MICRO SOFTWARE SUPPORT STRATEGIES

INPUT

About INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, and office products and services.

The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyze and interpret the research data, then develop recommendations and innovative ideas to meet clients' needs. Clients receive reports, presentations, access to data on which analyses are based, and continuous consulting.

Many of INPUT's professional staff members have nearly 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed in 1974, INPUT has become a leading international planning services firm. Clients include over 100 of the world's largest and most technically advanced companies.

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INPUT
Planning Services For Management

MICRO SOFTWARE SUPPORT STRATEGIES

1984

C2

M.C.S.S.

AUTHOR

Micro Software Support

TITLE

Strategies

DATE LOANED	BORROWER'S NAME
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MICRO SOFTWARE SUPPORT STRATEGIES

CONTENTS

MICRO SOFTWARE SUPPORT STRATEGIES

EXHIBITS

1 INTRODUCTION

I INTRODUCTION

A. SCOPE

- It has become increasingly clear that many micro software vendors do not understand the critical corporate marketplace. Nowhere is this more true than when dealing with the issue of software support.

- Consequently, in this report, INPUT is focusing on the support of micro business software as it relates to the corporate user.

- One of INPUT's key findings is the convergence of the micro and "traditional" software markets within corporations (see Exhibit II-1); consequently, INPUT will spend a considerable amount of time in this report showing what corporations need in the way of software support. The report also focuses on the actions and plans of vendors who have successfully served this marketplace. Unfortunately, this excludes all but a small number of current micro software vendors.

B. METHODOLOGY

- INPUT interviewed software marketing and technical management personnel from 37 leading firms in the industry (including both hardware and software

companies offering the full line of software products) to ascertain current industry practices and future plans. The questionnaire used for this purpose is shown in Appendix A.

- INPUT also interviewed over 100 information systems (IS) managers of leading corporations to determine their current and planned use of vendor-supplied software support (see Appendix B).

- INPUT has also drawn on insights gained by several special consulting studies it has completed in the areas of:

  - Software marketing practices.

  - Software maintenance business opportunities.

  - New business opportunities in computer services.

  - IS department organization and mission planning.

C. SOFTWARE PRODUCT DEFINITIONS

- Application software products are software products performing processing that directly serves user functions. The products consist of:

  - Cross-industry products, in multiple-user industry sectors. Examples are payroll, inventory control, and financial planning.

  - Industry-specialized products, in a specific industry sector such as banking and finance, transportation, or discrete manufacturing. Examples are demand deposit accounting and airline scheduling.

- System software products are software products that enable the computer/communications system to perform basic functions. They consist of:

  - Systems control products, which function during applications program execution to manage the computer system resource. Examples include operating systems, communication monitors, emulators, and spoolers.

  - System utilization products, used by operations personnel to utilize the computer system more effectively. Examples include performance measurement, job accounting, computer operations scheduling, and utilities.

  - Applications development tools, which are used to create programs and/or to access computer-based information. Examples include DBMS, languages, and report writers.

II EXECUTIVE SUMMARY

II EXECUTIVE SUMMARY

- This executive summary is designed in a presentation format in order to:
  - Help the busy reader quickly review key research findings.
  - Provide an executive presentation and script that facilitates group communications.
- The key points of the entire report are summarized in Exhibits II-1 through II-6. On the left-hand page facing each exhibit is a script explaining the exhibit's contents.

A. MICRO SOFTWARE SUPPORT EVOLUTION

- The microcomputer hardware and software industries are currently going through what is variously termed a shakeout or maturation process. INPUT expects that, when this process is complete, the computer industry will appear very different than it does now.

- One of the principal changes will be in the software support area. According to INPUT's research and analysis, software support will be the most affected of any micro area because, among other reasons, micro software support either is not offered at all or is of uncertain quality.

- The most attractive market--the corporate market--cannot accept the current situation. The situation will change as:

  - Corporations understand the proper place of the micro and implement corporate strategies accordingly.

  - Corporate micros and hosts are integrated.

  - Vendors offer software products aimed at the micro-mainframe environment.

- Consequently, as time goes on, the market's needs will demand software support such as that historically offered to corporate customers, i.e., mainframe and mini software support. This will be true even of smaller businesses, as they become linked electronically with larger business partners.

EXHIBIT II-1

MICRO SOFTWARE SUPPORT EVOLUTION

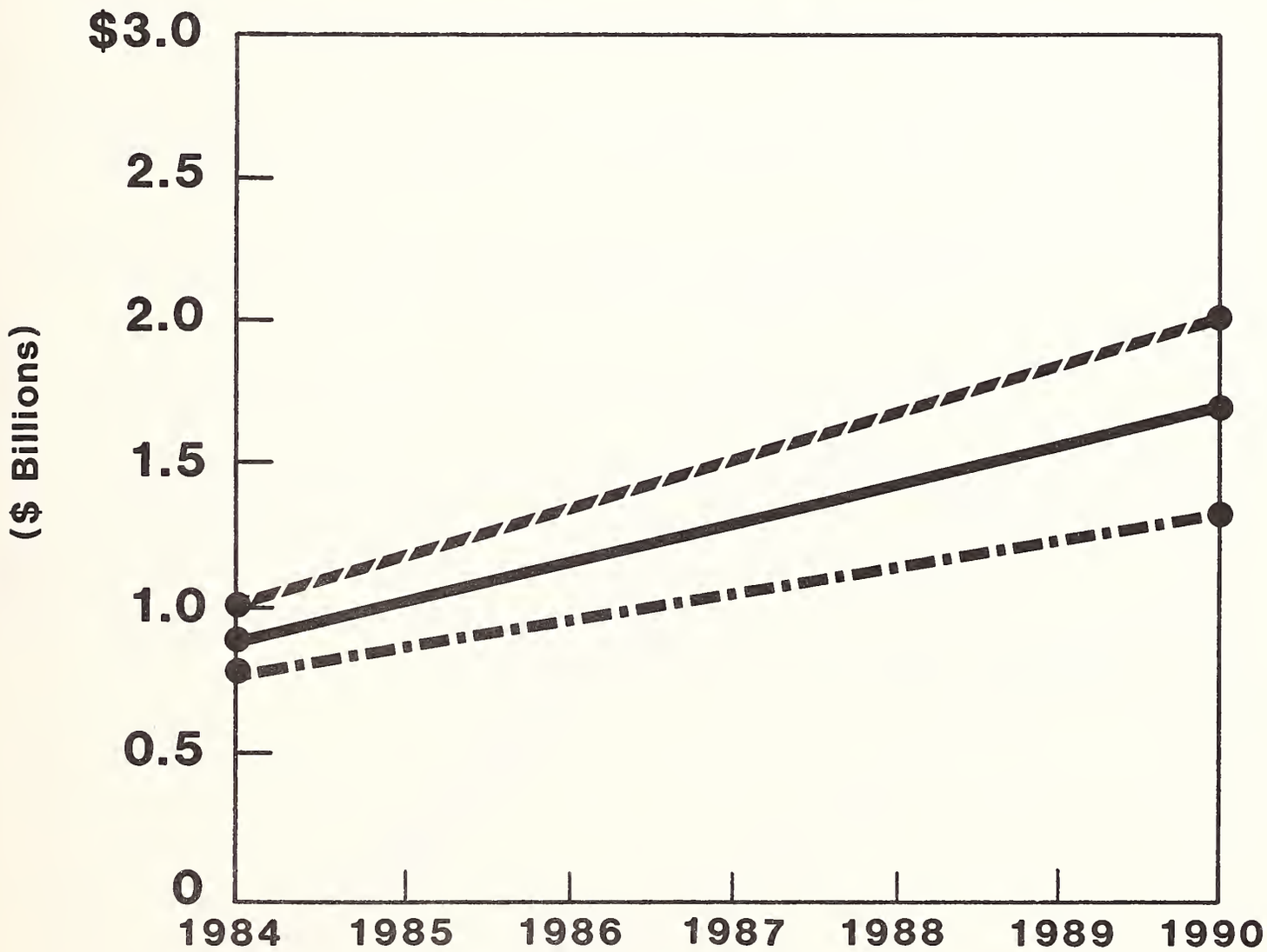
Support Components	1984	1990
Proportion of Packages with Support	Low	High
Support Content	Limited	Extensive
Perceived Need by Customer	Variable	High
Support Quality	Variable	Medium to High
Functional Integration with Mainframe Products	None to Low	Medium to High

B. THE MICRO SOFTWARE PRODUCTS SUPPORT MARKET IS ALREADY LARGE—AND STILL GROWING

- Software support will assume increasing importance over the next five years.
  - The micro market will grow tenfold.
  - For individual software products, especially those whose growth has stabilized, the software support proportion of total software revenue can be even more significant.
  - Software support represents one of the few areas not subject to cheap "knock-offs," as the rest of the computing industry moves into the commodity stage.
  - The cost pressures on supplying software support will increase, since so many present activities are labor-intensive. Companies that increase software support productivity will prosper.
- However, while software products themselves can be highly leveraged, software support at this time is not. Successful vendors will develop methods of improving leverage.

