The Measurement of Customer Satisfaction

INPUT®

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THE MEASUREMENT OF CUSTOMER SATISFACTION

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ABSTRACT

As customer service becomes increasingly market oriented, customer satisfaction surveys are becoming even more important. Previous INPUT studies have shown that the long-term route to profitable customer services is through improving satisfaction.

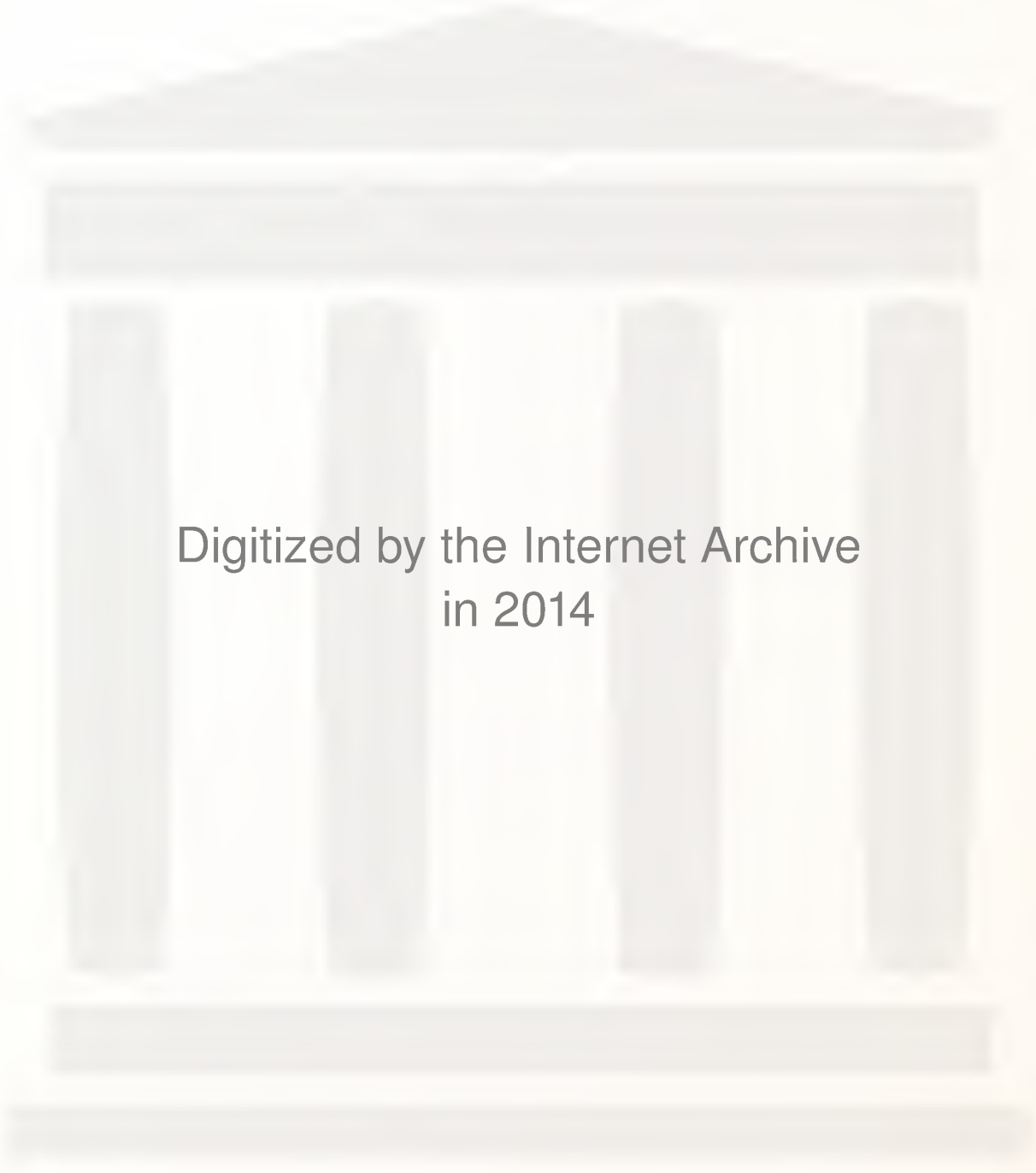
INPUT's latest European report, The Measurement of Customer Satisfaction, examines the benefits to be gained from customer satisfaction surveys and shows how the results of such surveys can be analysed and data interpreted to focus attention on the real problem.

This report contains 47 pages, including 32 exhibits.

THE MEASUREMENT OF CUSTOMER SATISFACTION

CONTENTS

EXHIBITS



I INTRODUCTION

- The purpose of this report, part of INPUT's Customer Service Program, is to examine the benefits to be gained from effective measurement of customer satisfaction. It explores the concepts and techniques of measurement and shows examples of customer satisfaction charts derived from a number of INPUT surveys.

- The report draws on INPUT's many years of experience in measuring customer satisfaction and interpreting the results, and has drawn from surveys conducted in 1984 and 1985. The data used, although "live," is intended to be indicative and does not therefore cover each individual market.

- A distinction is also drawn between what users describe as their ideal wants and their real need, which is, in many cases, a lower level of service than their ideal and a level which can be more profitably attained.

II THE IMPORTANCE OF MEASUREMENT

A. WHY MEASURE SATISFACTION?

- The current issues in customer service, particularly due to its increasingly competitive nature, are breaking down traditional 'brand loyalties,' with the result that users are increasingly ready to satisfy their service needs from a wider range of suppliers. As is said in Exhibit II-1, maintenance is now becoming a commodity.

- Price, although often quoted by users as the primary reason for changing suppliers, is not the most important criterion. Users put service quality first, with price only becoming an issue once the required level of service has been achieved. It is vital that service vendors know precisely what is expected of them by their customers.

- Maintenance is a negative activity in the eyes of the user. Service, on the other hand, can be marketed as a positive activity. In both cases, it is important to establish the criteria against which performance can--and will--be measured. In this way vendors can identify problems before they become crises, and users will have clear facts on which to base their discussions with vendors.

- Improving service quality can be an end it itself, but more significantly, it can be a way to improving profits. Measuring the service provided is an important

EXHIBIT II-1

MAINTENANCE BECOMING A COMMODITY

- Sharp Increases in Reliability Encourage Users to Think of Maintenance as a Declining Need
- Service as "Commodity" Means:
  - Brand Name Loyalty Decreases
  - Service Market Opens to Competition which in Turn Causes. . .
  - Pressure on the Price of Maintenance
- Equipment Manufacturers/Service Vendors Must:
  - Distance Themselves from "Maintenance Only" Image
  - Develop Image of Total Service Company
  - Integrate all Post-Sale Services

aspect of that process, as without measurement, it is difficult to ensure the right product is being delivered (see Exhibit II-2).

- With user views about service pricing hardening--that is, with users feeling increasingly that they are not receiving good value for money--providing a measured service is one way in which users can be made aware of the quality of service that is being provided. Exhibit II-3 highlights the difference between user views of value compared to vendor views. The gap between user and vendor views has serious implications:

  - Users may be tempted to buy apparently cheaper service alternatives.

  - User expectations may be higher than they should be.

  - Vendor price flexibility is limited.

B. FACTORS TO MEASURE

1. INTRODUCTION

- The two key elements in measuring the effectiveness of customer service are (1) using a factor which can be measured in a mutually agreeable way, and (2) being sure this factor is important to the user.

- A previous INPUT study, User Requirements in Customer Service, showed the key service elements to be:

  - System reliability.

  - System availability.

  - Response time.

