

User Ratings of General-Purpose Computing Systems

Many Users, Many Opinions

As Datapro's subscribers keep telling us, a summary of users' evaluations of the pros and cons of the myriad products offered to the data processing community can be a valuable tool in selecting the product that will best meet each computer user's needs. That kind of information is often hard to come by, however, which accounts for the increasing popularity of the "User Reaction" sections of Datapro's reports on computer systems, proprietary software, and peripheral products.

To quote the Latin poet Terence, "many men, many opinions," and this 1974 survey of user ratings of general-purpose computer systems summarizes the opinions of our subscribers about their satisfaction with their currently installed computer systems. Datapro solicited these views in an extensive questionnaire mailed on a postpaid reply form to more than 8200 Datapro subscribers in June 1974.

By the end of July, when the monumental task of tabulating the responses was begun, a total of 878 questionnaires had been returned. Of these, 60 responses were received from users of minicomputers and small accounting computers. These responses were excluded from the tabulated results of this survey and will be incorporated in the user experience sections of future editions of two other Datapro reports, All About Minicomputers and All About Small Accounting Computers.

Seven Datapro subscribers generously took the trouble to return the survey form with an indication that they have no in-house computer installation at present and could supply no information relevant to this survey. Ten questionnaires were returned in which the respondents had not completed the user ratings section, primarily because the users felt that their computer systems had not been installed long enough to be definitively evaluated. Regrettably, an additional 59 questionnaires contained no identification of the respondents and had to be excluded from the tabulated results. Datapro conscientiously protects the identity of all participants in our user satisfaction surveys, but questionnaires returned with no identification cannot be validated and thus cannot be incorporated into the final results of the surveys.

All general-purpose computer systems of any vintage were grouped and included in the tabulated totals if they were rated in three or more valid responses. Single responses describing a model of a currently marketed product line were incorporated into the appropriate computer family's totals under the category of "Others."

In the case of questionnaires that described two or more computer systems representing more than one main-frame manufacturer or more than one model within a product line, each set of ratings was counted as one

This report presents the results of an extensive Datapro survey and tabulates the experience of 752 users with a total of 1288 computer systems. The users' ratings pinpoint the strengths and weaknesses of each manufacturer's equipment, software, and support, yielding information that should be of great value in computer acquisition.

response. However, when only one set of ratings was given for multiple computer systems of the same model or series, that set of ratings was counted as a single response in order to avoid skewing of the final ratings by one installation reporting on a large number of identical computer systems. As a result, our 752 valid questionnaires add up to a total of 1016 responses evaluating a total of 1288 computer systems from 9 manufacturers.

Our comprehensive questionnaire asked each Datapro subscriber to describe his computer installation in considerable detail. Each respondent was asked to identify the manufacturer and model number of the computer system, the number of systems installed, the main memory size, and the operating system in use.

Another question asked whether the user acquired his system by outright purchase, rental from the manufacturer, or through a third-party leasing arrangement. The results, listed in Table 1, represent the percentages of the total number of responses for each computer manufacturer that signified each type of acquisition. Since some respondents failed to supply an answer to this question, the percentages do not always add up to 100%.

What Are All Those Computers Doing Out There?

We then asked our subscribers to describe the major functions of each computer system by indicating the principal application, or applications, performed by each system. The results are shown in Table 2. Here the percentages always far exceed 100%, indicating that most of

TABLE 1: METHOD OF ACQUISITION

Manufacturer	Purchase	Rental from Manufacturer	Third-Party Lease
Burroughs	21%	69%	5%
Control Data	50%	25%	25%
DEC	80%	10%	10%
Honeywell	34%	52%	9%
IBM	28%	40%	32%
NCR	26%	56%	15%
Singer	11%	78%	11%
Univac	30%	39%	11%
Xerox	71%	14%	0%
Totals	28%	37%	26%

**User Ratings of
General-Purpose Computer Systems**

TABLE 2: PRINCIPAL APPLICATIONS

Manufacturer	Business Data Processing	Scientific and Engineering	Real-Time Control	Data Communications	Data Base Management	Others
Burroughs	90%	5%	10%	40%	31%	9%
Control Data	42%	75%	17%	17%	17%	17%
DEC	60%	70%	0%	30%	30%	50%
Honeywell	92%	14%	3%	28%	14%	3%
IBM	76%	17%	5%	34%	22%	10%
NCR	82%	13%	3%	5%	3%	10%
Singer	44%	11%	11%	67%	11%	11%
Univac	83%	22%	11%	35%	22%	2%
Xerox	57%	71%	29%	14%	29%	71%
Totals	78%	18%	6%	33%	21%	9%

➤ the computer systems represented in the survey perform a variety of functions. Not surprisingly, with the exception of the computers made by Control Data, Digital Equipment Corporation, Singer, and Xerox, the emphasis is still heavily in the area of business data processing. The next highest activity is represented by data communications.

The high percentages in the "Others" category for Control Data, DEC, and Xerox are comprised mainly of entries for instruction, research, and administration in educational institutions.

The next question asked the computer users "Who wrote the programs for your applications?" Table 3 summarizes their replies. Although the vast majority of users maintain in-house programming staffs, most also have turned to other sources for programming assistance. Hence, the figures in Table 3 also total more than 100 percent in most cases.

Computer users represented in the survey relied most often on software packages supplied by independent software houses to supplement their in-house programming efforts. These results underscore the growing importance of proprietary software industry in the computer marketplace. The percentages listed in Table 3, however, probably underestimate the full extent of the utilization of proprietary software packages by computer users; our question specified application programs only, and many of the popular proprietary software programs supplement the services performed by the computer manufacturers' systems software.

The percentage of computer users in the survey who were using remote batch and/or interactive terminals varied widely. But all of the manufacturers had some representation in both categories, as shown in Table 4.