EXHIBIT II-2

THE MICRO SOFTWARE PRODUCTS SUPPORT MARKET IS ALREADY LARGE - AND STILL GROWING



C. SOFTWARE SUPPORT: A VITAL REVENUE GENERATOR FOR MATURE PRODUCTS

- This exhibit profiles vendor revenue sources over the life of a typical software product. The following assumptions are made:

  - Peak sales are in year six: 2,500 units at $2,400 each.

  - The introductory price is intentionally low; it is raised to a market price in year three; there is a 10% annual increase until year nine.

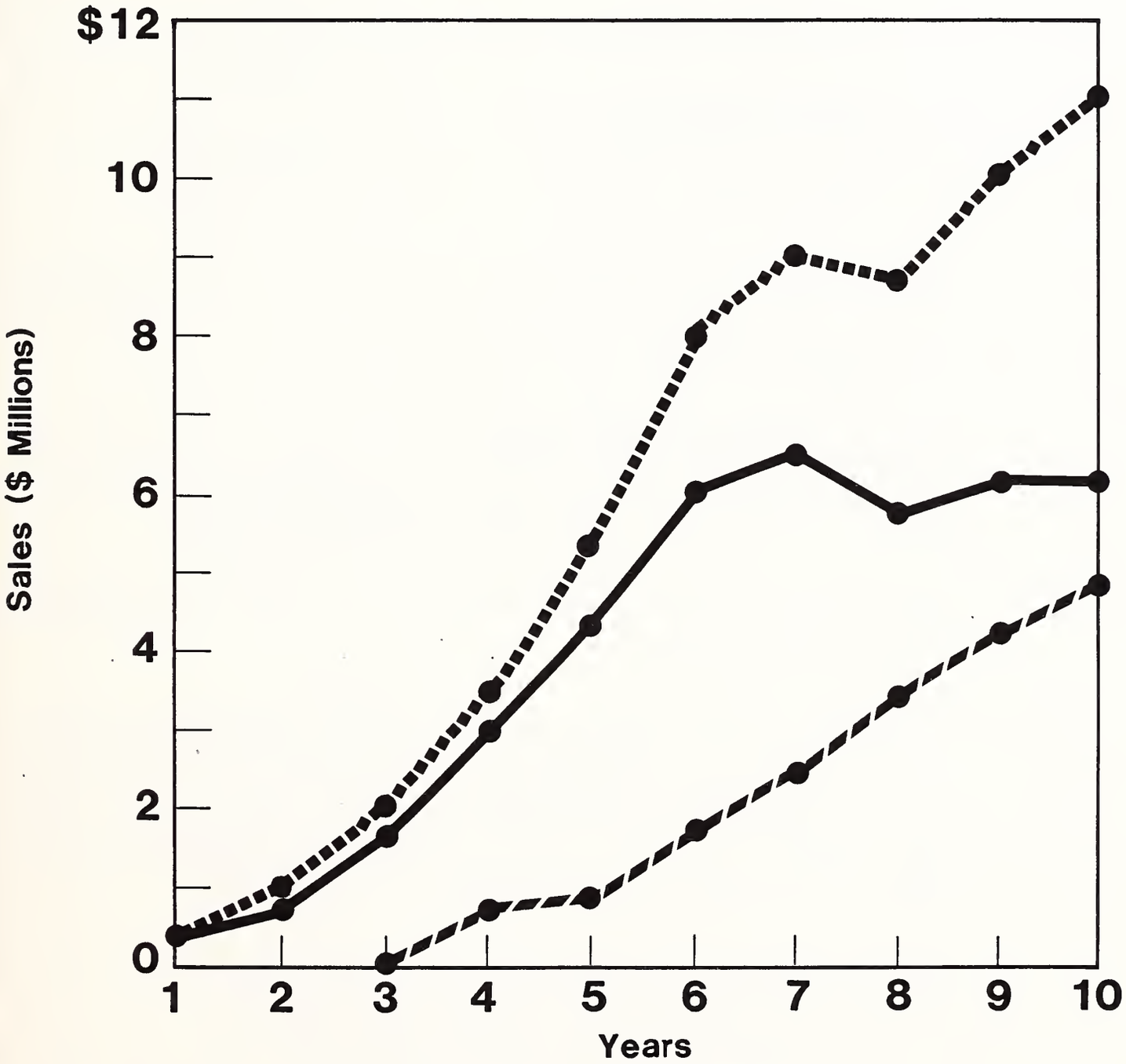
  - There is no charge for support in the first year after sale; thereafter, it is assumed that all customers are under support.

  - The annual support cost is 12% of the sales price in the same year.

- As a result, support revenue almost equals revenue from product sales by year ten. The success of manframe software products offered by both hardware vendors and independent software vendors indicates that it is not unreasonable to expect a product life of more than ten years, provided the product is continually updated and occasionally redesigned.

EXHIBIT II-3

SOFTWARE SUPPORT: A VITAL REVENUE GENERATOR FOR MATURE PRODUCTS

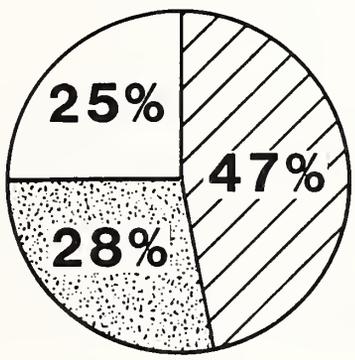


D. CUSTOMER BENEFITS FROM REMOTE SUPPORT ARE UNCLEAR

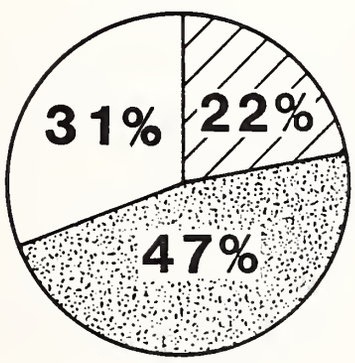
- There is considerable planning and some implementation by mainframe and mini software vendors in remote support, which includes:
  - Automatic downloading.
  - Remote diagnostics.
  - Remote fixes.
- Vendors believe that remote support will improve customer service while reducing their own costs. About a third of the respondents report using current remote support.
- Customers, on the other hand, see either few benefits to themselves or only general benefits. Obviously, the word is not getting through to customers (or else there are in fact not many tangible benefits to customers).
- Vendors that have not yet offered remote support should examine expected customer benefits very closely.
- Remote support will be even more difficult for micro software vendors, since there are usually many more people involved in the product's use and they are episodic, semiskilled users. Consequently, vendors should be very cautious about providing this type of service until the costs and benefits in each product's environment are well understood.

EXHIBIT II-4

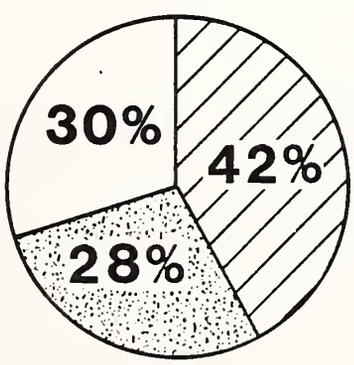
CUSTOMER BENEFITS FROM REMOTE SUPPORT ARE UNCLEAR



Automatic Downloading



Remote Diagnostics



Remote Fixes

Percent of Customers Seeing Few or No Benefits to Themselves

Seeing General Benefits

Seeing Specific Benefits

E. REMOTE SUPPORT SERVICES SHOULD BETTER SERVE CUSTOMER NEEDS

- Service must improve, or be perceived as having improved to take advantage of customer attitudes toward pricing. INPUT believes that electronic support (in revised form) is the key to increasing customer perceptions of value.

