchase	53.8	44.4	47.4	44.1	63.3	85.7
Rent/Lease from Manufacturer	13.6	5.6	0.0	13.8	17.1	4.8
Lease from Third Party	26.0	27.8	10.5	37.9	15.2	9.5
Principal Applications (%)						
Accounting/Billing	68.4	61.1	73.7	66.2	72.8	57.1
Banking-Check Processing	13.4	5.6	0.0	10.8	19.6	9.5
Construction/Architecture	1.2	5.6	0.0	1.0	1.3	0.0
Education/Sched./Adminis.	14.8	0.0	10.5	17.4	12.0	28.6
Engineering/Scientific	9.7	33.3	0.0	10.3	7.6	9.5
Health Care/Medical	8.5	11.1	10.5	8.7	8.9	0.0
Insurance	11.9	16.7	21.1	14.9	5.7	19.0
Manufacturing	20.4	11.1	21.1	21.5	20.9	14.3
Mathematics/Statistics	8.3	5.6	0.0	11.3	5.1	14.3
Order Processing/Inventory	48.2	50.0	57.9	45.6	50.0	47.6
Payroll/Personnel	52.3	55.6	31.6	52.8	52.5	61.9
Petroleum/Fuel Analysis	1.2	5.6	0.0	1.5	0.6	0.0
Process Control	5.1	16.7	0.0	4.6	4.4	9.5
Purchasing	39.7	38.9	52.6	41.5	36.7	33.3
Sales/Distribution	30.4	27.8	31.6	27.7	34.2	28.6
Other	17.0	11.1	5.3	19.0	17.7	9.5
Source of Application Programs (%)						
Developed Internally	78.8	66.7	57.9	82.6	76.6	90.5
Contract Programmers	21.4	22.2	10.5	26.7	18.4	4.8
Packaged from Manufacturer	34.5	22.2	21.1	35.4	36.7	33.3
Independent Suppliers	49.9	44.4	15.8	53.8	50.0	47.6
Type of System (%)						
Departmental	4.6	0.0	0.0	5.1	3.8	14.3
Organizational	87.8	72.2	57.9	89.2	91.8	85.7
Use Third-Party Maintenance (%)	6.6	0.0	10.5	8.7	3.8	9.5

U.S. User Ratings of Mainframes

TABLE 2. MAINFRAME CHARACTERISTICS AND RATINGS
—RECAP BY VENDOR (Continued)

	Total Mainframes	Amdahl	Bull HN	IBM	Unisys	Other Mainframes
System Ratings:						
Excellent (10) - Poor (1)						
Ease of Operation	8.0	8.8	8.4	7.4	8.6	8.1
Reliability of Mainframe	9.2	9.6	8.9	9.2	9.1	8.9
Reliability of Peripherals	8.3	8.5	8.3	8.6	7.8	8.6
Maintenance Service (Mfr.):						
Responsiveness	8.5	9.2	7.6	8.7	8.4	8.0
Effectiveness	8.4	9.2	7.9	8.7	8.2	8.1
Technical Support:						
Troubleshooting	7.7	8.9	7.3	7.8	7.3	8.0
Education	7.3	8.8	6.4	7.6	6.9	7.1
Documentation	6.9	8.2	6.2	7.3	6.3	7.3
Manufacturer's Software:						
Operating System	8.3	8.9	7.8	7.9	8.9	8.3
Compilers & Assemblers	8.3	8.4	8.2	8.0	8.6	8.0
Application Programs	6.8	7.0	6.2	6.9	6.7	7.5
Ease of Programming	7.6	8.3	7.8	7.0	8.4	7.6
Ease of Conversion	7.4	8.2	7.8	6.7	8.0	8.1
Overall Satisfaction	8.4	9.1	8.2	8.3	8.5	8.2
Additional Ratings:						
Excellent (10) - Poor (1)						
Timely Hardware Installation	8.3	9.4	8.7	8.4	8.0	8.3
Timely Software Installation	7.9	8.9	8.7	7.8	7.8	8.0
Ease of Expansion	8.3	9.1	9.2	7.8	8.8	8.0
Compatibility of Peripherals from Other Systems	8.3	9.6	7.7	8.1	8.3	8.4
Compatibility of Programs/Data from Other Systems	8.0	9.6	7.9	7.9	8.1	8.2
Power/Energy Efficiency	7.8	9.0	8.4	7.6	7.7	8.1
Productivity Aids to Reduce Programming Costs	6.7	7.5	7.3	6.3	7.2	6.6
Software Support by Vendor	7.0	8.1	7.1	7.1	6.7	7.0
Keeping Up with and Implementing Vendor Hardware/Software Changes:						
Difficult (10) - Easy (1)	4.3	3.4	4.1	4.5	4.1	4.0
System Performed as Expected (%)						
Yes	95.1	100.0	89.5	94.4	96.8	90.5
No	1.5	0.0	10.5	1.0	0.6	4.8
Undecided	2.7	0.0	0.0	3.1	2.5	4.8
Would Recommend System to Another User (%)						
Yes	92.2	100.0	78.9	92.8	93.7	81.0
No	2.4	0.0	0.0	3.1	1.3	9.5
Undecided	3.6	0.0	15.8	2.1	5.1	0.0