All told, the 1016 responses accounted for a total of 2971 remote batch terminals and 13,411 interactive terminals. The number of each type of terminal installed per system naturally varied widely with the sizes of the computer systems.

The final question relating to the description of each configuration asked the users to specify what types of peripheral devices, if any, they had obtained from sources other than their mainframe manufacturer. The results are shown in Table 5. Responses in the "Others" category included printers, graphic plotters, MICR devices, and various types of remote terminals and front-end communications processors. As expected, the use of "foreign" peripheral devices is most common among users of IBM computers, who can choose from a wide variety of plug-compatible devices. But the figures also make it clear that many users of other makes of computers are now looking to alternative sources for some of their peripheral equipment.

A Matter of Opinion

Finally and most importantly, in order to determine the level the users' satisfaction with their computer systems, we asked each respondent to judge his system in 11 distinct categories of performance by assigning ratings of Excellent, Good, Fair, or Poor. These responses were grouped by computer model, and weighted average based on the number of responses for each category was computed. To calculate the weighted averages, each Excellent response was weighted as 4, Good as 3, Fair as 2, and Poor as 1. The total numbers of responses were multiplied by their corresponding weights, and the sum of these products were then divided by the total number of responses in each category. The results for each computer model that was rated by three or more users and the totals for each mainframe manufacturer are presented in the detailed tables on the next four pages.

We feel obliged to make a few qualifying statements about these ratings in order to further clarify the results. In the first place, readers with a penchant for addition will discover that the numbers of responses listed for a given rating category often fail to add up to the total number of user responses indicated for that computer system. Not every user rated his computer system in all 11 categories, often because he felt that one or more of ➤

**User Ratings of
General-Purpose Computer Systems**

TABLE 3: SOURCES OF APPLICATIONS PACKAGES

Manufacturer	In-House Personnel	Computer Manufacturer's Personnel	Used "Ready Made" Programs from Manufacturer	Used Proprietary Software Packages	Used Contract Programming House
Burroughs	100%	24%	29%	36%	24%
Control Data	100%	42%	25%	17%	7%
DEC	100%	10%	10%	10%	0%
Honeywell	97%	27%	19%	16%	19%
IBM	94%	11%	18%	38%	18%
NCR	85%	23%	44%	10%	8%
Singer	67%	0%	22%	0%	11%
Univac	93%	17%	17%	13%	11%
Xerox	100%	0%	43%	29%	0%
Totals	94%	13%	20%	33%	18%

▷ the categories did not apply to his installation. The most striking example is the category for the mainframe manufacturers' Applications Programs, to which only 63% of the respondents supplied a rating. Only those responses which assigned a rating were included in calculating the weighted average for each category.

In the Ease of Conversion category, however, the number of users who did not supply a rating, or who specified Not Applicable, probably had some effect on the resulting ratings. In perusing these questionnaires, Datapro discovered that a number of computer users who actually had upgraded to new computer models within a manufacturer's product line checked off Not Applicable in the Ease of Conversion category. The transition must have been so painless that some users felt they hadn't gone through a conversion, although other respondents with similar experiences could as easily have rated Ease of Conversion as Excellent.

Some Mixed Emotions

In order to establish a base-line or standard of performance, we computed weighted averages for all responses for each of the mainframe manufacturers.

TABLE 4: REMOTE TERMINAL USAGE

Manufacturer	Remote Batch Terminals	Interactive Terminals
Burroughs	25%	48%
Control Data	75%	83%
DEC	20%	100%
Honeywell	16%	20%
IBM	32%	40%
NCR	5%	13%
Singer	11%	78%
Univac	28%	43%
Xerox	14%	71%
Total	30%	40%

In addition, the ratings provided by all of the computer users in this survey are summarized in Table 6 to form an overall picture of user satisfaction—and in some cases dissatisfaction—with their computer systems. The figures in Table 6 represent the percentage of Excellent, Good, Fair, and Poor ratings supplied for each performance category by all of the 1016 responses.

Thus, a resounding 90% of the computer users who responded to Datapro's survey supplied a Good or Excellent rating for Overall Satisfaction with their currently installed computer systems. To halt the spread of a rosy glow probably now emerging on the faces of computer marketing managers from Armonk to San Diego, it should be noted that comparable expressions of good will on the part of these computer users appeared in only two other categories: Ease of Operation, where 92% of the respondents bestowed a Good or Excellent rating, and Reliability of the Mainframe, where 92% of the users also rated their experience as Good or Excellent.

On the other hand, the responding computer users described themselves as most dissatisfied with the applica- ▷

TABLE 5: USAGE OF "FOREIGN" PERIPHERALS*

Mainframe Manufacturer	Disk Drives	Magnetic Tape Drives	Add-On Main Memory	Others
Burroughs	9%	12%	0%	10%
Control Data	17%	17%	8%	0%
DEC	20%	10%	10%	0%
Honeywell	22%	20%	0%	16%
IBM	43%	45%	21%	15%
NCR	31%	26%	8%	5%
Singer	33%	33%	0%	0%
Univac	19%	19%	11%	7%
Xerox	0%	0%	0%	0%
Total	37%	38%	17%	12%

*Peripheral devices obtained from sources other than the mainframe manufacturer.