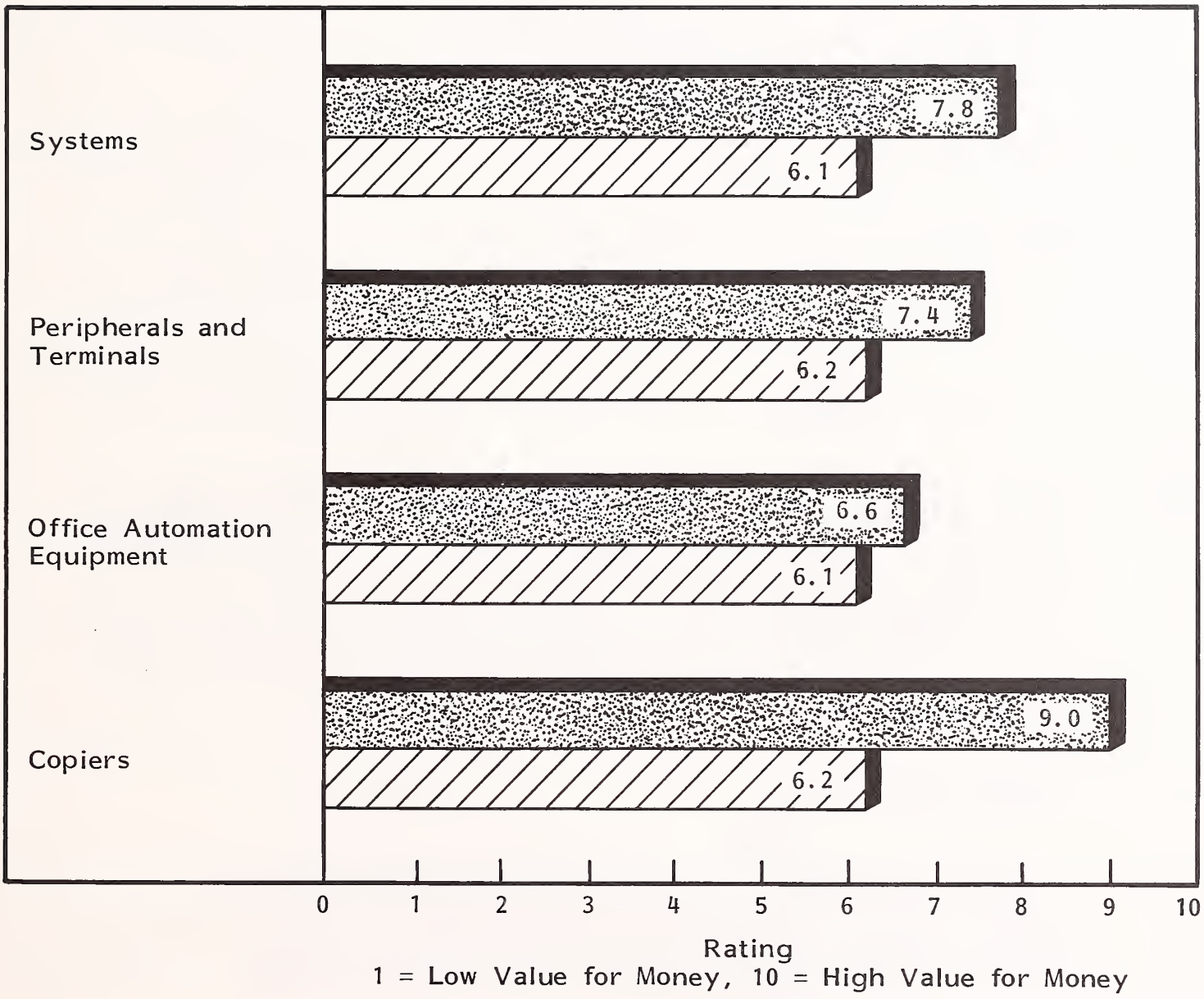
EXHIBIT II-2

WHY MEASURE SATISFACTION?

- Effective CS Measurement Ensures:
  - Customer Satisfaction
  - Optimum Resource Utilisation
- Resulting in:
  - Profitable Revenue Growth

EXHIBIT II-3

SERVICE VALUE - USER AND VENDOR VIEWS COMPARED



- Each of these factors can be measured at a global level, but there are a number of sub-factors which must also be taken into account if vendors are to optimise their support capability.

  - Service parts availability ratio.

  - Effectiveness of preventive maintenance.

  - Fixing faults at first call.

2. RELIABILITY

- System reliability can be measured in various ways:

  - Mean time between failures.

  - System availability.

- Users surveyed by INPUT had, in general, no clearly defined method of measuring reliability, but used system availability as the key yardstick. Nevertheless, users do have an intuitive view of product reliability. As can be seen in Exhibit II-4, these views correspond roughly with vendor views. Only in the case of word processors and copiers is there any significant divergence in view.

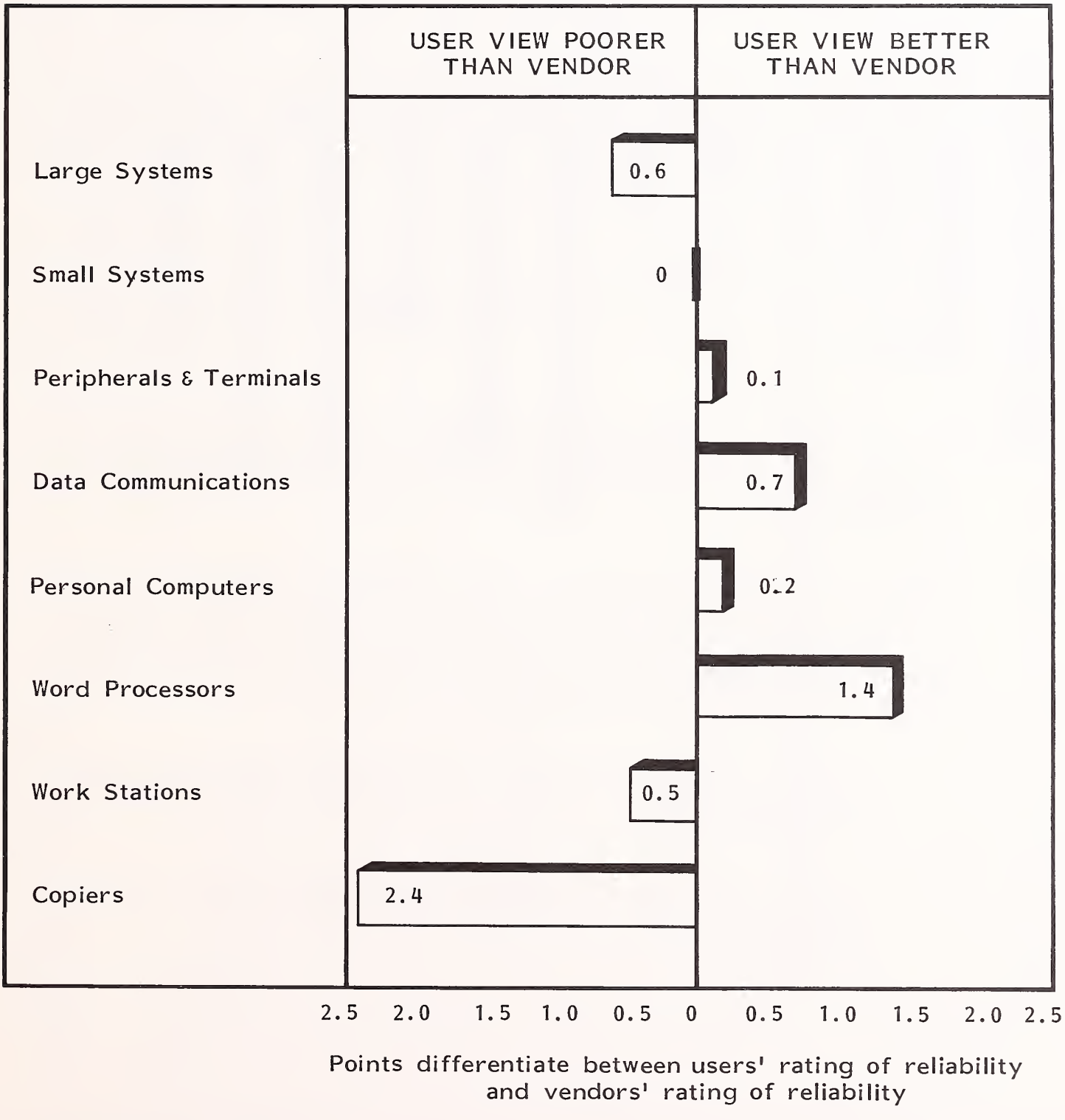
3. SYSTEM AVAILABILITY

- Reliability, as discussed previously, is based essentially on perception rather than any scientific measurement. System availability, therefore, becomes a more critical factor since it is measured by both users and vendors.

  - Having said that, several users INPUT telephoned admitted that their measurement is not always accurate and that frequently they rely on the vendors' records.

EXHIBIT II-4

USER AND VENDOR VIEWS OF PRODUCT RELIABILITY



- Users have two levels of need. At the highest level is their ideal target--availability, but there is a second, lower level--the minimum acceptable level of availability. A comparison of the 1984 results is shown in Exhibit II-5.

  - In almost every case, vendors are failing to meet the users' ideal standard, but are exceeding the minimum acceptable performance.

- Vendors are therefore faced with two options. First, they can continue to improve system availability, involving as it does improving inherent product reliability, response time, and repair turnaround time for both hardware and software products. Steadily improving product reliability, which in turn improves system availability, is also negatively impacting user views about service value. The alternative is to educate users to think in terms of their real availability need rather than the more nebulous ideal target currently considered.

- The importance of system availability is shown in Exhibit II-6, with over half the users surveyed rating system availability as the most important factor in customer support.

- Exhibit II-7 demonstrates that user system availability requirements are, at the ideal level, more demanding than vendors are currently able to deliver. By comparison, current availability levels are above the minimum acceptable to users. The two exceptions to this are:

  - Data communications equipment, where vendor performance already meets the user ideal.

  - Copiers, where current availability falls below the user minimum acceptable level.