U.S. User Ratings of Mainframes

TABLE 3. MAINFRAME PLANS FOR 1989-90—BY VENDOR AND MODEL

	Amdahl All Models	Bull HN All Models	IBM 308X	IBM 3090 Multiple Processors	IBM 3090 Single Processors	IBM 4381	IBM 9370
Which of the following Systems Do You Plan to Acquire in 1989? (%)	11.1	5.3	40.5	34.5	31.0	29.4	16.7
3090	11.1	0.0	32.4	31.0	19.0	13.7	0.0
9370	0.0	0.0	5.4	0.0	9.5	7.8	8.3
4381	0.0	0.0	0.0	0.0	0.0	7.8	5.6
AS/400	0.0	5.3	13.5	3.4	4.8	5.9	5.6
Unisys (Net)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A17	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
V Series	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bull HN (Net)	0.0	15.8	0.0	0.0	0.0	0.0	0.0
DPS 8000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DPS 7000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DPS 6+	0.0	15.8	0.0	0.0	0.0	0.0	0.0
DEC (Net)	0.0	0.0	10.8	6.9	7.1	5.9	5.6
VAX 8000 Series	0.0	0.0	5.4	0.0	4.8	0.0	0.0
6000 Series	0.0	0.0	0.0	0.0	2.4	0.0	0.0
Micro VAX	0.0	0.0	8.1	6.9	2.4	5.9	5.6

U.S. User Ratings of Mainframes

TABLE 3. MAINFRAME PLANS FOR 1989-90—BY VENDOR AND MODEL (Continued)

	Unisys 1100	Unisys A2/A3/A5	Unisys A9/A10	Unisys A12/A15/A17	Unisys V Series	Other Mainframes
Which of the following Systems Do You Plan to Acquire in 1989? (%)	3.0	0.0	0.0	4.3	6.3	23.8
3090	3.0	0.0	0.0	0.0	3.1	4.8
9370	0.0	0.0	0.0	4.3	0.0	0.0
4381	0.0	0.0	0.0	0.0	3.1	14.3
AS/400	0.0	0.0	0.0	0.0	0.0	9.5
Unisys (Net)	6.1	20.5	41.9	13.0	25.0	4.8
A17	3.0	0.0	0.0	8.7	0.0	0.0
A12	0.0	5.1	19.4	4.3	0.0	0.0
A10	0.0	0.0	6.5	0.0	0.0	0.0
A6	0.0	15.4	16.1	0.0	0.0	0.0
V Series	0.0	0.0	0.0	0.0	25.0	4.8
7000	3.0	0.0	0.0	0.0	0.0	0.0
Bull HN (Net)	0.0	0.0	0.0	0.0	0.0	4.8
DPS 8000	0.0	0.0	0.0	0.0	0.0	4.8
DPS 7000	0.0	0.0	0.0	0.0	0.0	0.0
DPS 6+	0.0	0.0	0.0	0.0	0.0	0.0
DEC (Net)	3.0	0.0	0.0	0.0	0.0	4.8
VAX 8000 Series	0.0	0.0	0.0	0.0	0.0	0.0
6000 Series	3.0	0.0	0.0	0.0	0.0	0.0
Micro VAX	0.0	0.0	0.0	0.0	0.0	4.8

U.S. User Ratings of Mainframes

TABLE 3. MAINFRAME PLANS FOR 1989-90—BY VENDOR AND MODEL (Continued)