- Current electronic support methods are, in reality, an automation of past vendor practices. They represent a one way flow of information (for example, releases) or action (for example, remote fixes). Even remote diagnostics, seemingly an exception, is not really the customer sending data to the vendor, but the vendor taking control of the customer's system and sending data back to its own product.

- Future electronic support should be customer-oriented and should allow the customer to take action, and in doing so often resolves its own problem. This would save vendor resources while at the same time increasing customer satisfaction.

- The means of achieving this is through a combination of a vendor problem/fix data base (which many vendors are already constructing for their own use), and a natural language query interface to the data base so that customers can access the data base easily.

- This kind of service will be even more critical for micro software vendors than it will be for other software products, given the difficulty and expense in supplying traditional mainframe-line support to corporate clients.

REMOTE SUPPORT SERVICES SHOULD BETTER SERVE CUSTOMER NEEDS

1980-1984

Recommendation:

- Major Benefits Should Flow to Customer, Not Vendor

F. CUSTOMER SELF SUPPORT: A DOUBLE-EDGED SWORD

- Four out of five customers see more self-support occurring in the future. Already, customers are very active in performing functions that they see as self-support. For example:

  - Four out of five usually install initial releases, and even more install subsequent releases.

  - Two-thirds modify packages or fix errors at least part of the time.

  - About half of customers currently have internal "help desks" for buffering internal queries and potential problems.

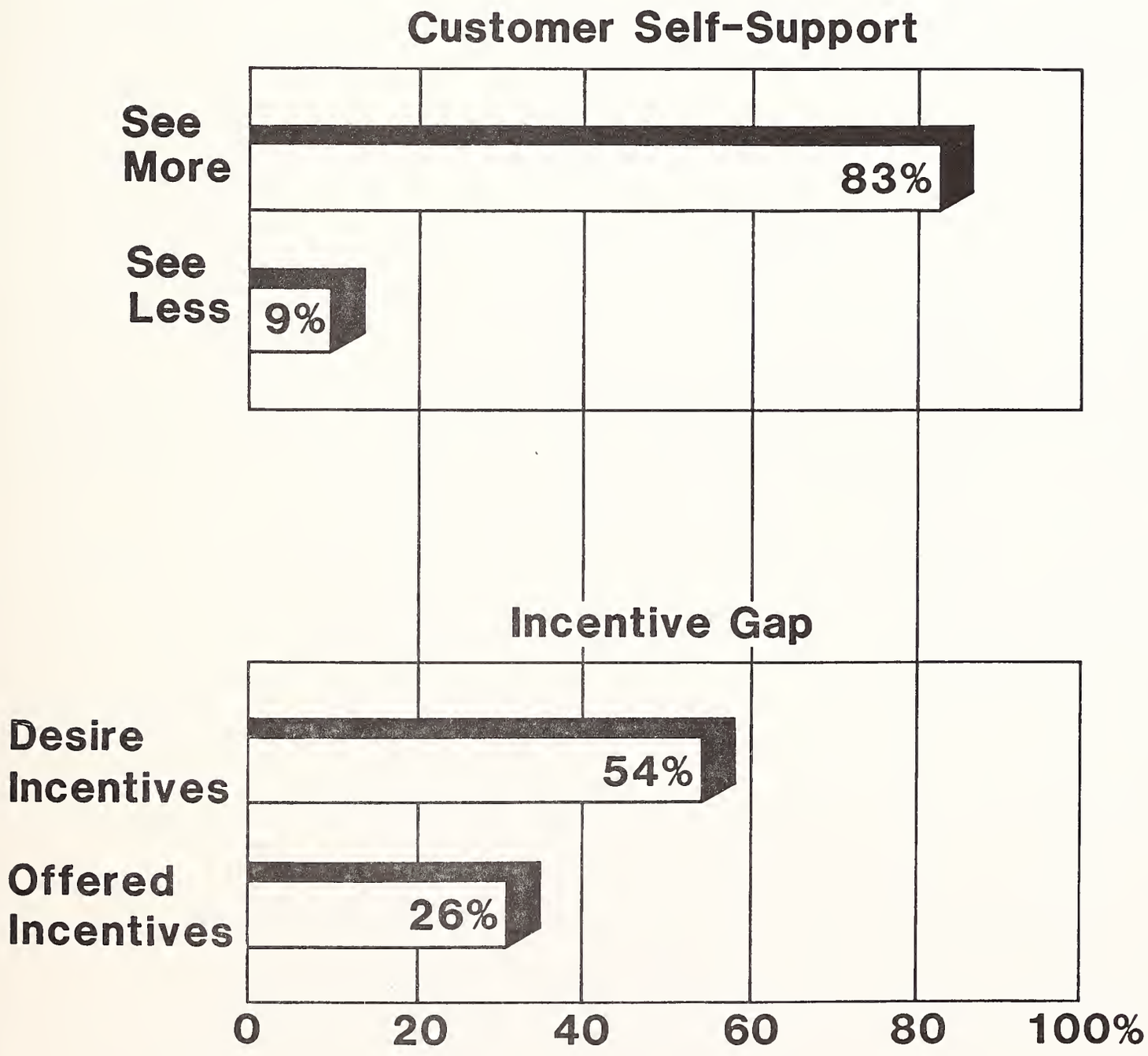
- These types of activities are expected to increase modestly.

- Over half the customers interviewed would like to be offered more incentives to perform more self-support. However, many more desire incentives than are currently being offered them. The incentives most often mentioned are in the pricing area; however, INPUT believes that other types of incentives would prove equally or more compelling.

- Self-support need not be a revenue threat, as long as vendors structure the situation so that customers take over much of the semiskilled but time-consuming support work. Micro software vendors should be able to take advantage of the fact that micro users have already been forced to work more closely with their software and to provide much of their own support.

EXHIBIT II-6

CUSTOMER SELF-SUPPORT: A DOUBLE-EDGED SWORD



Note: Based on User Respondents

III SOFTWARE SUPPORT COMPONENTS

III SOFTWARE SUPPORT COMPONENTS

- This chapter examines the major components of software support.
  - First and foremost, exactly what is software support in the corporate environment, both from the standpoint of vendors and their customers?
  - Secondly, what are the related issues of customer satisfaction and vendor response to customer problems?

A. WHAT IS SOFTWARE SUPPORT?

- "Software support" does not have a commonly accepted definition in either the user or vendor communities.
  - Information systems departments have elastic definitions of maintenance when maintaining their own in-house-developed software: maintenance covers functions ranging from fixing minor bugs to system rewrites encompassing many years of effort.
  - This confusion carries over into vendor activities. It is at least partly influenced by the lack of clarity in IS departments' expectations.

I. THE VENDOR VIEW

- Virtually all vendors agree that fixing software errors is included in software support, as shown in Exhibit III-1. It is interesting that a few software vendors do not see even this as part of their responsibilities.

  - Most vendors also see improving, adding, and extending features as part of software support.

  - Software vendors are much less likely than hardware vendors to include training and consulting support.

  - Supplying conversion and interface assistance are seen by only a minority of vendors as being part of support.

  - Generally, software vendors include fewer activities in support than do hardware vendors, except for conversions.