EXHIBIT II-5

SYSTEM AVAILABILITY - ACTUAL COMPARED TO IDEAL

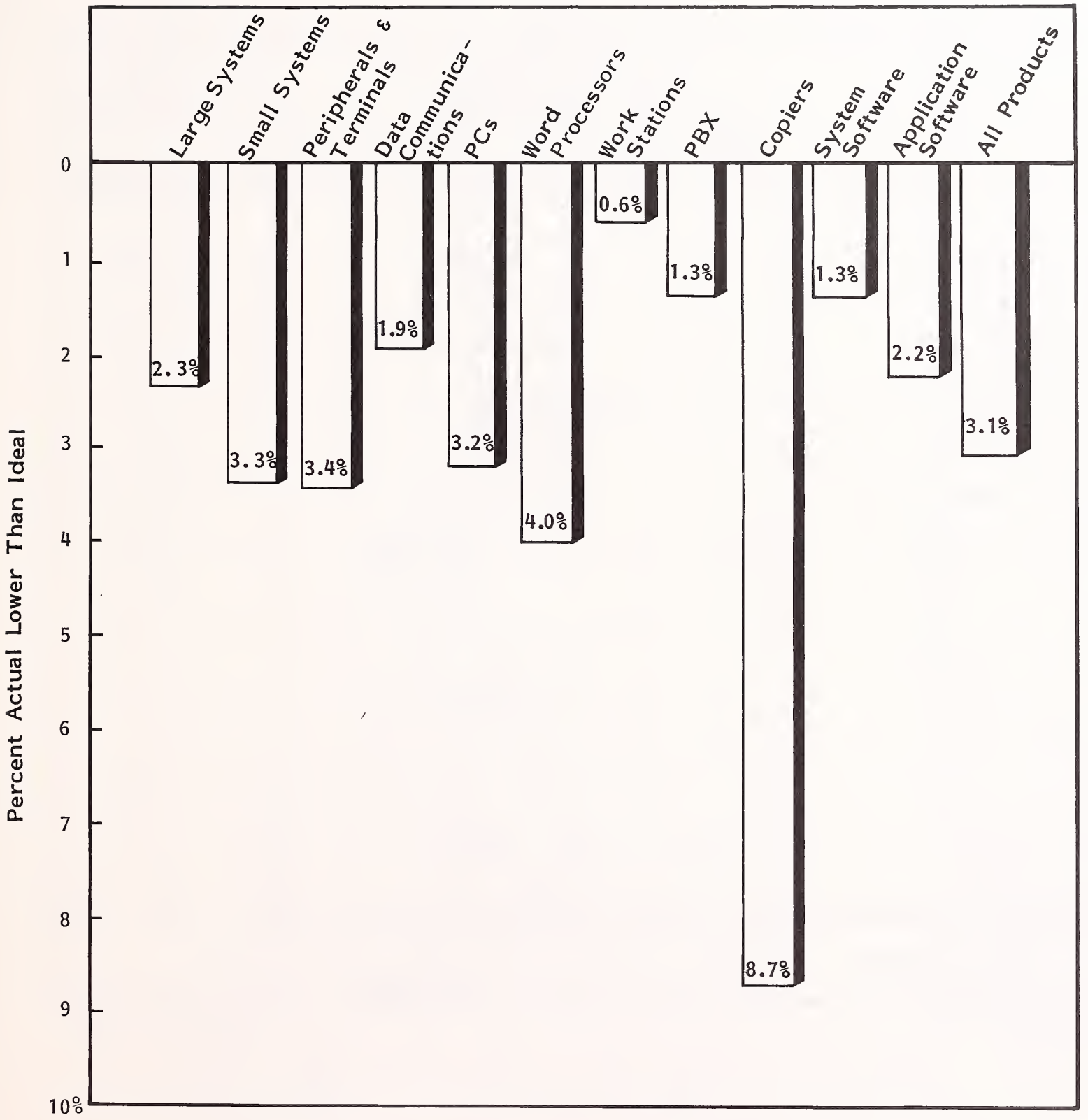


EXHIBIT II-6

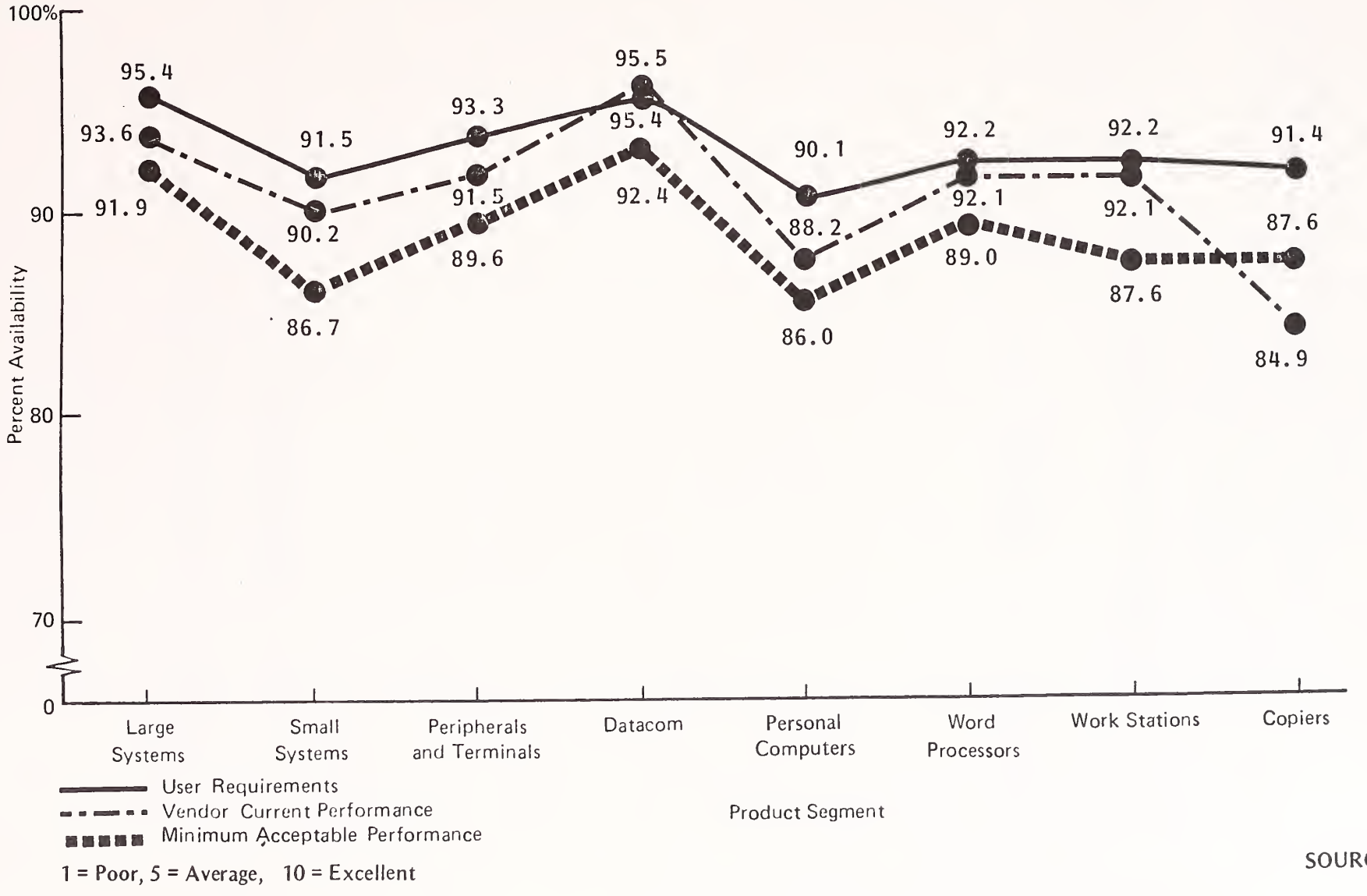
SYSTEM AVAILABILITY - USER RANKING OF IMPORTANCE

	PERCENT OF USERS RANKING RESPONSE TIME AS:					TOTAL PERCENT OF USERS	
	Most Important Factor	Important Factor	Neutral	Relatively Unimportant	Least Important	Important	Unimportant
Large Systems	71.3%	28.7%	-	-	-	100.0%	NIL
Small Systems	58.3	36.2	2.5	2.5	0.5	94.5	3.0
Peripherals and Terminals	46.2	45.8	3.0	4.7	0.3	92.0	5.0
Data Communications	50.6	47.0	0.8	1.6	-	97.6	1.6
Personal Computers	52.6	38.7	5.1	3.6	-	91.3	3.6
Word Processors	57.6	39.4	1.5	1.5	-	97.0	1.5
Work Station	65.0	30.0	5.0	-	-	95.0	NIL
Copiers	57.4	37.0	-	5.6	-	94.4	5.6
PBX	82.9	17.1	-	-	-	100.0	NIL
Total Hardware	56.2	38.4	2.3	2.9	0.2	94.6	3.1

Source: INPUT Survey

EXHIBIT II-7

EUROPEAN USER AND VENDOR RATINGS OF SERVICE QUALITY
SYSTEM AVAILABILITY: VENDOR PERFORMANCE AND USER REQUIREMENTS



SOURCE: INPUT Survey

- Examples of the way in which comparative data can be used are shown in Exhibits II-8 through II-15. Exhibit II-8 compares the success rates of a number of vendors in providing the desired service level, while Exhibit II-9 shows the proportion of users who are dissatisfied with the level of service. The key benefit of such analysis is that it identifies areas where effort can provide real improvement and can help to eliminate effort which will satisfy few, if any, additional customers.

- Exhibits II-16 through II-26 show similar analyses for response times.