User Ratings of General-Purpose Computer Systems

Computer Manufacturer and Model	No. of User Replies	No. of Computers Represented	Ease of Operation				Reliability of Mainframe				Reliability of Peripherals				Responsiveness of Maint. Service				Effectiveness of Maint. Service					
			WA	E	G	F	P	WA	E	G	F	P	WA	E	G	F	P	WA	E	G	F	P		
Burroughs B 1700	6	20	3.8	5	1	0	0	3.3	2	4	0	0	2.5	0	3	30	2.3	0	3	21	2.5	1	3	11
Burroughs B 2700	11	11	3.9	10	1	0	0	3.2	3	7	10	2.6	1	5	50	3.2	2	9	0	0	3.0	2	8	0
Burroughs B 3500	19	20	3.8	15	4	0	0	3.4	8	11	0	2.7	1	12	51	2.7	1	12	60	2.7	2	10	70	
Burroughs B 3700	4	4	3.8	3	1	0	0	3.8	3	1	0	2.8	0	3	10	3.0	1	2	10	2.5	0	2	20	
Burroughs B 4700	11	13	3.7	8	3	0	0	3.4	5	5	10	2.8	1	7	30	3.5	4	5	11	2.6	2	4	41	
Burroughs B 6700	6	10	3.8	5	1	0	0	3.3	2	4	0	2.5	0	4	11	3.2	2	3	10	3.0	1	4	10	
Burroughs, others	1	1	4.0	1	0	0	0	3.0	0	1	0	3.0	0	1	10	4.0	1	0	0	4.0	1	0	0	
Burroughs Totals	58	79	3.8	47	11	0	0	3.3	23	33	20	2.7	3	35	182	2.9	11	34	112	2.8	9	31	153	
Control Data 3100 Series	3	4	2.7	0	2	10	3.3	1	2	0	0	2.0	0	0	30	2.5	0	1	10	2.0	0	0	20	
Control Data 6000 Series	8	8	3.4	3	5	0	0	2.9	1	5	20	2.6	0	6	11	3.3	2	6	0	0	2.5	0	4	40
Control Data, others	1	1	3.0	0	1	0	0	4.0	1	0	0	2.0	0	0	10	3.0	0	1	0	2.0	0	0	10	
Control Data Totals	12	13	3.2	3	8	10	3.1	3	7	20	2.4	0	6	51	3.1	2	8	10	2.4	0	4	70		
Digital Equipment DECsystem-10	10	14	3.8	8	2	0	0	3.6	8	1	0	3.3	3	7	0	3.4	5	4	10	3.5	5	5	0	
Honeywell Series 200	38	44	3.1	7	26	50	3.1	10	23	23	3.0	7	25	42	3.1	7	26	50	2.7	5	19	131		
Honeywell Series 2000	15	19	3.3	6	8	10	3.3	7	5	30	2.9	2	9	40	3.2	6	6	30	2.9	2	9	40		
Honeywell Series 600/6000	10	14	3.5	5	5	0	0	3.8	8	2	0	2.9	2	5	30	3.5	5	5	0	3.3	3	5	20	
Honeywell, others	1	1	4.0	1	0	0	0	4.0	1	0	0	4.0	1	0	0	4.0	1	0	0	4.0	1	0	0	
Honeywell Totals	64	78	3.2	19	39	60	3.2	26	30	53	3.0	12	39	112	3.2	19	37	80	2.8	11	33	191		
IBM 360/20	19	45	3.3	9	8	11	3.7	14	5	0	0	3.3	7	10	10	3.4	8	10	10	3.3	6	12	10	
IBM 360/22	12	12	3.1	2	9	10	3.4	6	5	10	3.1	1	11	0	2.9	2	7	30	3.0	2	8	20		
IBM 360/25	12	13	3.4	3	7	20	3.9	6	5	10	2.8	2	6	40	3.4	4	7	10	2.8	1	7	30		
IBM 360/30	77	87	3.3	25	47	20	3.5	47	24	60	3.1	26	37	122	3.1	17	50	90	3.0	16	45	140		
IBM 360/40	79	93	3.3	34	38	71	3.6	53	25	20	3.1	21	47	111	3.1	21	48	81	3.1	19	47	112		
IBM 360/50	49	61	3.3	15	31	20	3.1	19	17	83	3.1	4	17	21	3.0	5	15	30	3.0	6	14	30		
IBM 360/65	33	38	3.2	7	25	0	0	3.3	10	21	0	1	2.8	8	21	81	3.0	6	21	60	2.9	4	21	80
IBM 360/75	3	3	2.7	0	2	10	3.7	2	1	0	0	2.7	0	2	10	2.7	0	2	10	3.0	1	1	10	
IBM 360/91	3	3	2.7	0	2	10	2.3	0	1	20	3.0	1	1	10	2.7	0	2	10	2.7	0	2	10		
IBM System/360, others	1	1	3.0	0	1	0	0	3.0	0	1	0	4.0	1	0	0	4.0	1	0	0	4.0	1	0	0	
IBM System/360 Totals	288	356	3.3	95	170	172	3.5	157	105	204	3.1	71	152	405	3.1	64	162	331	3.0	56	157	442		
IBM 370/125	32	32	3.5	17	14	0	0	3.6	22	8	20	3.2	12	15	50	3.4	16	15	0	1	3.3	13	15	21
IBM 370/135	96	102	3.4	42	47	30	3.6	62	29	41	3.1	26	50	180	3.3	35	49	110	3.3	29	51	150		
IBM 370/145	143	165	3.4	55	78	60	3.5	85	53	32	3.2	36	99	70	3.2	48	81	113	3.2	42	84	142		
IBM 370/155	38	41	3.2	11	23	30	3.4	16	20	20	3.1	7	28	30	3.2	13	21	40	3.1	10	21	60		
IBM 370/158	59	75	3.8	24	32	20	3.5	34	20	50	3.0	10	41	80	3.2	17	39	30	3.1	12	39	80		
IBM 370/165	8	9	3.3	3	4	10	3.8	6	2	0	0	3.0	2	4	20	3.5	4	4	0	3.4	4	3	10	
IBM 370/168	8	10	3.1	2	5	10	3.1	2	5	10	2.9	1	5	20	3.5	4	4	0	3.1	2	5	10		
IBM System/370, others	1	6	3.0	0	1	0	0	3.0	0	1	0	3.0	0	1	0	3.0	0	1	0	3.0	0	1	0	
IBM System/370 Totals	385	440	3.4	154	204	160	3.5	227	138	173	3.1	95	243	450	3.3	137	214	290	3.2	112	219	473		
IBM 1130	26	33	3.5	13	8	40	3.6	16	7	20	3.1	7	15	40	3.2	8	12	60	2.9	4	15	70		
IBM 1401	10	63	3.3	4	4	10	3.3	5	4	0	1	3.2	3	5	10	3.0	2	6	20	2.9	1	7	20	
IBM 1440	5	5	3.6	3	2	0	0	3.8	4	1	0	3.6	3	2	0	3.8	4	1	0	3.6	3	2	0	