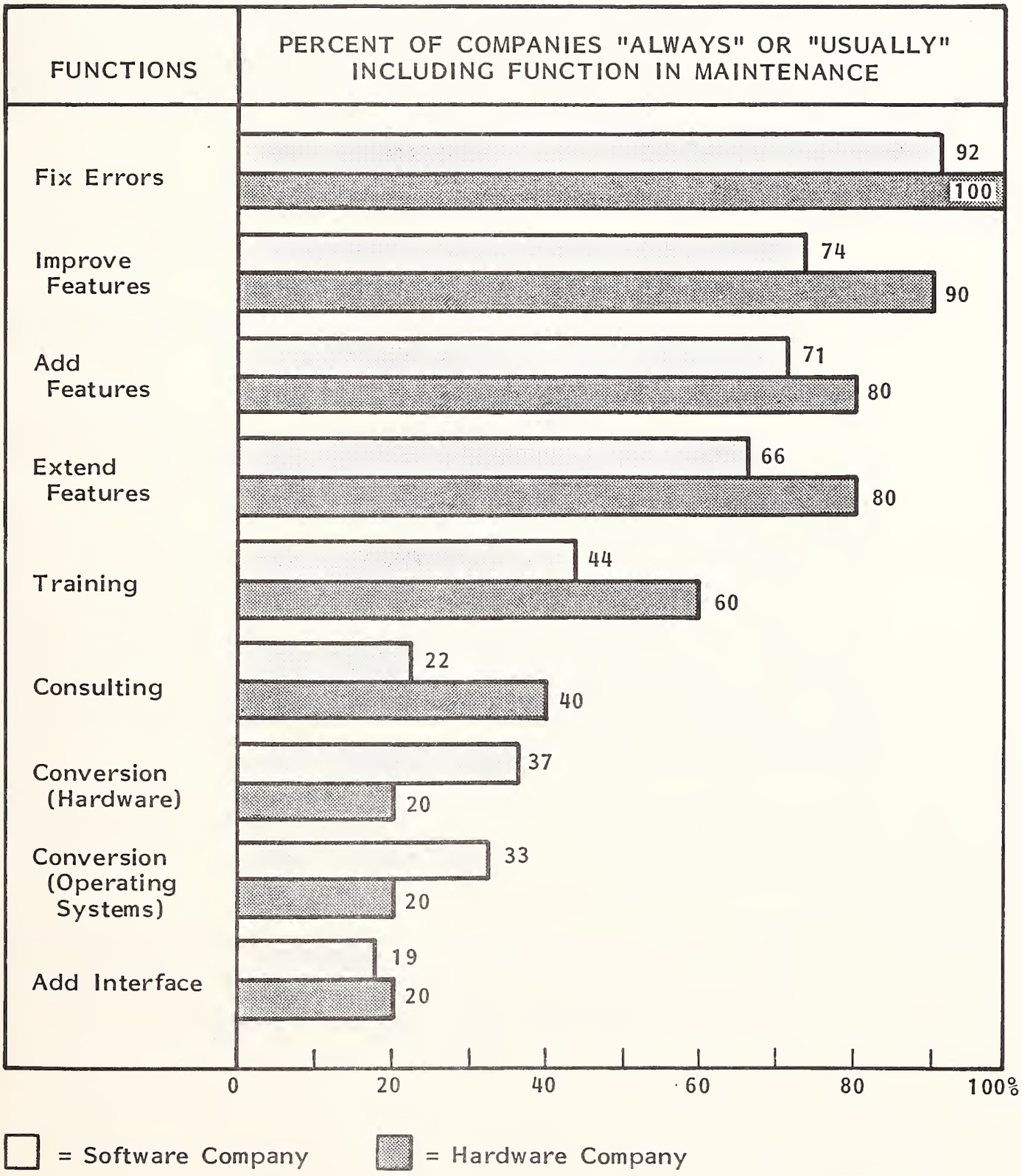
    . Hardware vendors take a more inclusive view of support because they are used to taking a more comprehensive view of customers' needs; in addition a "bundled service" attitude has in many cases survived unbundling.

    . The exception for conversions points up the different roles of hardware and software companies. Hardware companies will only consider conversions within their own hardware line, while software companies will make any conversions that are economically attractive.

- Hardware vendors have not recently altered their definition of support; however, 30% of software vendors report having done so to adapt to new markets and product areas.

EXHIBIT III-1

FUNCTIONS INCLUDED IN VENDOR
MAINTENANCE OF SOFTWARE



SOURCE: INPUT Survey

- Both hardware vendors (60%) and software vendors (44%) expect to be making changes in the activities included in software support. Both types of vendor will try to reduce the extent of services and activities included in maintenance, as part of their efforts to reduce the costs of software support.

- It is noteworthy that while fewer than half the vendors view training and consulting as activities normally part of software support, 60% of vendors see dealing with misuse by users or lack of understanding as the key maintenance activity, as shown in Exhibit III-2.

  - Error correction accounts for only 13% of activities. (Note: this is within the 10-20% range commonly reported for in-house maintenance.)

  - Technology issues (e.g., conversions, upgrades, or improved efficiency) account for less than one-fifth of activities.

- There is consequently a built-in tension between what vendors see as software support and the actual demands on the software support function.

2. THE CUSTOMER VIEW

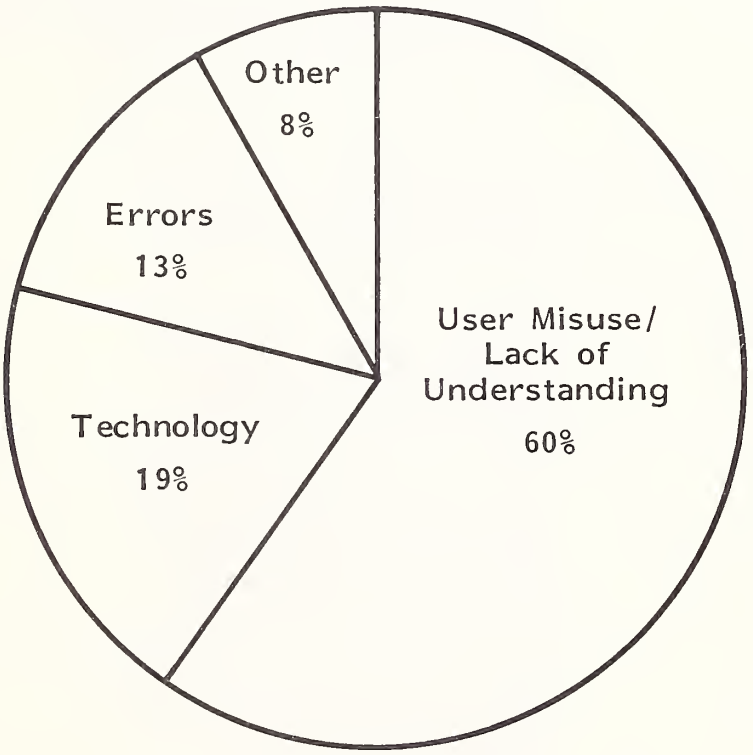
- By far the most important software support function from the customer standpoint is fixing errors (Exhibit III-3). Feature modification (improving, adding, extending) and training are viewed as important, but much less so than fixing errors. Consulting is somewhat less important.

- As far as satisfaction with vendor performance is concerned, there is both good news and bad news:

  - The good news is that there is a one-to-one correlation between the importance of a function and customer satisfaction: the most important support functions have earned the most satisfaction.