EXHIBIT II-8

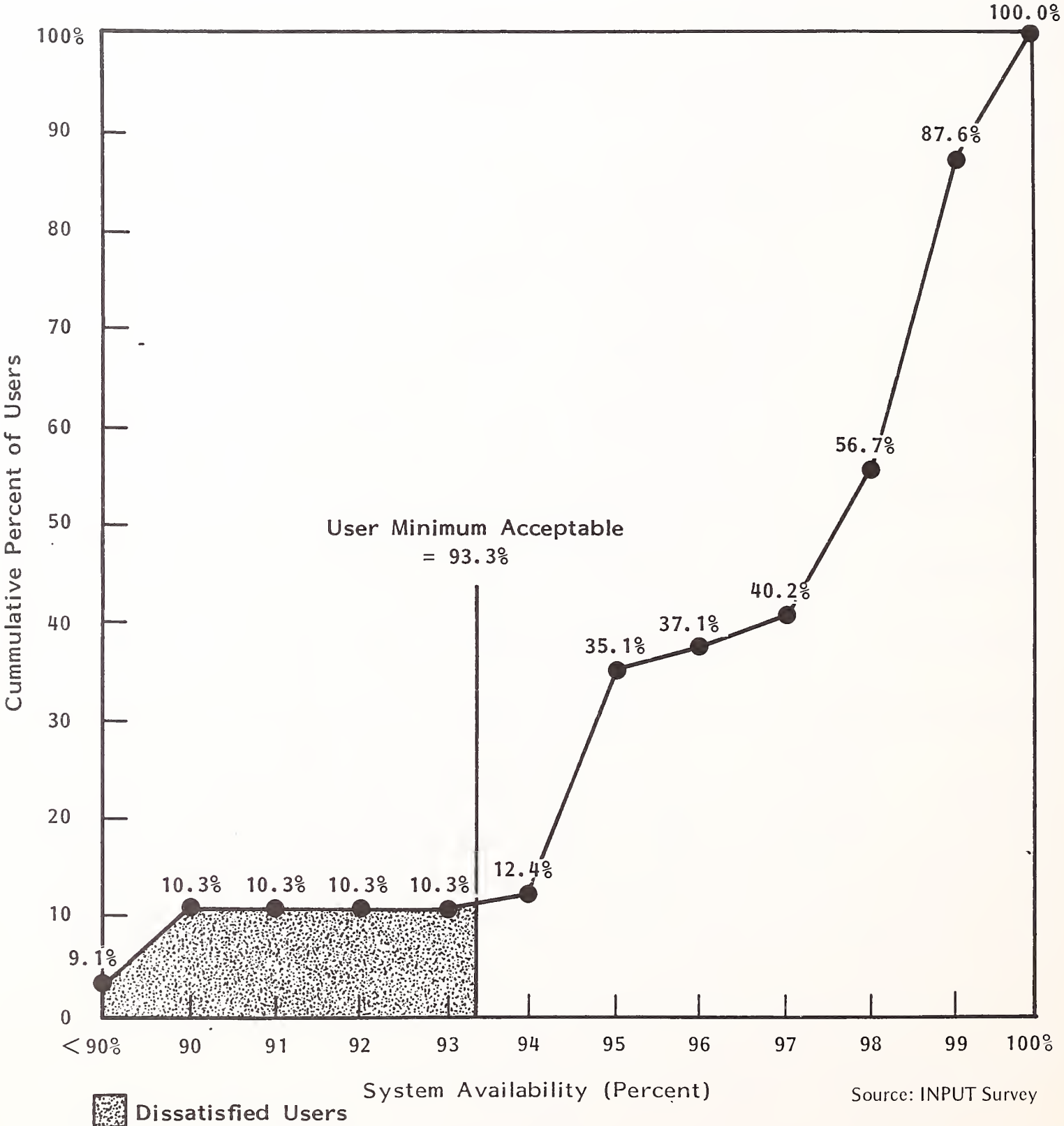
LARGE SYSTEMS AVAILABILITY - U.K.

MANUFACTURER	Number of Observations	EQUIPMENT AVAILABILITY (Percent)			PERCENT OF USERS RECEIVE	
		Current	Ideal	Minimum Acceptable	Ideal	Minimum Acceptable
ICL	27	95.3%	96.5%	92.9%	51.9%	88.9%
IBM	27	97.0	96.8	93.6	55.5	96.3
DEC	7	96.6	95.3	88.9	57.1	85.7
Burroughs	7	96.4	98.0	93.9	42.9	85.7
Honeywell	11	96.8	96.3	93.4	36.4	100.0
Sperry	3	99.6	96.7	96.7	100.0	100.0
Hewlett-Packard	4	97.8	98.3	96.7	50.0	75.0
Other	12	96.8	97.6	94.2	50.0	75.0
Total	98	96.5%	96.9%	93.3%	52.6%	91.8%

Source: INPUT Survey

EXHIBIT II-9

U.K. LARGE SYSTEMS
USER SATISFACTION WITH AVAILABILITY



Source: INPUT Survey

EXHIBIT II-10

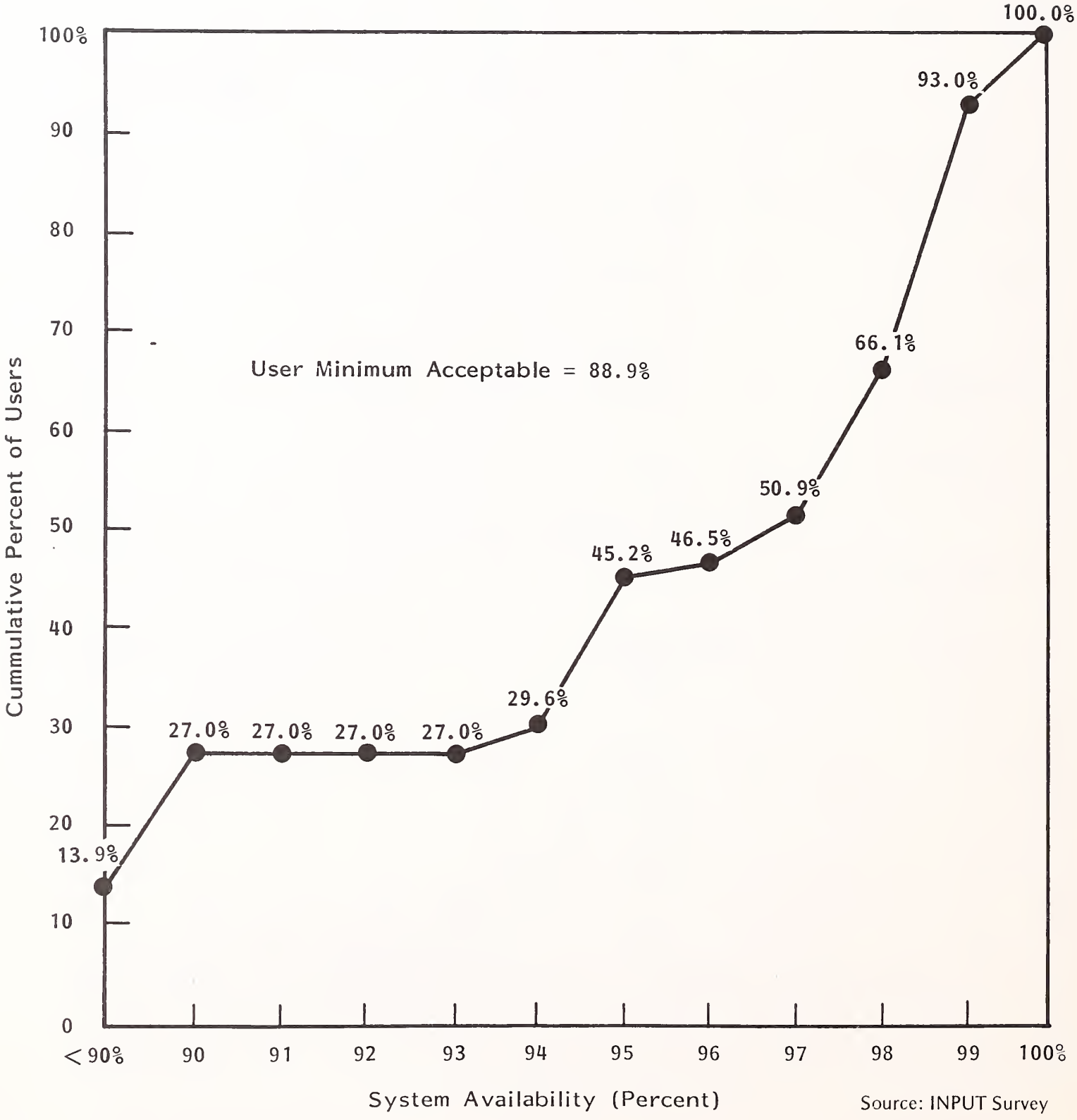
PERIPHERAL AND TERMINAL AVAILABILITY - U.K.