NOTE: All ratings are expressed in terms of number of user responses. The legend is E for Excellent, G for Good, F for Fair, and P for Poor. WA is the Weighted Average, calculated on a scale of 4 for Excellent, 3 for Good, 2 for Fair, and 1 for Poor.

User Ratings of General-Purpose Computer Systems

Computer Manufacturer and Model	Technical Support					Operating Systems					Compilers and Assemblers					Applications Programs					Ease of Conversion					Overall Satisfaction									
	W	A	E	G	F	P	W	A	E	G	F	P	W	A	E	G	F	P	W	A	E	G	F	P	W	A	E	G	F	P	W	A	E	G	F
Burroughs B 1700	2.0	0	2	2	2	3.2	3	2	1	0	3.3	4	1	1	0	2.3	0	1	2	0	3.0	2	3	0	1	3.3	3	2	1	0					
Burroughs B 2700	3.0	2	7	2	0	4.0	11	0	0	0	3.7	8	3	0	0	2.6	1	5	3	1	3.3	3	7	0	0	3.6	6	4	0	0					
Burroughs B 3500	2.5	3	6	9	0	3.7	16	1	2	0	3.6	11	8	0	0	2.3	2	3	7	3	2.8	3	10	4	1	3.3	7	11	1	0					
Burroughs B 3700	2.5	0	3	0	1	3.8	3	1	0	0	3.3	1	3	0	0	2.7	0	2	1	0	3.3	1	3	0	0	3.3	1	3	1	0					
Burroughs B 4700	2.6	1	5	5	0	3.6	7	4	0	0	3.5	6	4	1	0	2.4	1	3	4	1	3.2	6	1	4	0	3.2	3	7	1	0					
Burroughs B 6700	3.2	1	4	0	0	3.7	4	2	0	0	3.2	1	5	0	0	3.5	1	1	0	0	3.0	2	2	0	1	3.4	2	3	1	0					
Burroughs, others	3.0	0	1	0	0	4.0	1	0	0	0	4.0	1	0	0	0	—	0	0	0	0	3.0	0	1	0	0	3.0	0	1	0	0					
Burroughs Totals	2.7	7	28	18	3	3.7	45	10	3	0	3.5	32	24	2	0	2.5	5	15	17	5	3.1	17	27	8	3	3.3	22	31	4	0					
Control Data 3100 Series	2.3	0	1	2	0	2.3	0	2	0	1	2.7	0	2	1	0	1.7	0	1	1	0	2.5	0	1	1	0	2.3	0	1	2	0					
Control Data 6000 Series	2.8	1	5	1	1	2.5	0	4	4	0	3.4	3	5	0	0	2.6	0	3	2	0	2.9	0	7	1	0	2.9	0	7	1	0					
Control Data, others	2.0	0	0	1	0	3.0	0	1	0	0	3.0	0	1	0	0	2.0	0	0	1	0	1.0	0	0	0	1	3.0	0	1	0	0					
Control Data Totals	2.6	1	6	4	1	2.5	0	7	4	1	3.2	3	8	1	0	2.5	0	4	4	0	2.8	0	8	2	1	2.8	0	9	3	0					
Digital Equipment DECsystem-10	3.1	2	7	1	0	3.5	5	5	0	0	3.4	4	6	0	0	2.7	1	4	1	1	3.2	4	3	2	0	3.7	7	3	0	0					
Honeywell Series 200	2.4	4	12	16	6	2.4	2	13	16	3	2.6	2	17	13	2	2.3	1	9	9	7	2.7	4	13	7	3	2.7	1	25	10	1					
Honeywell Series 2000	2.2	0	5	6	2	2.6	2	5	6	1	3.0	3	9	3	0	2.4	0	3	5	0	3.1	4	6	1	1	2.9	3	9	2	1					
Honeywell Series 600/6000	3.2	4	4	2	0	3.4	5	4	1	0	3.6	6	4	0	0	2.4	1	3	4	1	3.2	3	6	1	0	3.4	4	6	0	0					
Honeywell, others	3.0	0	1	0	0	3.0	0	1	0	0	3.0	0	1	0	0	4.0	1	0	0	0	4.0	1	0	0	0	4.0	1	0	0	0					
Honeywell Totals	2.5	8	22	24	8	2.7	9	23	23	4	2.9	11	31	16	2	2.3	3	15	18	8	2.9	12	25	9	4	2.9	9	40	12	2					