	Amdahl All Models	Bull HN All Models	IBM 308X	IBM 3090 Multiple Processors	IBM 3090 Single Processors	IBM 4381	IBM 9370
Planned Acquisitions/Implementations 1989-1990							
Applications (%)							
Executive Information System	16.7	5.3	29.7	31.0	42.9	21.6	8.3
Decision Support System	22.2	5.3	27.0	20.7	16.7	17.6	11.1
Case Tools	38.9	21.1	21.6	27.6	28.6	21.6	8.3
Expert System	38.9	5.3	10.8	37.9	21.4	11.8	5.6
Financial Control System	16.7	15.8	5.4	13.8	26.2	13.7	5.6
General Accounting System	16.7	26.3	18.9	10.3	28.6	13.7	2.8
Payroll/Human Resources	27.8	15.8	21.6	10.3	11.9	7.8	5.6
Sales and Marketing System	16.7	10.5	13.5	6.9	16.7	3.9	5.6
Order Processing/Inventory	27.8	10.5	18.9	0.0	21.4	19.6	5.6
Purchasing	11.1	15.8	16.2	0.0	26.2	9.8	5.6
Scheduling	5.6	5.3	2.7	0.0	11.9	0.0	5.6
Other	5.6	10.5	10.8	10.3	9.5	21.6	13.9
Additional Products (%)							
Additional Software from Manufacturer	44.4	31.6	62.2	62.1	69.0	56.9	33.3
Proprietary Software from Other Suppliers	77.8	21.1	62.2	58.6	71.4	60.8	30.6
Expand Present Hardware	55.6	68.4	56.8	69.0	78.6	58.8	41.7
Expand Data Communications Facilities	55.6	36.8	43.2	65.5	66.7	54.9	36.1
UNIX Operating System	11.1	10.5	5.4	10.3	2.4	5.9	5.6
Laser Printers	33.3	21.1	43.2	41.4	52.4	29.4	25.0
Power Conditioning Systems	27.8	5.3	5.4	13.8	14.3	25.5	25.0
Optical Disk Devices	27.8	5.3	13.5	37.9	19.0	17.6	2.8
Image Processing	16.7	0.0	18.9	24.1	19.0	15.7	8.3
System Extensions (%)							
Application Development Tools	33.3	21.1	37.8	37.9	42.9	27.5	33.3
Performance Monitors	27.8	10.5	35.1	27.6	50.0	33.3	16.7
Electronic Mail	38.9	15.8	24.3	34.5	35.7	37.3	27.8
Data Base Management System	22.2	26.3	18.9	20.7	26.2	27.5	19.4
Query/Report System	33.3	15.8	24.3	24.1	40.5	21.6	16.7
Data Center Control System	38.9	5.3	10.8	24.1	33.3	15.7	2.8
Graphics	0.0	0.0	5.4	10.3	19.0	9.8	11.1
Other	5.6	5.3	0.0	3.4	0.0	3.9	0.0

U.S. User Ratings of Mainframes

TABLE 3. MAINFRAME PLANS FOR 1989-90—BY VENDOR AND MODEL (Continued)

	Unisys 1100	Unisys A2/A3/A5	Unisys A9/A10	Unisys A12/A15/A17	Unisys V-Series	Other Mainframes
Planned Acquisitions/Implementations 1989-1990 Applications (%)						
Executive Information System	21.2	12.8	29.0	34.8	12.5	23.8
Decision Support System	12.1	0.0	9.7	17.4	3.1	0.0
Case Tools	30.3	0.0	22.6	13.0	12.5	4.8
Expert System	9.1	2.6	6.5	21.7	0.0	4.8
Financial Control System	15.2	2.6	9.7	13.0	9.4	14.3
General Accounting System	21.2	25.6	25.8	13.0	12.5	14.3
Payroll/Human Resources	15.2	15.4	16.1	8.7	25.0	19.0
Sales and Marketing System	24.2	7.7	16.1	0.0	6.3	19.0
Order Processing/Inventory	18.2	20.5	12.9	4.3	3.1	19.0
Purchasing	15.2	12.8	9.7	4.3	3.1	4.8
Scheduling	6.1	10.3	3.2	8.7	0.0	9.5
Other	15.2	15.4	19.4	21.7	18.8	0.0
Additional Products (%)						
Additional Software from Manufacturer	54.5	30.8	32.3	43.5	21.9	47.6
Proprietary Software from Other Suppliers	30.3	23.1	25.8	47.8	37.5	38.1
Expand Present Hardware	51.5	48.7	67.7	21.7	46.9	47.6
Expand Data Communications Facilities	51.5	41.0	48.4	52.2	43.8	61.9
UNIX Operating System	27.3	10.3	3.2	8.7	3.1	9.5
Laser Printers	45.5	10.3	35.5	30.4	34.4	52.4
Power Conditioning Systems	15.2	12.8	22.6	8.7	6.3	19.0
Optical Disk Devices	15.2	5.1	9.7	0.0	3.1	19.0
Image Processing	15.2	5.1	12.9	8.7	0.0	4.8
System Extensions (%)						
Application Development Tools	33.3	20.5	32.3	13.0	12.5	19.0
Performance Monitors	24.2	10.3	22.6	43.5	15.6	19.0
Electronic Mail	27.3	15.4	12.9	21.7	15.6	9.5
Data Base Management System	30.3	7.7	9.7	0.0	12.5	19.0
Query/Report System	12.1	20.5	25.8	17.4	34.4	19.0
Data Center Control System	12.1	5.1	0.0	13.0	9.4	14.3
Graphics	6.1	2.6	6.5	4.3	6.3	0.0
Other	3.0	0.0	0.0	4.3	0.0	4.8