MANUFACTURER	Number of Observations	EQUIPMENT AVAILABILITY (Percent)			PERCENT OF USERS RECEIVE	
		Current	Ideal	Minimum Acceptable	Ideal	Minimum Acceptable
IBM	49	98.0%	97.4%	96.9%	67.3%	95.6%
ICL	47	91.5	94.6	89.8	53.2	78.7
Honeywell	18	93.8	91.6	89.2	61.1	83.3
Memorex	15	92.3	91.3	89.4	73.3	93.3
DEC	13	96.1	91.5	86.7	92.3	100.0
Hewlett-Packard	9	96.8	95.7	94.7	88.9	88.9
Burroughs	8	95.8	96.1	93.9	75.0	100.0
Systime	8	94.1	94.1	92.2	100.0	100.0
STC	8	90.1	89.9	88.4	75.0	87.5
NCR	6	90.5	91.8	86.7	66.7	100.0
Philips	5	88.6	89.0	84.6	80.0	80.0
Other	53	84.6	83.7	79.4	64.2	90.6
Total	239	92.1%	91.9%	88.9%	67.8%	90.0%

Source: INPUT Survey

EXHIBIT II-11

U.K. PERIPHERALS AND TERMINALS
USER SATISFACTION WITH AVAILABILITY



Source: INPUT Survey

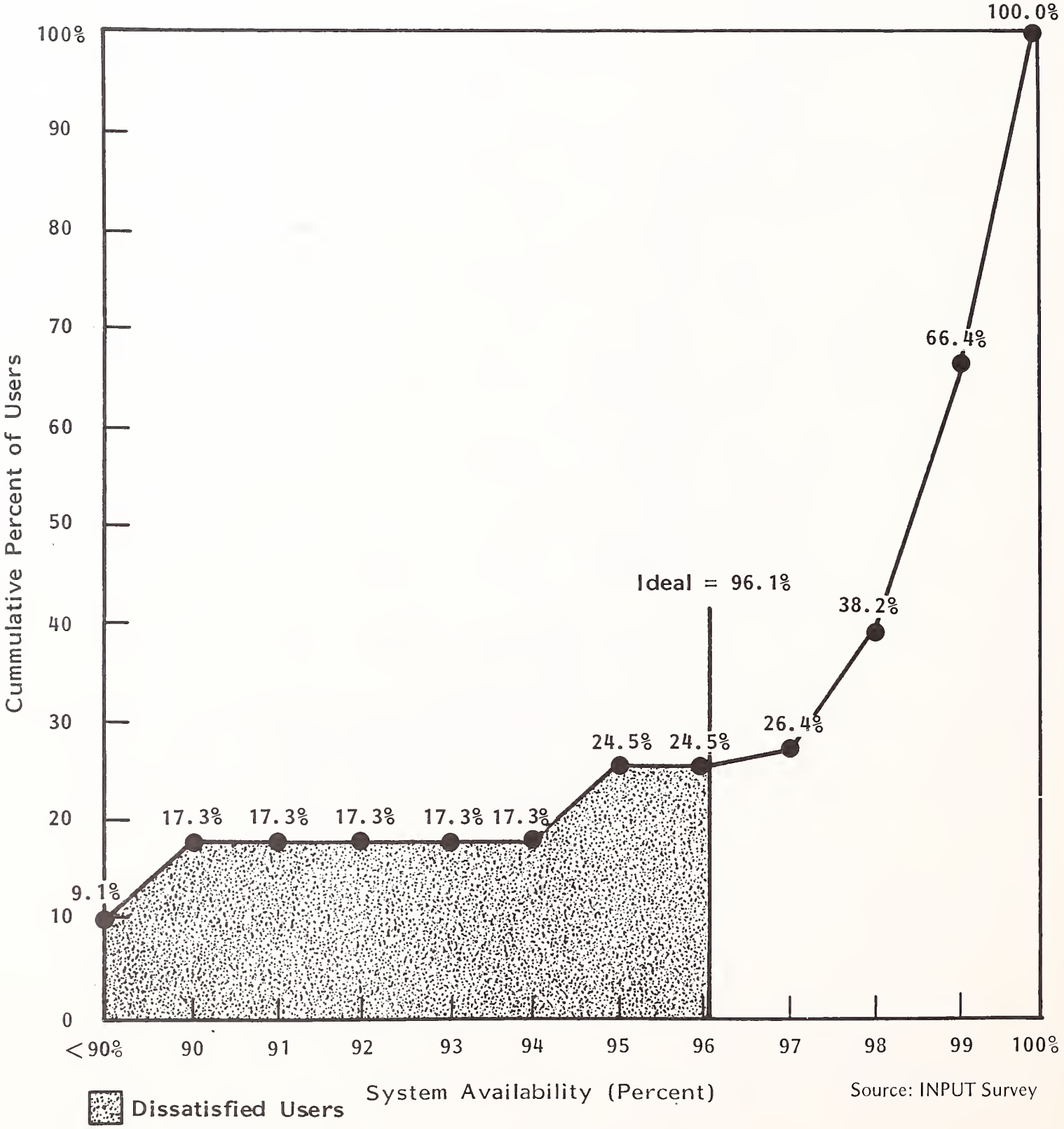
EXHIBIT II-12

DATA COMMUNICATIONS EQUIPMENT AVAILABILITY

MANUFACTURER	Number of Observations	EQUIPMENT AVAILABILITY (Percent)			PERCENT OF USERS RECEIVE	
		Current	Ideal	Minimum Acceptable	Ideal	Minimum Acceptable
Racal	28	96.2%	97.4%	93.6%	71.4%	96.4%
British Telecom	16	98.7	98.2	95.4	68.8	93.8
Case	12	97.9	98.8	97.5	83.3	83.3
Micom	8	96.7	96.6	95.1	87.5	87.5
IBM	5	89.4	88.0	87.0	100.0	100.0
Codex	4	98.8	98.5	97.8	75.0	75.0
Thorn EMI	4	99.2	100.0	98.0	25.0	100.0
Other	33	92.0	93.4	92.3	63.6	87.9
Total	110	95.4%	96.1%	94.0%	70.9%	90.9%

EXHIBIT II-13

DATA COMMUNICATIONS EQUIPMENT
USER SATISFACTION WITH AVAILABILITY



Source: INPUT Survey

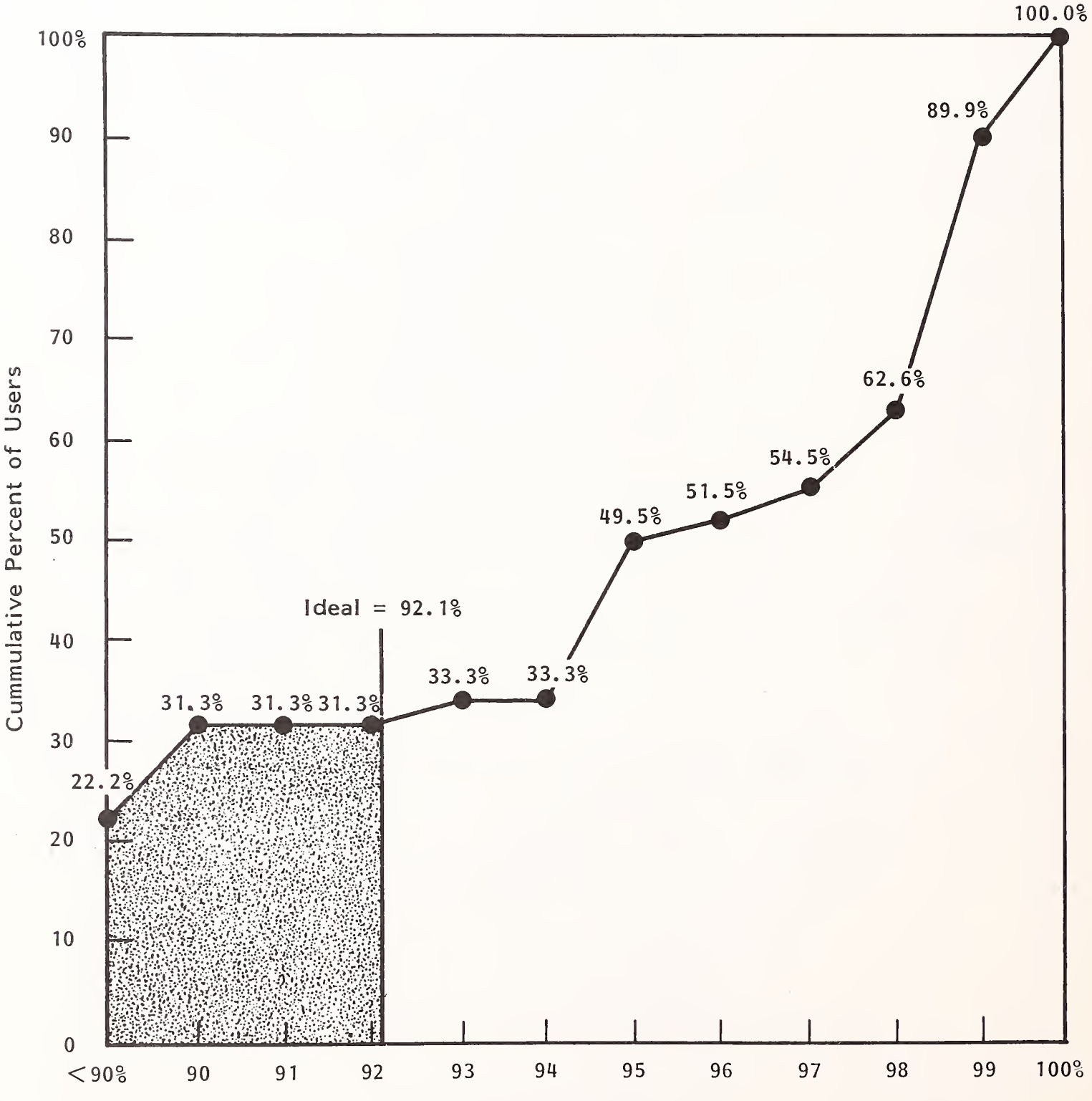
EXHIBIT II-14

OFFICE AUTOMATION EQUIPMENT AVAILABILITY

MANUFACTURER	Number of Observations	EQUIPMENT AVAILABILITY (Percent)			PERCENT OF USERS RECEIVE	
		Current	Ideal	Minimum Acceptable	Ideal	Minimum Acceptable
IBM	17	96.2%	93.7%	91.0%	64.7%	76.5%
ICL	12	93.0	96.0	92.6	58.3	83.3
Apple	8	95.5	90.8	89.4	62.5	75.0
ACT	7	99.0	92.3	89.4	57.1	100.0
Wang	7	97.0	96.7	94.0	57.1	100.0
Hewlett-Packard	4	81.8	80.5	77.8	75.0	75.0
Philips	4	93.2	92.5	82.5	75.0	75.0
Other	40	88.2	90.7	86.6	62.5	80.0
Total	99	92.1%	92.1%	88.5%	62.6%	81.8%