IBM 360/20	2.8	4	7	6	1	3.2	5	5	3	0	3.3	7	5	3	0	2.9	3	3	2	1	2.7	4	2	3	2	3.2	6	11	2	0					
IBM 360/22	2.7	2	3	5	0	3.1	2	9	1	0	3.0	2	8	2	0	2.5	0	5	2	1	2.7	0	8	4	0	3.2	2	10	0	0					
IBM 360/25	2.8	1	8	3	0	2.6	1	4	5	0	3.0	2	7	2	0	2.6	0	4	3	0	2.5	1	5	4	1	3.0	1	8	1	0					
IBM 360/30	2.6	9	29	22	5	3.1	16	54	61	3	3.2	21	49	7	0	2.7	5	26	15	2	2.6	7	31	14	7	3.1	13	59	4	0					
IBM 360/40	2.4	8	25	27	10	3.0	15	49	14	0	3.1	16	52	8	2	2.5	6	24	21	8	2.6	12	27	15	9	3.1	15	56	7	0					
IBM 360/50	2.5	5	15	16	6	2.9	8	30	9	1	3.1	11	31	6	0	2.6	3	19	10	3	3.0	11	20	11	1	3.1	7	37	4	0					
IBM 360/65	2.6	3	14	13	1	3.0	4	25	4	0	3.0	2	29	2	0	2.9	1	18	1	1	2.7	0	18	4	1	3.0	3	28	2	0					
IBM 360/75	2.3	0	1	2	0	2.3	0	1	2	0	2.7	0	2	1	0	2.3	0	1	2	0	2.7	0	2	1	0	3.0	0	3	0	0					
IBM 360/91	2.7	0	2	1	0	2.7	0	2	1	0	3.0	0	3	0	0	2.0	0	0	2	0	2.0	0	0	2	0	3.0	0	3	0	0					
IBM System/360, others	3.0	0	1	0	0	3.0	0	1	0	0	2.0	0	0	1	0	2.0	0	0	1	0	2.0	0	0	1	0	3.0	0	1	0	0					
IBM System/360 Totals	2.6	32	105	95	23	3.0	51	180	45	2	3.1	61	186	32	2	2.6	18	100	59	16	2.7	35	113	59	21	3.1	47	216	20	0					
IBM 370/125	3.0	10	10	9	1	3.2	11	16	4	1	3.1	11	15	5	1	3.2	5	13	1	0	2.9	4	22	6	0	3.3	9	22	1	0					
IBM 370/135	2.8	13	54	17	2	3.0	22	54	17	2	3.1	22	64	8	2	2.7	6	31	19	4	3.0	24	44	16	4	3.1	20	70	5	1					
IBM 370/145	2.6	23	65	41	5	3.0	24	96	22	1	3.1	32	95	16	0	2.7	8	53	22	7	3.1	31	62	22	0	3.3	29	102	1	0					
IBM 370/155	2.9	7	22	8	1	3.0	3	31	4	0	2.9	5	26	7	0	2.6	0	18	10	1	2.6	3	20	10	4	3.1	6	28	3	0					
IBM 370/158	2.9	11	30	15	1	2.9	11	35	12	1	3.1	14	36	8	1	2.6	2	20	15	1	3.0	14	26	13	1	3.0	8	44	6	0					
IBM 370/165	3.3	2	5	0	0	2.9	2	4	1	1	3.1	2	5	1	0	2.0	1	1	1	2	3.3	2	6	0	0	3.4	3	5	0	0					
IBM 370/168	3.3	3	4	1	0	3.0	1	6	1	0	3.1	2	5	1	0	3.0	1	3	1	0	3.3	4	2	2	0	3.3	2	6	0	0					
IBM System/370, others	3.0	0	1	0	0	3.0	0	1	0	0	3.0	0	1	0	0	3.0	0	1	0	0	3.0	0	1	0	0	3.0	0	1	0	0					
IBM System/370 Totals	2.9	69	191	91	10	3.0	74	243	61	6	3.1	88	247	46	4	2.9	23	140	27	4	3.0	82	183	69	9	3.1	77	278	25	1					
IBM 1130	2.6	3	11	9	2	3.0	5	16	5	0	3.0	5	14	6	0	2.5	1	11	5	3	2.3	1	8	5	4	3.0	6	14	5	1					
IBM 1401	2.3	0	3	6	0	2.5	0	2	2	0	2.8	1	5	3	0	2.4	1	2	4	1	2.6	1	2	1	1	3.2	2	8	0	0					
IBM 1440	3.3	1	3	0	0	3.5	1	1	0	0	3.3	1	3	0	0	2.7	0	2	1	0	2.5	1	0	3	0	3.6	3	2	0	0					