U.S. User Ratings of Mainframes

TABLE 4. MAINFRAME PLANS FOR 1989-90—RECAP BY VENDOR

	Total Mainframes	Amdahl	Bull HN	IBM	Unisys	Other Mainframes
Which of the following Systems Do You Plan to Acquire in 1989? (%)						
IBM (Net)	17.3	11.1	5.3	30.3	2.5	23.8
3090	10.0	11.1	0.0	18.5	1.3	4.8
9370	3.4	0.0	0.0	6.7	0.6	0.0
4381	2.4	0.0	0.0	3.1	0.6	14.3
AS/400	3.9	0.0	5.3	6.7	0.0	9.5
Unisys (Net)	8.5	0.0	0.0	0.0	21.5	4.8
A17	0.7	0.0	0.0	0.0	1.9	0.0
A12	2.2	0.0	0.0	0.0	5.7	0.0
A10	0.5	0.0	0.0	0.0	1.3	0.0
A6	2.7	0.0	0.0	0.0	7.0	0.0
V Series	2.2	0.0	0.0	0.0	5.1	4.8
7000	0.2	0.0	0.0	0.0	0.6	0.0
Bull HN (Net)	1.0	0.0	15.8	0.0	0.0	4.8
DPS 8000	0.2	0.0	0.0	0.0	0.0	4.8
DPS 7000	0.0	0.0	0.0	0.0	0.0	0.0
DPS 6+	0.7	0.0	15.8	0.0	0.0	0.0
DEC (Net)	3.9	0.0	0.0	7.2	0.6	4.8
VAX 8000 Series	1.0	0.0	0.0	2.1	0.0	0.0
6000 Series	0.5	0.0	0.0	0.5	0.6	0.0
Micro VAX	2.9	0.0	0.0	5.6	0.0	4.8

U.S. User Ratings of Mainframes

TABLE 4. MAINFRAME PLANS FOR 1989-90—
RECAP BY VENDOR (Continued)

	Total Mainframes	Amdahl	Bull HN	IBM	Unisys	Other Mainframes
Planned Acquisitions/Implementations 1989-1990						
Applications (%)						
Executive Information System	22.9	16.7	5.3	26.7	20.9	23.8
Decision Support System	12.9	22.2	5.3	18.5	7.6	0.0
Case Tools	19.0	38.9	21.1	21.5	15.2	4.8
Expert System	12.7	38.9	5.3	16.4	7.0	4.8
Financial Control System	12.2	16.7	15.8	13.3	9.5	14.3
General Accounting System	17.8	16.7	26.3	15.4	20.3	14.3
Payroll/Human Resources	14.6	27.8	15.8	11.3	16.5	19.0
Sales and Marketing Systems	10.9	16.7	10.5	9.2	11.4	19.0
Order Processing/Inventory	14.4	27.8	10.5	14.4	12.7	19.0
Purchasing	10.9	11.1	15.8	12.3	9.5	4.8
Scheduling	5.1	5.6	5.3	4.1	5.7	9.5
Other	14.1	5.6	10.5	13.8	17.7	0.0
Additional Products (%)						
Additional Software from Manufacturer	46.7	44.4	31.6	56.9	36.1	47.6
Proprietary Software from Other Suppliers	45.7	77.8	21.1	57.4	31.6	38.1
Expand Present Hardware	55.7	55.6	68.4	61.0	48.7	47.6
Expand Communications Facilities	50.6	55.6	36.8	53.3	46.8	61.9
UNIX Operating System	8.3	11.1	10.5	5.6	10.8	9.5
Laser Printers	34.8	33.3	21.1	37.9	30.4	52.4
Power Conditioning Systems	15.8	27.8	5.3	17.4	13.3	19.0
Optical Disk Devices	13.4	27.8	5.3	17.4	7.0	19.0
Image Processing	12.2	16.7	0.0	16.9	8.2	4.8
System Extensions (%)						
Application Development Tools	29.0	33.3	21.1	35.4	22.8	19.0
Performance Monitors	26.8	27.8	10.5	33.3	21.5	19.0
Electronic Mail	25.3	38.9	15.8	32.3	18.4	9.5
Data Base Management System	19.0	22.2	26.3	23.1	12.7	19.0
Query/Report Systems	23.8	33.3	15.8	25.6	22.2	19.0
Data Center Control Systems	13.9	38.9	5.3	17.4	7.6	14.3
Graphics	7.3	0.0	0.0	11.3	5.1	0.0
Other	1.9	5.6	5.3	1.5	1.3	4.8