EXHIBIT II-15

OFFICE AUTOMATION EQUIPMENT
USER SATISFACTION WITH AVAILABILITY



Source: INPUT Survey

EXHIBIT II-16

RESPONSE TIME - USER RANKING OF IMPORTANCE

	PERCENT OF USERS RANKING RESPONSE TIME AS:					TOTAL PERCENT OF USERS	
	Most Important Factor	Important Factor	Neutral	Relatively Unimportant	Least Important	Important	Unimportant
Large Systems	8.6%	90.3%	-	1.1%	-	98.9%	1.1%
Small Systems	8.8	86.8	2.5%	1.9	-	95.6	1.9
Peripherals and Terminals	9.0	83.3	4.3	2.7	0.7%	92.3	3.4
Data Communications	6.2	88.4	1.5	3.9	-	94.6	3.9
Personal Computers	3.6	85.0	6.4	4.3	0.7	88.6	5.0
Word Processors	8.6	87.1	2.9	1.4	-	95.7	1.4
Work Stations	10.0	75.0	10.0	-	5.0	85.0	5.0
Copiers	8.4	81.4	1.7	8.5	-	89.8	8.5
PBX	16.6	77.8	-	5.6	-	94.4	5.6
Total Hardware	8.0%	85.2%	3.3%	3.1%	0.4%	93.2%	3.5%

EXHIBIT II-17

RESPONSE TIMES - CURRENT SERVICE EFFECTIVENESS
AVERAGES

	Number of Observations	RESPONSE TIME			PERCENT OF USERS RECEIVE	
		Current	Ideal	T.O.P.*	Ideal	T.O.P.*
Large Systems	83	2.6	1.8	4.4	43.3%	92.8%
Small Systems	152	4.1	2.7	5.7	36.2	87.5
Peripherals and Terminals	97	5.1	3.3	7.9	45.4	87.6
Data Communications	75	5.7	2.5	6.5	16.0	74.7
Personal Computers	69	9.6	4.2	12.6	27.5	73.9
Word Processors	37	4.1	2.6	6.1	29.7	91.9
Copiers	34	5.0	3.0	8.9	32.4	88.2

*"Threshold of Pain" = Longest delay acceptable to users

EXHIBIT II-18

RESPONSE TIMES - CURRENT SERVICE EFFECTIVENESS
STANDARD DEVIATION

	Number of Observations	RESPONSE TIME		
		Current	Ideal	T.O.P.*
Large Systems	83	1.44	1.40	3.46
Small Systems	152	4.70	2.37	3.89
Peripherals and Terminals	97	4.43	3.98	8.18
Data Communications	75	6.01	1.91	6.85
Personal Computers	69	9.39	6.79	12.82
Word Processors	37	2.01	2.00	3.88
Copiers	34	3.37	3.31	9.47

*"Threshold of Pain" = Longest delay acceptable to users.

EXHIBIT II-19

RESPONSE TIMES: CURRENT SERVICE EFFECTIVENESS
LARGE SYSTEMS AVERAGES

	Number of Observations	RESPONSE TIME			PERCENT OF USERS RECEIVE	
		Current	Ideal	T.O.P.*	Ideal	T.O.P.*
Honeywell	7	2.2	1.8	4.1	57.1	85.7
ICL	12	2.4	1.7	3.8	41.7%	91.7%
DEC	17	3.7	2.8	7.3	35.3	100.0
IBM	22	2.4	1.6	3.0	30.4	78.3

*"Threshold of Pain" = Longest delay acceptable to users.

EXHIBIT II-20

RESPONSE TIMES: CURRENT SERVICE EFFECTIVENESS
LARGE SYSTEMS STANDARD DEVIATION

	Number of Observations	RESPONSE TIME		
		Current	Ideal	T.O.P.*
Honeywell	7	0.99	1.06	2.70
ICL	12	1.40	0.96	2.05
DEC	17	1.72	1.98	5.65
IBM	22	1.03	0.48	1.50

*"Threshold of Pain" = Longest delay acceptable to users.

EXHIBIT II-21

RESPONSE TIMES: CURRENT SERVICE EFFECTIVENESS
SMALL SYSTEMS AVERAGES

	Number of Observations	RESPONSE TIME			PERCENT OF USERS RECEIVE	
		Current	Ideal	T.O.P.*	Ideal	T.O.P.*
DEC	32	4.8	3.2	5.9	53.1%	87.5%
Honeywell	8	3.8	2.3	4.5	37.5	75.0
ICL	12	3.9	2.1	4.9	33.3	75.0
IBM	22	3.3	1.9	6.2	18.2	90.9
Data General	12	4.2	1.9	6.0	16.7	100.0

*"Threshold of Pain" = Longest delay acceptable to users.

EXHIBIT II-22

RESPONSE TIMES: CURRENT SERVICE EFFECTIVENESS
SMALL SYSTEMS STANDARD DEVIATION

	Number of Observations	RESPONSE TIME		
		Current	Ideal	T.O.P.*
DEC	32	6.70	2.02	3.86
Honeywell	8	3.32	2.32	2.55
ICL	12	2.90	1.85	2.40
IBM	22	1.65	1.69	4.81
Data General	12	2.30	1.04	3.29

*"Threshold of Pain" = Longest delay acceptable to users.

EXHIBIT II-23

RESPONSE TIMES: CURRENT SERVICE EFFECTIVENESS
PERIPHERALS AND TERMINALS AVERAGE

	Number of Observations	RESPONSE TIME			PERCENT OF USERS RECEIVE	
		Current	Ideal	T.O.P.*	Ideal	T.O.P.*
Hewlett-Packard	8	9.0	7.6	16.9	75.0	100.0
DEC	24	5.6	4.5	10.0	54.2	91.7
Honeywell	9	4.4	1.7	6.3	44.4	66.7
IBM	27	4.3	2.4	6.5	37.0%	81.4%
ICL	10	3.8	1.6	3.7	20.0	70.0

*"Threshold of Pain" = Longest delay acceptable to users.

EXHIBIT II-24

RESPONSE TIMES: CURRENT SERVICE EFFECTIVENESS
PERIPHERALS AND TERMINALS STANDARD DEVIATION

	Number of Observations	RESPONSE TIME		
		Current	Ideal	T.O.P.*
Hewlett-Packard	8	10.91	10.91	19.14
DEC	24	3.65	2.76	7.97
Honeywell	9	4.00	0.25	1.00
IBM	27	2.77	1.77	4.03
ICL	10	2.14	0.47	1.85

*"Threshold of Pain" = Longest delay acceptable to users.

EXHIBIT II-25

RESPONSE TIMES: CURRENT SERVICE EFFECTIVENESS
DATA COMMUNICATIONS EQUIPMENT AVERAGES

	Number of Observations	RESPONSE TIME			PERCENT OF USERS RECEIVE	
		Current	Ideal	T.O.P.*	Ideal	T.O.P.*
British Telecom	8	6.0	1.8	4.5	25.0	75.0
Racal	15	2.7	1.8	4.3	20.0%	86.7%
CASE	11	8.4	3.0	7.2	9.1	81.8

*"Threshold of Pain" = Longest delay acceptable to users.

EXHIBIT II-26

RESPONSE TIMES: CURRENT SERVICE EFFECTIVENESS
DATA COMMUNICATIONS EQUIPMENT STANDARD DEVIATION

	Number of Observations	RESPONSE TIME		
		Current	Ideal	T.O.P.*
British Telecom	8	6.87	1.00	2.24
Racal	15	1.00	0.98	2.27
CASE	11	8.18	2.17	6.32

*"Threshold of Pain" = Longest delay acceptable to users.

III USER PERCEPTIONS OF SATISFACTORY SERVICE

A. IMPORTANCE OF SERVICE CRITERIA

- When measuring customer satisfaction, it is important to ensure that the relative importance of the several service elements being considered is established. When putting together the final action plan, it will then be possible to focus attention on the most important areas, and scarce resources are not wasted on items which will not materially improve the users' satisfaction.

- Two main approaches can be adopted.