User Ratings of General-Purpose Computer Systems

Computer Manufacturer and Model	No. of User Replies	No. of Computers Represented	Ease of Operation					Reliability of Mainframe					Reliability of Peripherals					Responsiveness of Maint. Service					Effectiveness of Maint. Service				
			WA	E	G	F	P	WA	E	G	F	P	WA	E	G	F	P	WA	E	G	F	P	WA	E	G	F	P
IBM System/3 Model 10	34	34	3.7	24	10	0	0	3.8	27	7	0	0	3.4	17	12	3	1	3.6	24	8	2	0	3.6	22	9	2	0
IBM System/3, model unspecified	15	37	3.6	9	4	1	0	3.7	11	4	0	0	3.6	9	6	0	0	3.1	3	11	1	0	3.2	3	12	0	0
IBM System/3 Totals	49	71	3.7	33	14	1	0	3.8	38	11	0	0	3.4	26	18	3	1	3.5	27	19	3	0	3.5	25	17	2	0
IBM Totals	763	968	3.3	302	402	39	2	3.5	447	266	39	8	3.1	204	435	93	6	3.2	242	414	73	1	3.1	201	417	102	5
NCR Century 100	7	7	3.6	4	3	0	0	3.1	2	4	1	0	2.7	2	1	4	0	3.1	3	2	2	0	3.0	1	5	1	0
NCR Century 101	7	7	3.6	4	3	0	0	3.7	5	2	0	0	3.0	0	6	0	0	3.6	4	3	0	0	3.4	3	4	0	0
NCR Century 200	15	15	3.5	8	7	0	0	3.5	8	7	0	0	3.0	3	9	3	0	3.6	9	6	0	0	3.3	6	8	1	0
NCR Century, others	2	3	2.5	0	1	1	0	3.0	0	2	0	0	3.0	0	2	0	0	3.5	1	1	0	0	3.5	1	1	0	0
NCR Century Totals	31	32	3.5	16	14	1	0	3.5	15	15	1	0	2.9	5	18	7	0	3.5	17	12	2	0	3.4	11	18	2	0
NCR 315	8	12	3.1	1	7	0	0	3.1	1	7	0	0	2.8	1	4	3	0	3.1	3	3	2	0	3.1	3	3	2	0
NCR Totals	39	44	3.4	17	21	1	0	3.4	16	22	1	0	2.9	6	22	10	0	3.4	20	15	4	0	3.3	14	21	4	0
Singer System Ten	9	18	3.6	6	2	1	0	2.9	4	2	1	2	2.7	2	2	5	0	2.4	1	4	2	2	2.4	1	3	4	1
Univac 9200	3	3	2.7	0	2	1	0	3.3	1	2	0	0	2.3	0	1	2	0	3.3	1	2	0	0	3.3	1	2	0	0
Univac 9300	10	10	3.3	4	5	1	0	3.2	3	6	1	0	2.7	1	6	2	1	3.1	4	3	3	0	3.7	1	6	2	1
Univac 9400	4	4	3.0	0	4	0	0	2.8	0	3	1	0	2.0	0	1	2	1	3.3	2	1	1	0	2.5	1	1	1	1
Univac 9000 Series, others	1	1	3.0	0	1	0	0	3.0	0	1	0	0	3.0	0	1	0	0	4.0	1	0	0	0	3.0	0	1	0	0
Univac 9000 Series Totals	18	18	3.1	4	12	2	0	3.1	4	12	2	0	2.5	1	9	6	2	3.2	8	6	4	0	2.8	3	10	3	2
Univac Series 70/45	9	17	3.0	3	4	1	1	3.1	3	3	2	0	2.4	0	5	3	1	3.2	4	3	2	0	2.9	2	4	3	0
Univac Series 70, others	5	5	2.6	0	3	2	0	3.2	2	2	1	0	2.6	0	3	2	0	3.4	2	3	0	0	3.0	1	3	1	0
Univac 1106	10	10	3.4	4	6	0	0	3.6	6	4	0	0	2.3	1	3	3	2	3.6	6	4	0	0	3.3	5	3	2	0
Univac 1108	3	4	3.7	2	1	0	0	3.7	2	1	0	0	2.0	0	0	1	0	2.7	0	2	1	0	2.7	0	2	1	0
Univac 1110	3	3	4.0	3	0	0	0	3.7	2	1	0	0	3.7	2	1	0	0	4.0	3	0	0	0	4.0	3	0	0	0
Univac 1100 Series Totals	16	17	3.6	9	7	0	0	3.6	10	6	0	0	2.6	3	4	7	2	3.5	9	6	1	0	3.3	8	5	3	0
Univac 490 Series	6	8	3.2	1	5	0	0	3.7	4	2	0	0	2.7	0	4	2	0	3.3	2	4	0	0	3.3	2	4	0	0
Univac Totals	54	65	3.2	17	31	5	1	3.3	23	25	5	0	2.5	4	25	20	5	3.3	25	22	7	0	3.0	16	26	10	2
Xerox Sigma Series	6	7	3.3	2	4	0	0	3.2	2	3	1	0	2.7	1	2	3	0	3.6	4	0	1	0	3.2	2	2	1	0
Xerox, others	1	2	3.0	0	1	0	0	4.0	1	0	0	0	2.0	0	0	1	0	2.0	0	0	1	0	2.0	0	0	1	0
Xerox Totals	7	9	3.3	2	5	0	0	3.3	3	3	1	0	2.6	1	2	4	0	3.3	4	0	2	0	3.0	2	2	2	0
RECAP OF TOTALS BY MANUFACTURER																											
Burroughs	58	79	3.8	47	11	0	0	3.3	23	33	2	0	2.7	3	35	18	2	2.9	11	34	11	2	2.8	9	31	15	3
Control Data	12	13	3.2	3	8	1	0	3.1	3	7	2	0	2.4	0	6	5	1	3.1	2	8	1	0	2.4	0	4	7	0
Digital Equipment	10	14	3.8	8	2	0	0	3.6	8	1	0	1	3.3	3	7	0	0	3.4	5	4	1	0	3.5	5	5	0	0
Honeywell	64	78	3.2	19	39	6	0	3.2	26	30	5	3	3.0	12	39	11	2	3.2	19	37	8	0	2.8	11	33	19	1
IBM	763	968	3.3	302	402	39	2	3.5	447	266	39	8	3.1	204	435	93	6	3.2	242	414	73	1	3.1	201	417	102	5
NCR	39	44	3.4	17	21	1	0	3.4	16	22	1	0	2.9	6	22	10	0	3.4	20	15	4	0	3.3	14	21	4	0
Singer	9	18	3.6	6	2	1	0	2.9	4	2	1	2	2.7	2	2	5	0	2.4	1	4	2	2	2.4	1	3	4	1
Univac	54	65	3.2	17	31	5	1	3.3	23	25	5	0	2.5	4	25	20	5	3.2	25	22	7	0	3.0	16	26	10	2
Xerox	7	9	3.3	2	5	0	0	3.3	3	3	1	0	2.6	1	2	4	0	3.3	4	0	2	0	3.0	2	2	2	0
Totals for manufacturers other than IBM	253	320	3.4	119	119	14	1	3.3	106	123	17	6	2.8	31	138	73	10	3.2	87	124	36	4	2.9	58	125	61	7
Grand Totals	1,016	1,288	3.4	421	521	53	3	3.5	553	389	56	14	3.0	235	573	166	16	3.2	329	538	109	5	3.1	259	542	163	12

NOTE: All ratings are expressed in terms of number of user responses. The legend is E for Excellent, G for Good, F for Fair, and P for Poor. WA is the Weighted Average, calculated on a scale of 4 for Excellent, 3 for Good, 2 for Fair, and 1 for Poor.