EXHIBIT III-2

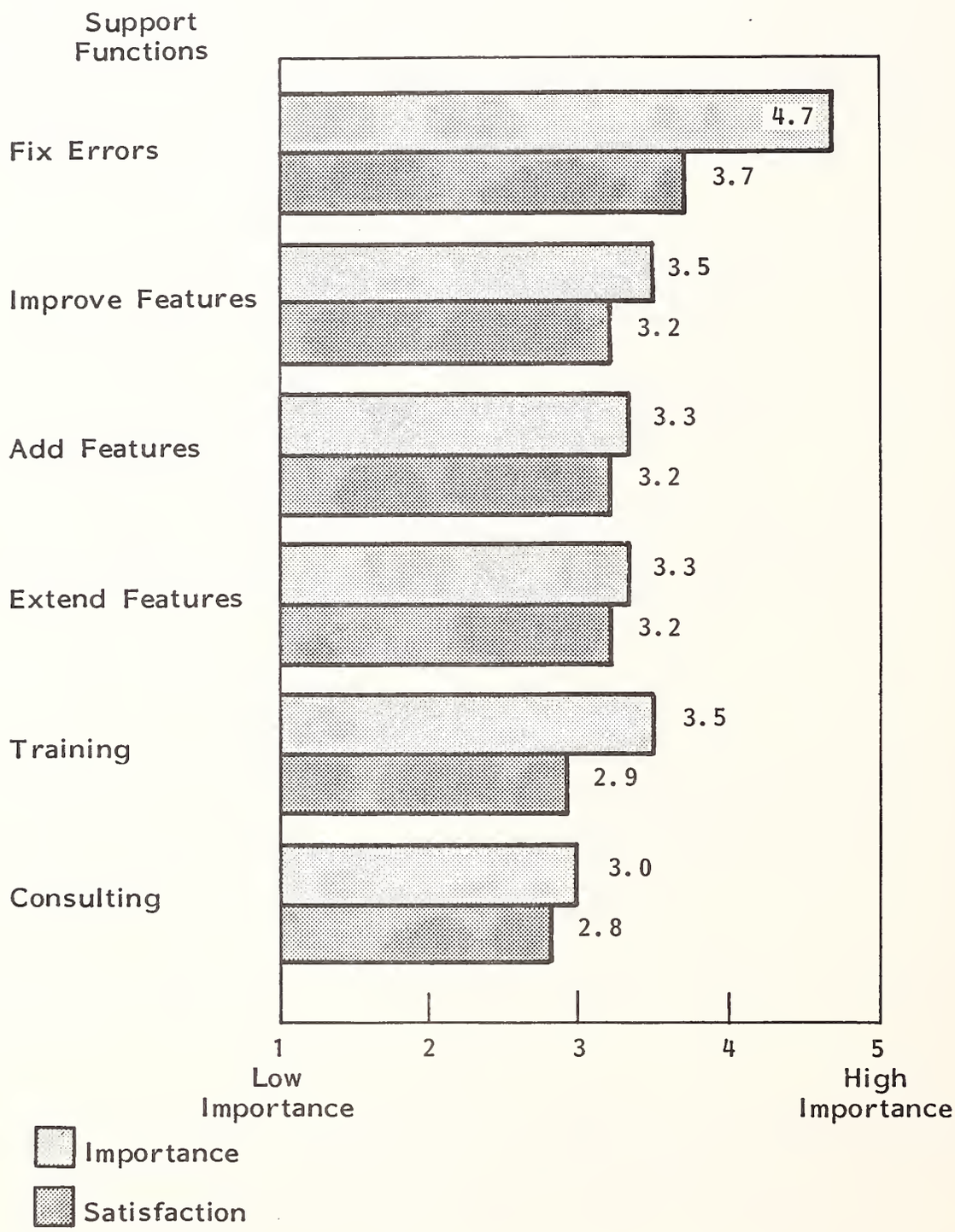
CAUSES OF SUPPORT ACTIVITY BY VENDORS



SOURCE: INPUT Survey

EXHIBIT III-3

IMPORTANCE OF AND SATISFACTION WITH SUPPORT FUNCTIONS, AS REPORTED BY CUSTOMERS



- The bad news is that satisfaction with error correction does not match its importance. Exhibit III-4 shows this gap.

- This is a difficult gap to close, since error identification is out of the control of the vendor and, unfortunately, often impacts important customer work. Consequently, errors need to be fixed immediately.

B. CUSTOMER SATISFACTION

- As noted above, customers are generally satisfied with software support, except in the area of error correction. Software companies believe their customers are more satisfied than do hardware companies, as shown in Exhibit III-4.

  - Software company customers are rarely captives, as are many customers of hardware companies.

  - Software companies do not have to offer and support the range of software that many hardware companies do.

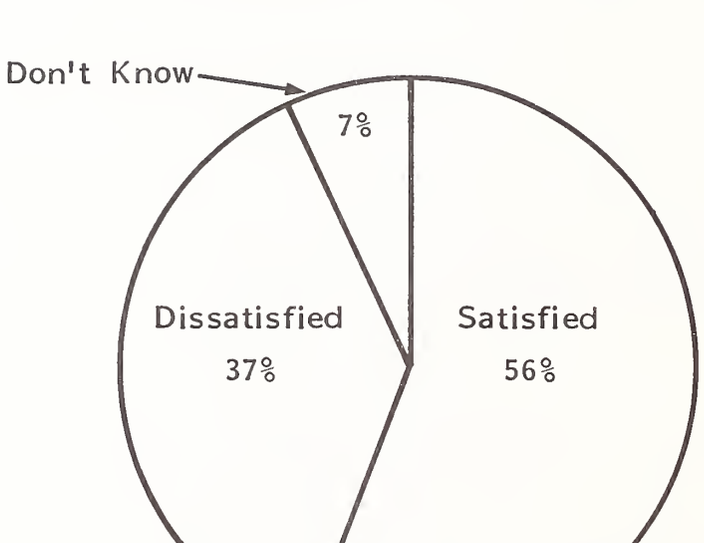
  - Software companies, generally younger and smaller, can be more responsive to customers; however, software companies often suffer from growing pains, which can inhibit a satisfactory customer service effort.

- Even companies with satisfied customers today can have unsatisfied customers tomorrow without adequate information on customer needs and problems.

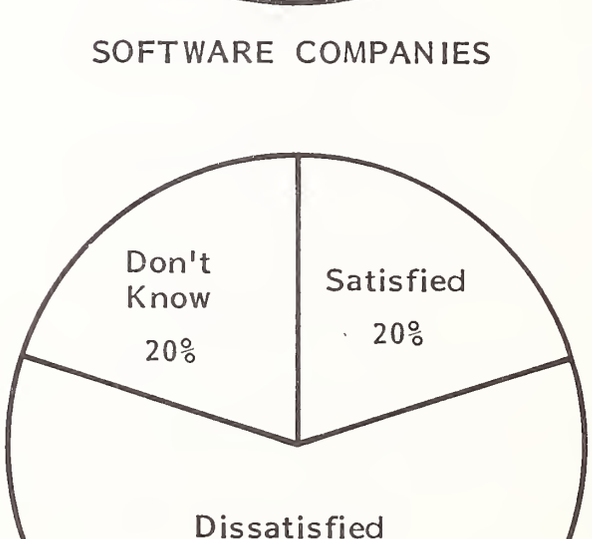
  - Vendors generally use all means of identifying software support needs, as shown in Exhibit III-5.