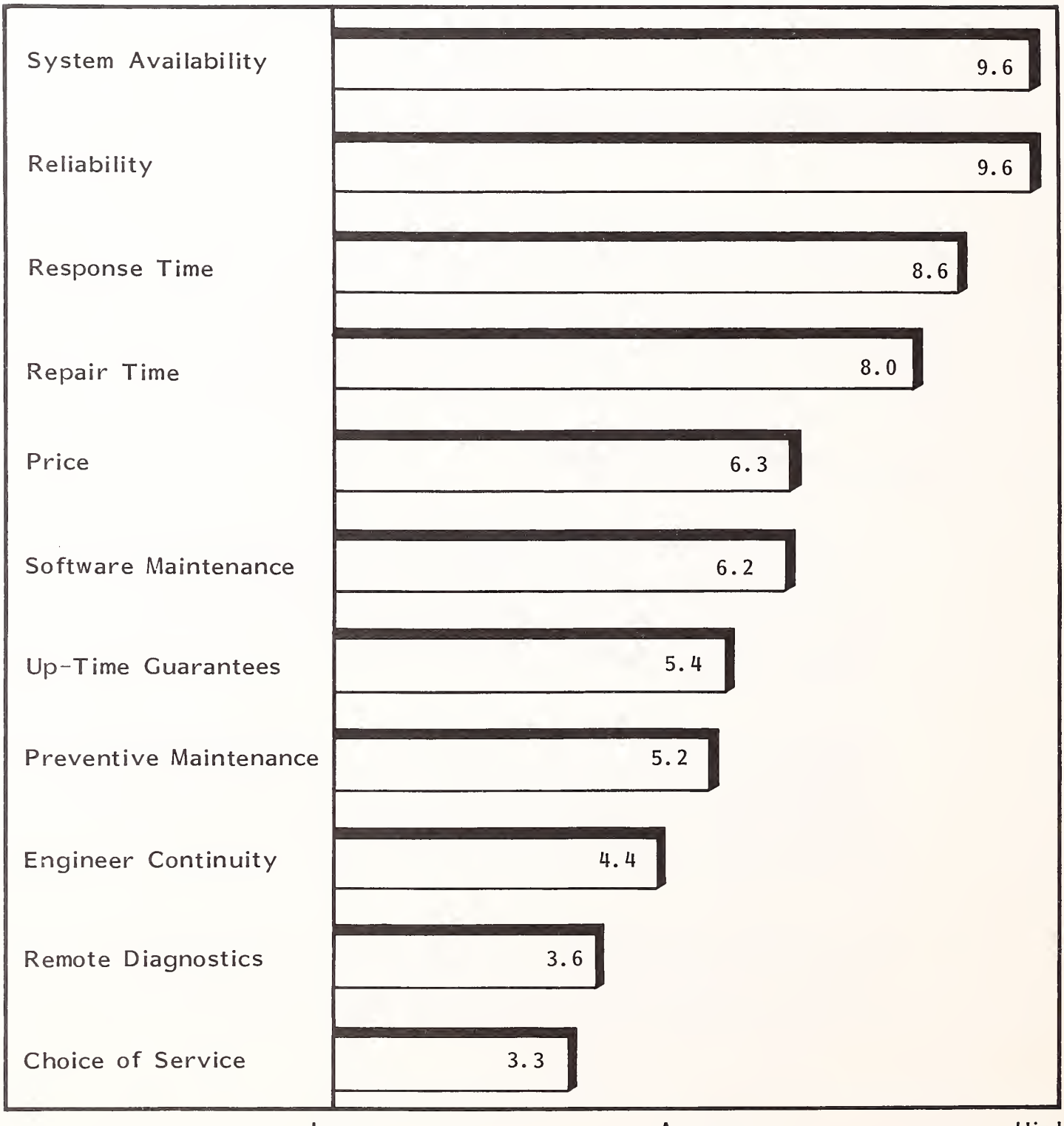
  - Users can be asked to rank various elements in order of importance. By combining all the resulting rankings, it becomes clear which of the factors are most important. Exhibit III-1 shows the results of such an exercise carried out in the U.K. market in 1985.

  - This approach can be supported by individual product analysis, as illustrated in Exhibit III-2. This shows, for example, that for large systems, 98.9% of users regard response time as an important factor, but only 8.6% of users regard it as the most important factor.

  - An alternative to ranking the various elements is to ask users to rate them on a scale of importance. The net result may often be the same, but there does seem to be a temptation for users to rate every element

EXHIBIT III-1

RELATIVE IMPORTANCE OF SERVICE FACTORS
(Average Ranking)



Number of Respondents: 210

Average Ranking of Importance

Source: User Survey

EXHIBIT III-2

RESPONSE TIME - USER RANKING OF IMPORTANCE

	PERCENT OF USERS RANKING RESPONSE TIME AS:					TOTAL PERCENT OF USERS	
	Most Important Factor	Important Factor	Neutral	Relatively Unimportant	Least Important	Important	Unimportant
Large Systems	8.6%	90.3%	-	1.1%	-	98.9%	1.1%
Small Systems	8.8	86.8	2.5%	1.9	-	95.6	1.9
Peripherals and Terminals	9.0	83.3	4.3	2.7	0.7	92.3	3.4
Data Communications	6.2	88.4	1.5	3.9	-	94.6	3.9
Personal Computers	3.6	85.0	6.4	4.3	0.7	88.6	5.0
Word Processors	8.6	87.1	2.9	1.4	-	95.7	1.4
Work Stations	10.0	75.0	10.0	-	5.0	85.0	5.0
Copiers	8.4	81.4	1.7	8.5	-	89.8	8.5
PBX	16.6	77.8	-	5.6	-	94.4	5.6
Total Hardware	8.0%	85.2%	3.3%	3.1%	0.4%	93.2%	3.5%

Number of Respondents: 210

as being vitally important. The main advantage of rating is that it allows comparison of performance against user requirements, as shown in Exhibit III-3. This clearly identifies those areas requiring management attention. Another advantage is that areas of over-performance, as well as problem areas, are identified.

B. USER COMPLAINTS

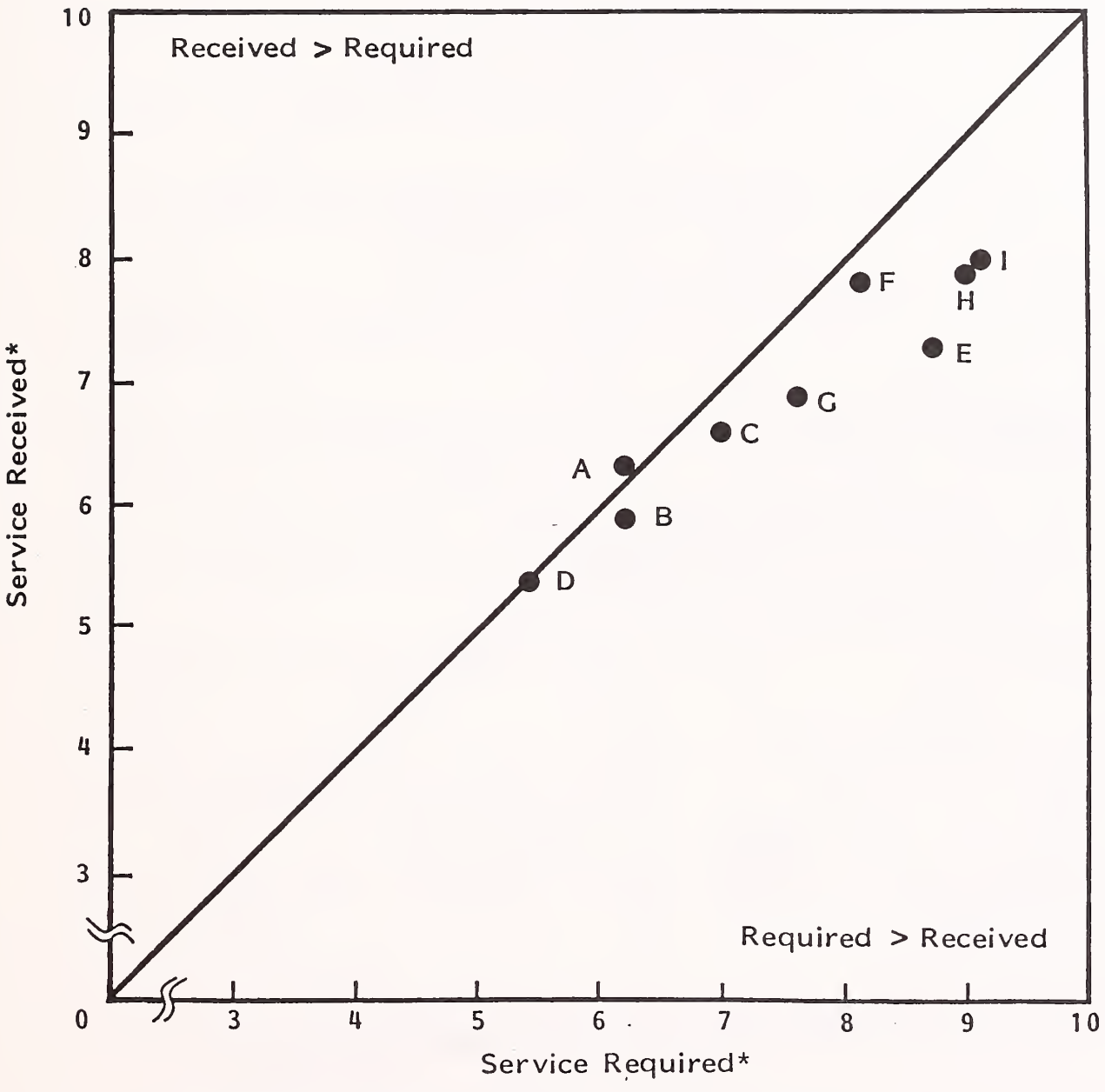
- As well as the 'formal' rating or ranking of the importance of service factors, it is also useful to include free-format questions about service. The answers to these questions may help to identify particular areas of user concern and to explain the ratings given to some of the factors. Quite often, apparently minor complaints can loom large in the user's mind.