User Ratings of General-Purpose Computer Systems

Computer Manufacturer and Model	Technical Support					Operating Systems					Compilers and Assemblers					Applications Programs					Ease of Conversion					Overall Satisfaction				
	WA	E	G	F	P	WA	E	G	F	P	WA	E	G	F	P	WA	E	G	F	P	WA	E	G	F	P	WA	E	G	F	P
IBM System/3 Model 10	3.1	11	14	8	0	3.4	17	14	2	1	3.5	18	15	1	0	3.1	10	9	3	2	2.9	9	18	2	5	3.5	17	14	2	0
IBM System/3, model unspecified	2.7	2	7	5	1	3.0	2	8	2	0	3.1	2	10	1	0	2.7	0	9	2	1	2.9	1	9	3	0	3.1	3	10	1	0
IBM System/3 Totals	3.0	13	21	13	1	3.3	19	22	4	1	3.3	20	25	2	0	3.0	10	18	5	3	2.9	10	27	5	5	3.4	20	24	3	0
IBM Totals	2.8	118	334	214	36	3.0	150	464	117	9	3.1	176	480	89	6	2.8	53	273	101	27	2.9	130	333	142	40	3.1	155	542	53	2
NCR Century 100	2.4	1	2	3	1	3.0	2	4	0	1	2.9	2	3	1	1	2.5	1	2	2	1	2.8	2	1	3	0	3.0	1	5	1	0
NCR Century 101	2.8	2	1	1	1	3.4	3	4	0	0	3.3	3	3	1	0	3.3	3	3	1	0	3.9	6	1	0	0	3.6	4	3	0	0
NCR Century 200	2.9	3	7	5	0	3.3	5	9	1	0	3.1	4	9	2	0	2.8	1	8	3	0	3.4	8	6	1	0	3.1	2	13	0	0
NCR Century, others	2.5	0	1	1	0	2.0	0	0	2	0	3.0	0	2	0	0	3.0	0	2	0	0	3.0	0	2	0	0	3.0	0	2	0	0
NCR Century Totals	2.7	6	11	10	2	3.2	10	17	3	1	3.2	9	17	4	1	2.9	5	15	6	1	3.4	16	10	4	0	3.2	7	23	1	0
NCR 315	1.9	0	2	3	3	2.4	0	5	1	2	2.5	1	3	3	1	2.6	1	4	2	1	3.4	2	3	0	0	2.9	0	7	1	0
NCR Totals	2.5	6	13	13	5	3.0	10	22	4	3	3.0	10	20	7	2	2.8	6	19	8	2	3.4	18	13	4	0	3.1	7	30	2	0
Singer System Ten	2.0	0	3	2	3	2.3	0	4	4	1	2.7	0	6	3	0	2.3	0	2	4	0	2.3	0	4	2	2	2.8	2	5	0	2
Univac 9200	2.7	0	2	1	0	3.0	0	1	0	0	2.0	0	1	0	1	2.5	0	1	1	0	-	0	0	0	0	3.5	1	1	0	0
Univac 9300	2.3	1	3	4	2	2.5	1	4	4	1	2.8	2	4	4	0	1.9	0	2	2	3	2.7	1	5	2	1	3.0	1	8	1	0
Univac 9400	3.0	1	2	1	0	2.5	0	4	1	1	2.8	0	3	1	0	3.0	0	2	0	0	2.0	0	1	1	1	2.8	0	3	1	0
Univac 9000 Series, others	4.0	1	0	0	0	4.0	1	0	0	0	4.0	1	0	0	0	-	0	0	0	0	4.0	1	0	0	0	4.0	1	0	0	0
Univac 9000 Series Totals	2.6	3	7	6	2	2.8	2	9	4	1	2.8	2	9	4	1	2.2	0	5	3	3	2.6	2	6	3	2	3.1	3	12	2	0
Univac Series 70/45	2.7	1	5	1	2	2.8	3	2	3	1	3.2	4	3	2	0	2.8	1	3	0	1	2.8	2	3	4	0	3.0	2	5	2	0
Univac Series 70, others	3.0	1	3	1	0	2.4	0	3	1	1	2.6	0	3	2	0	2.0	0	0	2	0	3.0	2	0	2	0	2.8	1	1	2	0
Univac 1106	2.8	2	4	2	1	3.6	6	4	0	0	3.1	3	5	2	0	3.0	2	4	2	0	2.6	2	3	1	2	3.2	3	6	1	0
Univac 1108	2.0	0	0	1	0	3.3	1	2	0	0	3.3	1	2	0	0	2.5	0	1	1	0	2.7	0	2	1	0	2.7	0	2	1	0
Univac 1110	3.7	2	1	0	0	3.3	1	2	0	0	3.3	1	2	0	0	3.3	1	2	0	0	3.3	1	2	0	0	3.7	2	1	0	0
Univac 1100 Series Totals	2.9	4	5	3	1	3.5	8	8	0	0	3.2	5	9	2	0	3.0	3	7	3	0	2.8	3	7	2	2	3.2	5	9	2	0
Univac 490 Series	2.7	1	2	3	0	2.5	0	3	3	0	2.3	0	2	4	0	2.3	0	2	4	0	2.0	0	2	1	2	3.0	0	6	0	0
Univac Totals	2.7	10	22	14	5	2.9	13	25	11	3	2.9	11	26	14	1	2.5	4	17	12	7	2.7	9	18	12	6	3.1	11	33	8	0
Xerox Sigma Series	2.8	2	1	3	0	3.3	2	4	0	0	3.5	3	3	0	0	2.8	1	3	0	1	3.0	1	2	1	0	3.3	2	4	0	0
Xerox, others	2.0	0	0	1	0	3.0	0	1	0	0	3.0	0	1	0	0	3.0	0	1	0	0	3.0	0	1	0	0	3.0	0	1	0	0
Xerox Totals	2.7	2	1	4	0	3.3	2	5	0	0	3.4	3	4	0	0	2.8	1	4	0	1	3.0	1	3	1	0	3.3	2	5	0	0
RECAP OF TOTALS BY MANUFACTURER																														
Burroughs	2.7	7	28	18	3	3.7	45	10	3	0	3.5	32	24	2	0	2.5	5	15	17	5	3.1	17	27	8	3	3.3	22	31	4	0
Control Data	2.6	1	6	4	1	2.5	0	7	4	1	3.2	3	8	1	0	2.5	0	4	4	0	2.8	0	8	2	1	2.8	0	9	3	0
Digital Equipment	3.1	2	7	1	0	3.5	5	5	0	0	3.4	4	6	0	0	2.7	1	4	1	1	3.2	4	3	2	0	3.7	7	3	0	0
Honeywell	2.5	8	22	24	8	2.7	9	23	23	4	2.9	11	31	16	2	2.3	3	15	18	8	2.9	12	25	9	4	2.9	9	40	12	2
IBM	2.8	118	334	214	36	3.0	150	464	117	9	3.1	176	480	89	6	2.8	53	273	101	27	2.9	130	333	142	40	3.1	155	542	53	2
NCR	2.5	6	13	13	5	3.0	10	22	4	3	3.0	10	20	7	2	2.8	6	19	8	2	3.4	18	13	4	0	3.1	7	30	2	0
Singer	2.0	0	3	2	3	2.3	0	4	4	1	2.7	0	6	3	0	2.3	0	2	4	0	2.3	0	4	2	2	2.8	2	5	0	2
Univac	2.7	10	22	14	5	2.9	13	25	11	3	2.9	11	26	14	1	2.4	4	17	12	7	2.7	9	18	12	6	3.1	11	33	8	0
Xerox	2.7	2	1	4	0	3.3	2	5	0	0	3.4	3	4	0	0	2.8	1	4	0	1	3.0	1	3	1	0	3.3	2	5	0	0
Totals for manufacturers other than IBM	2.6	36	102	80	25	3.0	84	101	49	12	3.1	74	125	43	5	2.5	20	80	64	24	2.9	61	101	40	16	3.1	60	156	29	4
Grand Totals	2.7	154	436	294	61	3.0	234	565	166	21	3.1	250	605	132	11	2.7	73	353	165	51	2.9	191	434	182	56	3.1	215	698	82	6