EXHIBIT III-4

CUSTOMER SATISFACTION WITH SOFTWARE MAINTENANCE



SOFTWARE COMPANIES



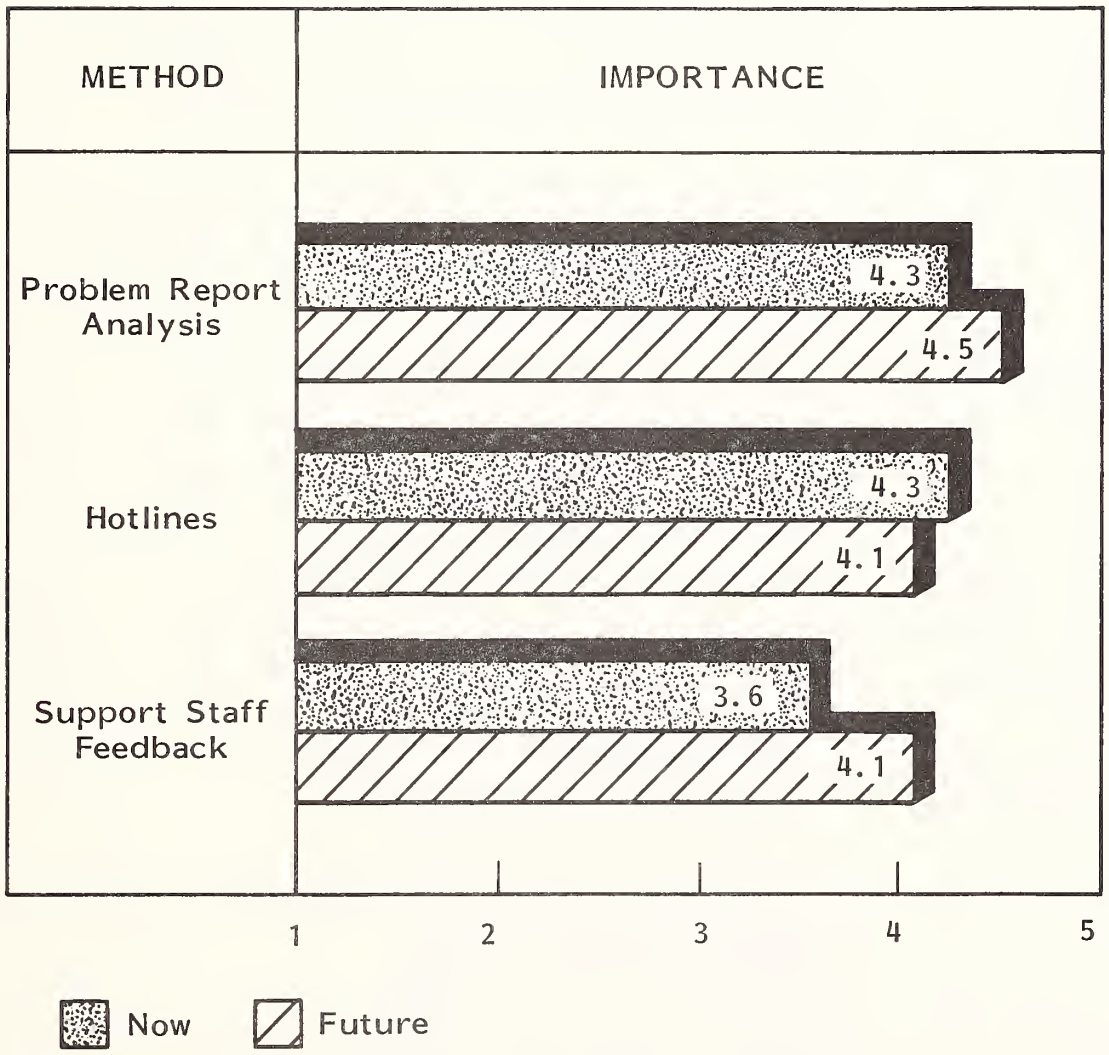
HARDWARE COMPANIES

Percent of Companies Perceiving
Their Customers as Satisfied

SOURCE: Input Survey

EXHIBIT III-5

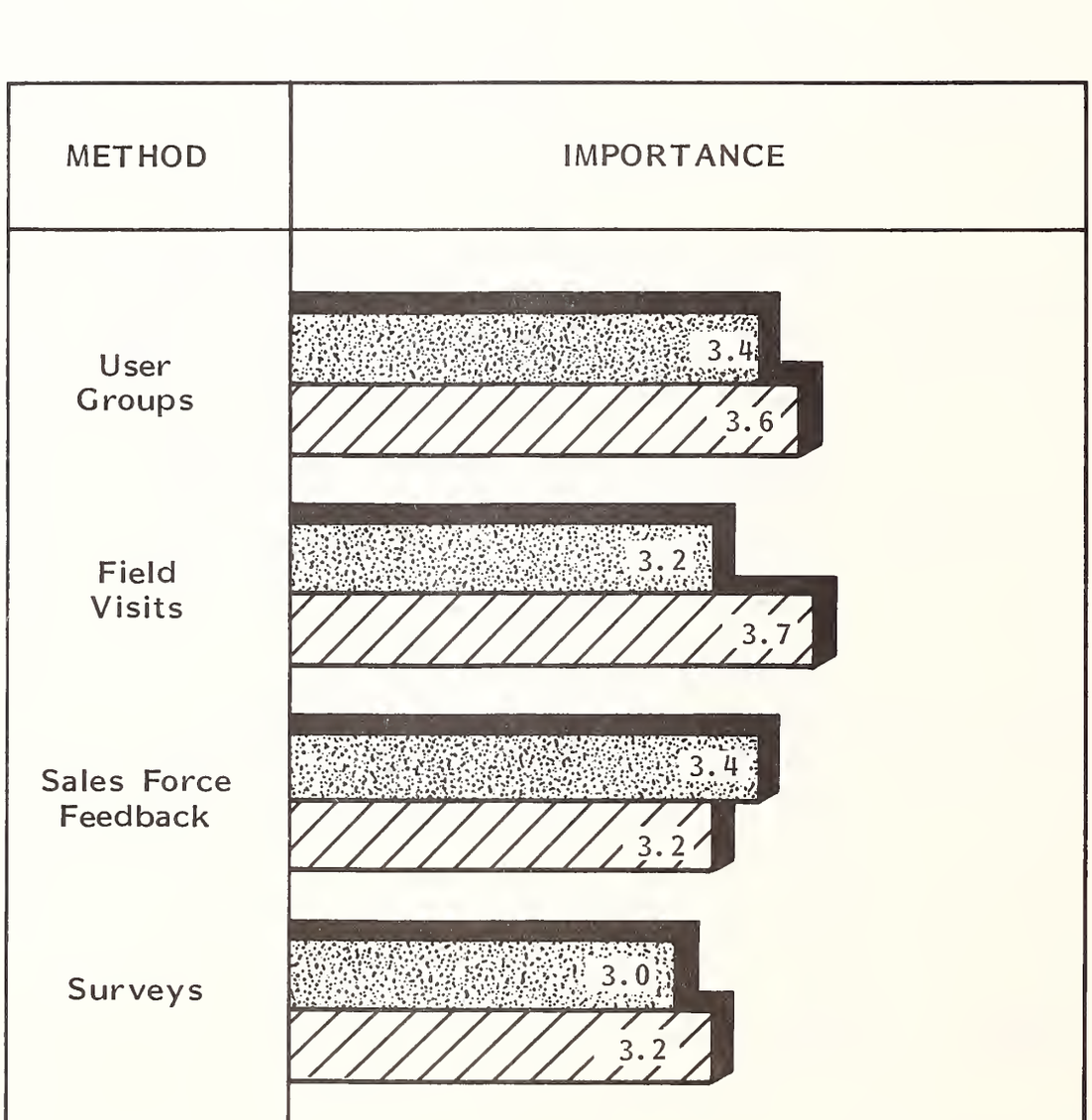
IMPORTANCE OF METHODS FOR IDENTIFYING
SOFTWARE MAINTENANCE NEEDS



Rating: 1 = Low Importance, 10 = High Importance

EXHIBIT III-5 (Cont.)

IMPORTANCE OF METHODS FOR IDENTIFYING SOFTWARE MAINTENANCE NEEDS



Rating: 1 = Low Importance, 10 = High Importance

. Problem analysis reports and hotlines are the most important methods.

. Support staff feedback, user groups, field visits, and sales force feedback are almost as important.

. Surveys are somewhat less important.

- Respondents see the future as much like the past.

- Most vendors now perceive software support sales as almost automatic, needing little initiative on their part, as shown in Exhibit III-6.

  - However, many software vendors--but no hardware vendors--believe that more active selling will be required in the future, as shown in Exhibit III-6.

  - Hardware vendors believe that their software support markets will continue to be as protected as they are now. This may not be so; the factors affecting this issue are analyzed in Chapter V.