- Exhibit III-4 shows a typical analysis of complaints grouped into a number of categories, while Exhibit III-5 gives some typical user quotes showing the range of their complaints.

- Addressing these complaints may not in itself improve some of the key measurable performance areas, but can nonetheless go a long way to improving user/vendor relationships.

EXHIBIT III-3

CDC HARDWARE SUPPORT
USER REQUIREMENTS VERSUS LEVEL OF SERVICE RECEIVED



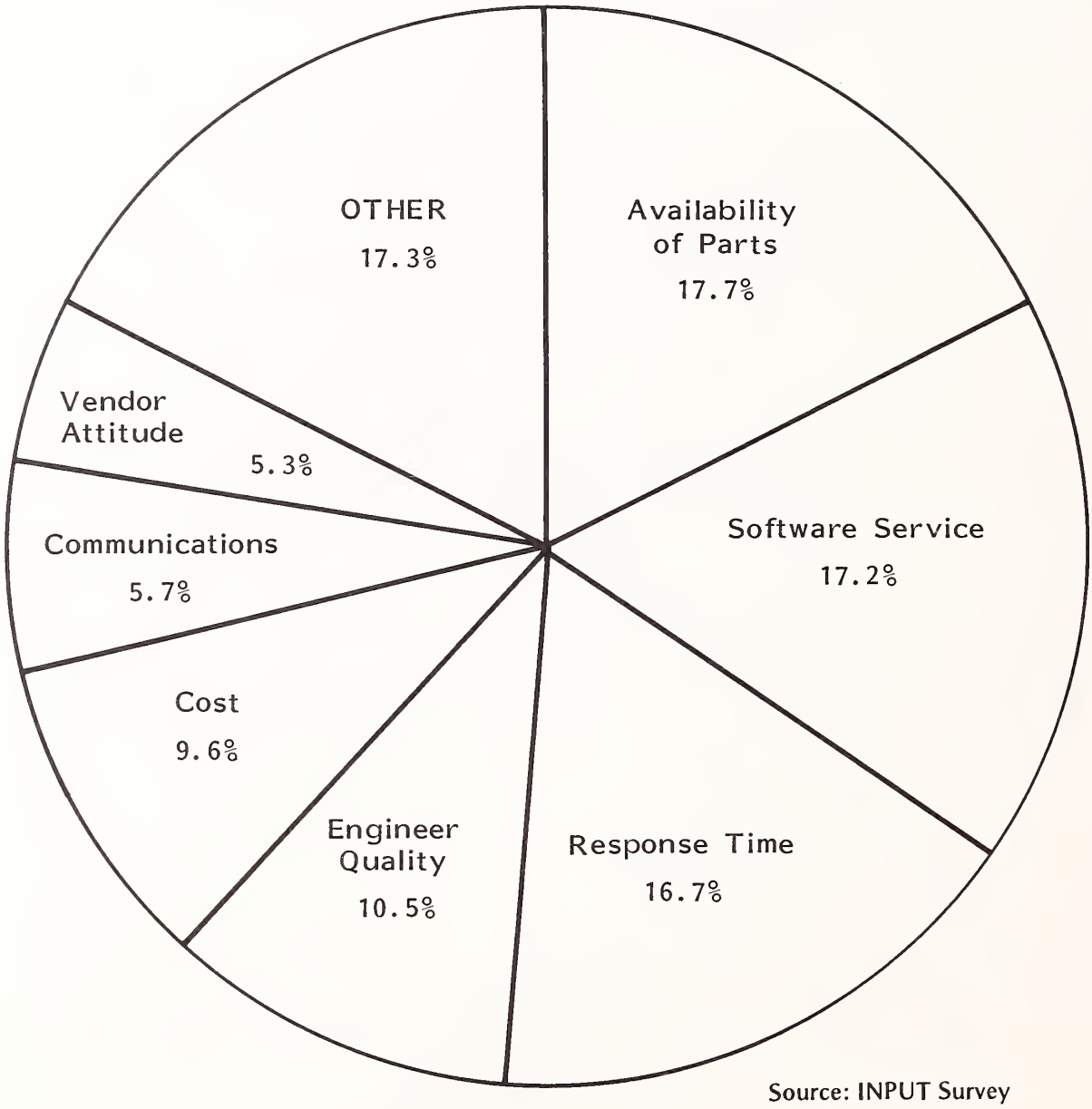
A. Hardware Capacity Planning
B. Hardware Consulting
C. Hardware Documentation
D. Hardware Training
E. Parts Availability
F. Dispatching
G. Escalation
H. Hardware Maintenance
I. Field Engineer Skill Level

Source: INPUT U.S. Study

*Rating: 1 = Low, 10 = High

EXHIBIT III-4

WORST FEATURES OF SERVICE - USER VIEWS



Source: INPUT Survey

EXHIBIT III-5

WORST FEATURES OF SERVICE - USER QUOTES

- "Increasing cost for software service of declining quality," ICL User
- "High costs for limited expertise," DEC User
- "Inexperienced engineers, lack of hardware and software diagnostic tools, unreliability of equipment and software," ICL User
- "Lack of training given to customer service engineers on new products," ICL User
- "Lack of expertise on both hardware and software from suppliers," IBM and Honeywell User
- "PCB swapping between units to determine fault," ICL User
- "Failure to achieve first-time fix, particularly on peripherals such as printers," Systime User
- "Inadequate diagnostic skills - fault recurring within 24 hours," ICL User, serviced by Mills Associates
- "Engineers often reduced to 'Let's try this and see what happens'," DEC User
- "Different groups in the supplier organization do not communicate; my problems get passed around," Hewlett-Packard User
- "Long call-to-fix time does not recognise the importance of systems to our business function," ICL User

IV ANALYSIS OF RESULTS

A. TARGETING THE PROBLEM

- Customer satisfaction surveys should result in an action plan aimed at improving customer satisfaction with the service being provided. The survey must, therefore, aim at those areas which are of most concern to the user--reliability, availability, and response time.

- Each of these areas is, of course, dependent on a range of sub-factors and are in themselves interrelated. Effective targeting of the problem areas depends, therefore, on the isolation and measurement of these sub-areas.

- Reliability can be looked at as inherent machine reliability, but over a period of time, the effectiveness of any fault repair or preventive maintenance will have an impact on the user view of system reliability. A study into this area should, therefore, not only attempt to measure inherent machine reliability, but also the effectiveness of maintenance and repair activity on that equipment. In this way, it will be possible to define the problem--be it with design, manufacturing, or service and support--which has to be solved.

- Availability also depends on a number of factors, some system oriented, some vendor oriented, and some user oriented. One important fact to establish is the user's pattern of system usage, as this is likely to determine both the potential failure rate of the system and the criticalness of the availability to

the user. There is a close affinity between reliability and system availability, but there are also a number of areas under the service vendor's control which can impact availability:

- Response time.

- Repair turnaround time.

- Timing, frequency, and duration of preventive maintenance activities.

- If availability is seen by the user to be a problem, then it is important to identify precisely where the problem lies and what is the root cause of the poor level of availability so that the appropriate action can be taken.

- Response time is one service activity which users frequently complain about. In targeting a problem in response time, it is important first to ensure that both user and vendor are measuring the event in the same way. From that point, check through the response chain to identify areas of potential bottleneck within the dispatching system. Often, however, the biggest problem lies in the lack of availability of suitably qualified engineers--a point again often made by users.

B. CONCENTRATING RESOURCES

- The greatest benefit from effective problem targeting is the ability to concentrate all necessary corporate resources on solving the real problem and not wasting energy--and money--on solving apparent problems instead of real ones.

- Once the problem has been clearly defined, the necessary action can be initiated--action which can take many forms:

- Recruit more engineers.

- Improve the training of engineers.

- Optimise the geographic distribution of engineers in relation to sites being supported.

- Optimise/improve parts holding capability.

- Improve or establish remote diagnostic systems.

- These are obviously only examples of what could be a very long list of potential action points emerging from a customer satisfaction survey.

- As with any action plan, it is important not only to detail the actions to be taken, but also to identify who will be responsible for the individual action points, the time frame in which the action will take place, and when the desired results should be achieved.

- By following this basic approach, management can optimise the use of increasingly scarce and expensive resources.

C. DEVELOPING THE SOLUTION

- This follows naturally from the careful identification of the problem described above. The added dimension when developing the solution is the introduction of the targeted result.

  - In this process, it is important to identify the desired result. The problem may be that the response does not meet the users' ideal

requirement, but the solution may well be to improve current performance, not necessarily to meet that user ideal.

- As can be seen from many of the Exhibits in Chapter II, the user satisfaction charts do not follow a linear path, but rather grow by steps. The implication for a service vendor is that a small improvement in system availability or response time will not necessarily result in an increase in the number of satisfied users. It may be necessary to improve performance from, for example, a 90% availability right up to 95% in order to improve user satisfaction significantly.

- Also at this point, management must decide whether the problem is real or only perceived. Again, as has been shown earlier in the report, there is often a disagreement between the vendors' statistics and user experience--or perceived experience. The solution to this perceived problem may, therefore, be a communication solution rather than an 'actual' solution.

- The path to increased customer satisfaction through measurement is summarised in Exhibit IV-1.

EXHIBIT IV-1

BENEFITS OF MEASURING CUSTOMER SATISFACTION

Identifying Real Problem Areas

To Facilitate

Concentrating Resources on the Problem

Leading to

Solving the Problem

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