User Ratings of General-Purpose Computer Systems

▷ tions programs supplied by the mainframe manufacturers. They also revealed their displeasure with the quality of technical support provided by most mainframe manufacturers by giving that category the highest percentage of negative (Fair or Poor) responses of any category in the survey. Although the great majority of these computer users described themselves as satisfied with the reliability of their mainframes, only 79% of them gave a Good or Excellent rating to their peripheral devices for reliability. Finally, no manufacturer scored an average of good (3.0) or better in all 11 performance categories, indicating that from the point of view of the users, the products and services provided by all of the major computer manufacturers could stand improvement.

And Some Well-Deserved Accolades

There were some outstanding performances described in the survey, however, and even considering the relatively small sample sizes for some product lines, the accomplishments of some of the computer manufacturers deserve special notice. Burroughs Corporation, for example, scored an outstanding 3.7 rating for its operating systems and 3.5 for its compilers and assemblers in comparison to overall average ratings of 3.0 and 3.1, respectively, for these two categories. Xerox Corporation and Digital Equipment Corporation also received ratings well above the overall averages in these two software categories.

Three manufacturers—Burroughs, Digital Equipment Corporation, and Xerox—were given ratings above the average for all computer systems in Overall Satisfaction, with the DECsystem-10 leading all the others with a 3.7 rating in this “bottom line” category. NCR Corporation also achieved some notable successes receiving above-average ratings for its maintenance service (an area where computer users often grumble), for its applications programs (where users often are displeased with the generality of the programs and equally displeased if none are provided), and for ease of conversion (another category in which very few bouquets were thrown).

Since IBM computer systems comprised some 75% of the total computer systems represented in our survey, their users' responses naturally had a strong effect on the overall ratings for all computer systems. In addition, we

TABLE 6: OVERALL PERFORMANCE RATINGS

	Excel- lent	Good	Fair	Poor
Ease of operation	41%	51%	5%	0%
Reliability of mainframe	54%	38%	6%	1%
Reliability of peripherals	23%	56%	16%	2%
Maintenance service:				
Responsiveness	32%	53%	11%	1%
Effectiveness	26%	53%	16%	1%
Technical support	15%	43%	29%	6%
Operating system	23%	56%	16%	2%
Compilers and assemblers	25%	60%	13%	1%
Applications programs	7%	35%	16%	5%
Ease of conversion	19%	43%	18%	6%
Overall satisfaction	21%	69%	8%	1%

were curious to see how all the non-IBM computer systems stacked up against the manufacturer that controls the largest chunk of the general-purpose computer market. All in all, most of the “others” turned in a pretty creditable performance. In fact, all of the non-IBM systems lumped together equalled IBM's score in the user ratings for Overall Satisfaction. Since the non-IBM systems collectively received lower ratings than their IBM counterparts in five other categories, at first glance it doesn't seem to add up. We can only conclude that in many cases users are willing to discount slight imperfections in some areas in order to avail themselves of other advantages offered by the smaller computer manufacturers, such as lower cost, specialized data processing capabilities, or expertise in selected industry sectors.

Thank You

Datapro wishes to thank all of our subscribers for responding so enthusiastically to our first major survey of user experience with general-purpose computer systems. Without your participation, it could not have been a success, and we hope that this compendium of the opinions of your colleagues will be of significant value to you. We are looking forward to hearing from you again next year.□