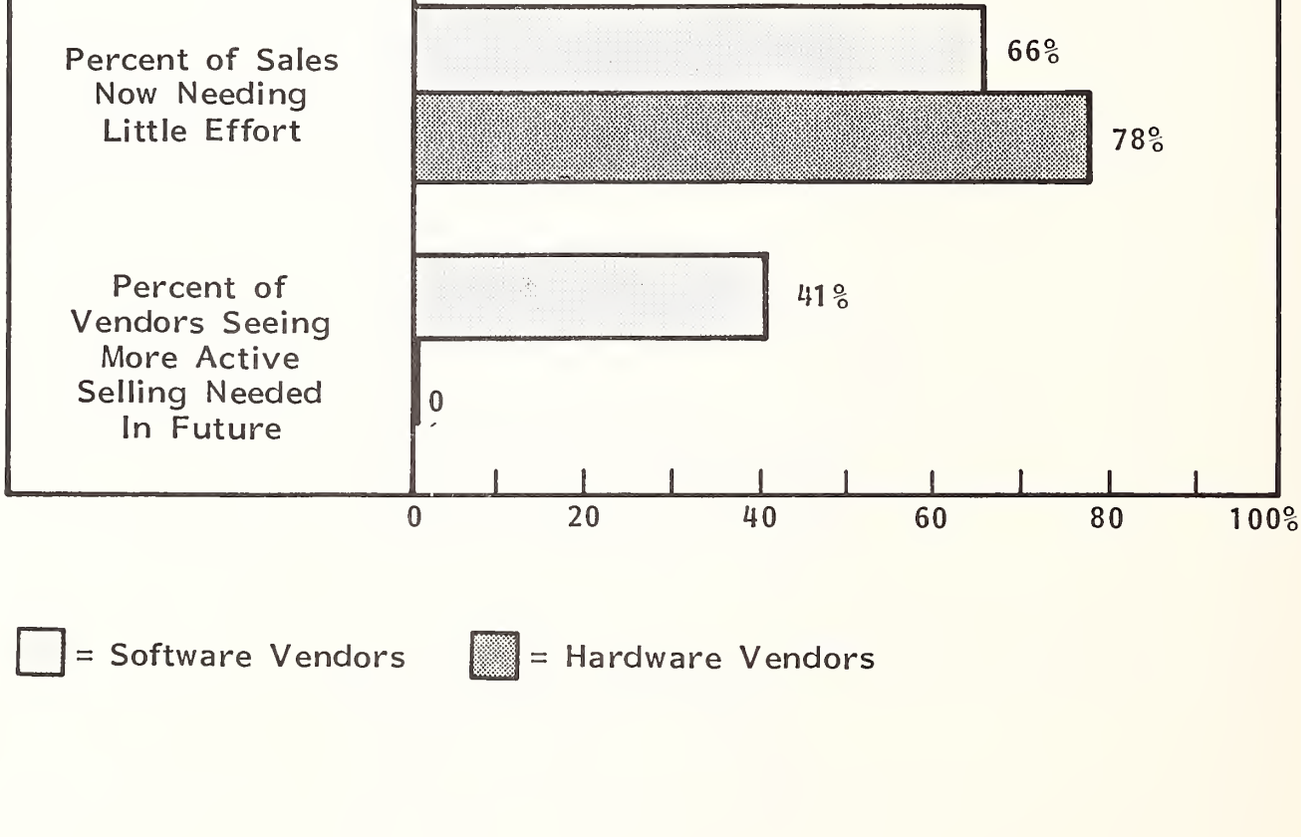
C. PROBLEM RESPONSE

- Since error correction is very important but falls short of customer requirements, it is important to understand the issue of problem response: customers do, since most keep logs of software problems (Exhibit III-7).

  - There is a wide variation by industry, with process manufacturing and insurance somewhat less likely to keep logs.

EXHIBIT III-6

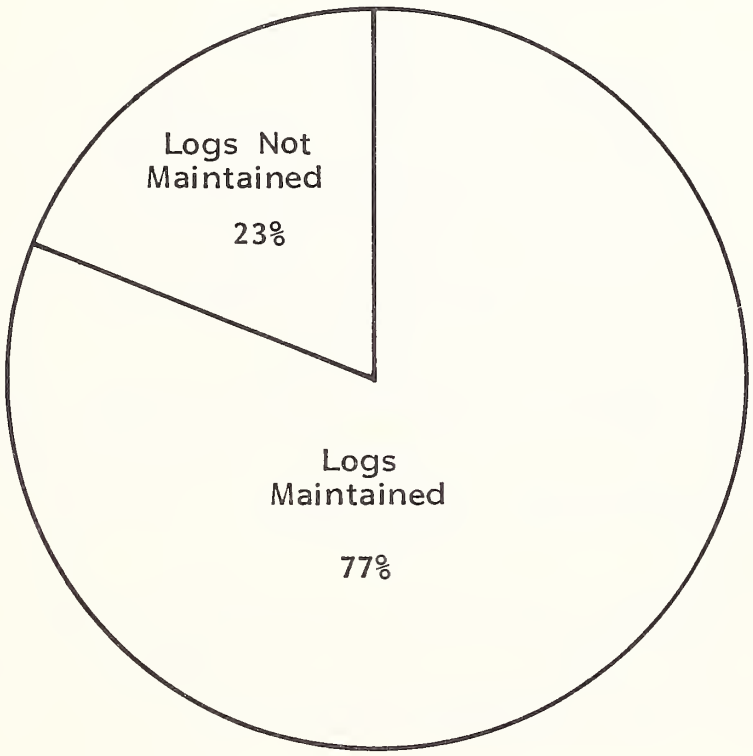
SOFTWARE MAINTENANCE SALES EFFORT



SOURCE: INPUT Survey

EXHIBIT III-7

PERCENTAGE OF CUSTOMERS
MAINTAINING LOGS OF SOFTWARE PROBLEMS



- About one problem in four is classified by customers as a "major" problem, with major problems fairly equally divided between operating systems, other systems software, and applications (Exhibit III-8).

  - The picture is different for minor problems:

    - Operating system problems account for more than the other two categories combined.

    - Application software accounts for a very small portion of this category of problem. This is due in part to the ability of customers to work around such problems--e.g., writing a special module or report program to deal with a problem. "Working around" systems software problems is much more difficult.

  - Operating system problems account for about half of all problems. As noted above, most customers are virtually forced to turn to the vendor for any operating system problem.

- Problem resolution performance is reasonably good, as reported by customers: almost four out of five are satisfied (Exhibit III-9). "Faster" and "better" are what the minority wants.

- The actual quantified performance as reported by customers is spotty.

  - Applications software has both the best and the worst performance, with virtually all major problems resolved, but only about two-thirds of minor problems (Exhibit III-10).

    - The minor problem performance is due in large part to the open-ended qualities of application software "problems"--many of these are really requests for enhancements that may not be acted on for several releases, if ever.

EXHIBIT III-8

SOFTWARE PROBLEM OCCURRENCE,
AS REPORTED BY CUSTOMERS

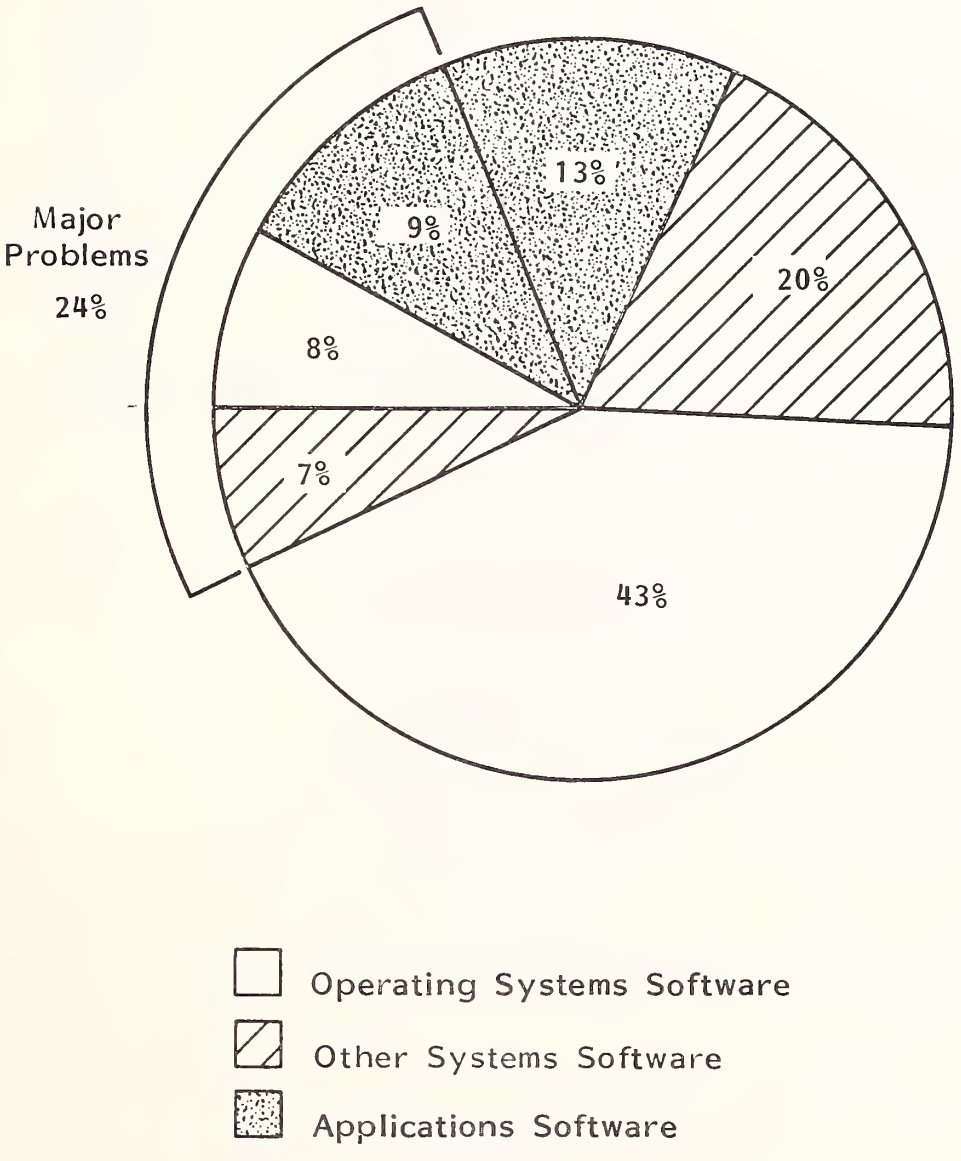
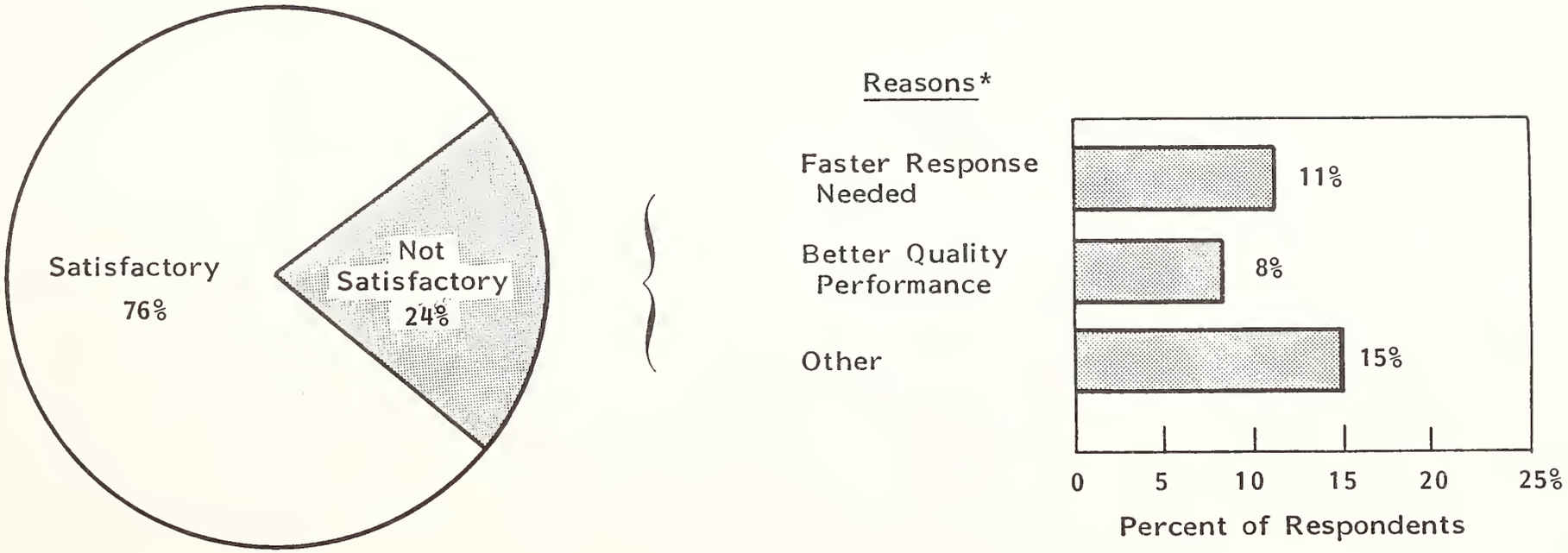


EXHIBIT III-9

PROBLEM RESOLUTION PERFORMANCE, AS REPORTED BY CUSTOMERS

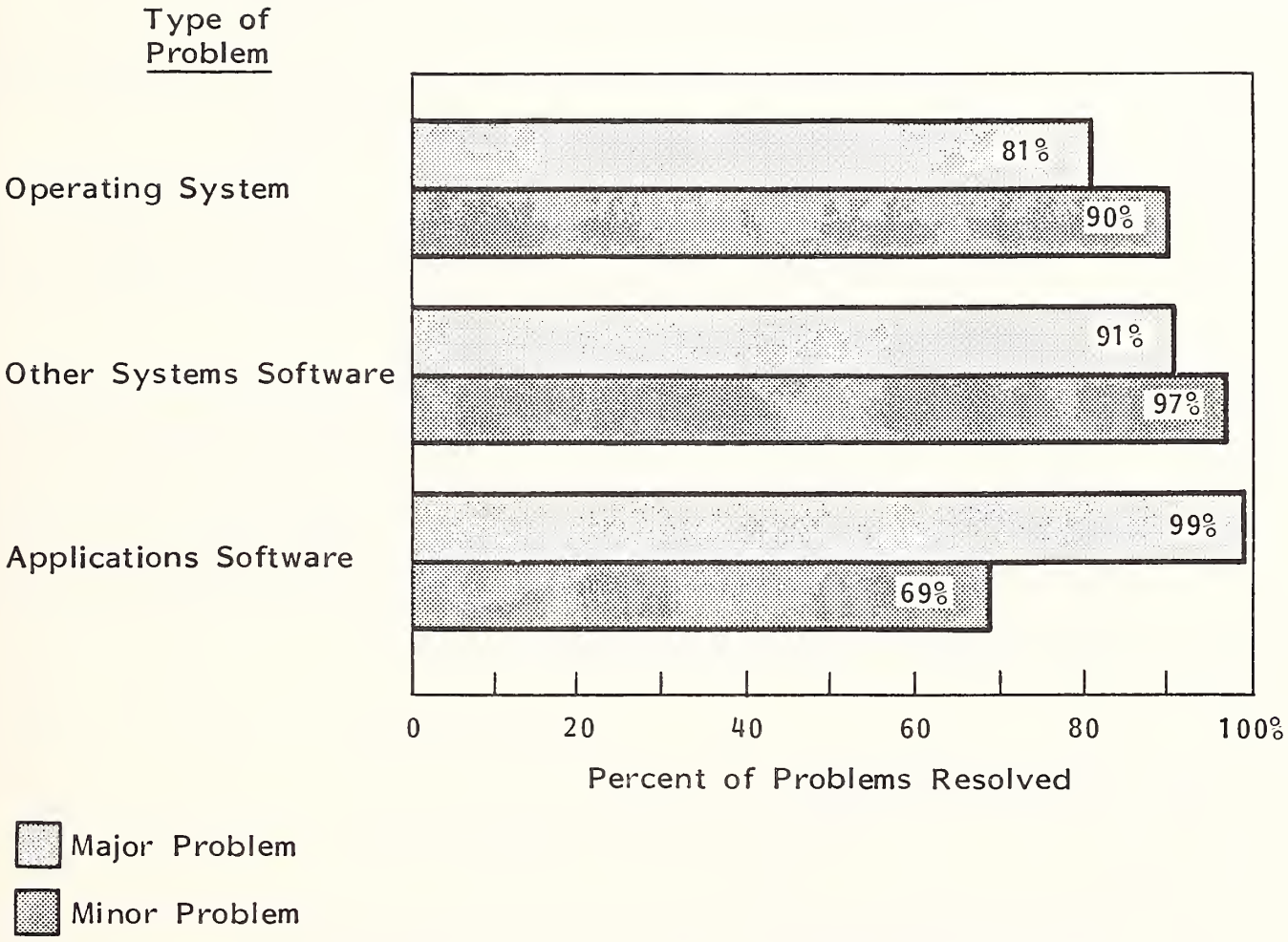


Note: Total is more than 24% due to multiple responses.

*Open-Ended; Responses Coded.

EXHIBIT III-10

SOFTWARE PROBLEM RESOLUTION



. There is often less pressure on vendors to solve these minor problems, since users can often take care of problems themselves.

- Operating system problem resolution is not good at all for major problems, and not much better for minor problems. For customers who are at a vendor's mercy this is a very uncomfortable position to be in.

- Problem resolution for other systems software is much better, although even here one in ten major problems is not resolved.

- It is understandable that the major systems software problems are harder to resolve than are minor problems; still, customers find it unsupportable.

- Unfortunately, there are no easy answers except quality assurance and quality improvement. Looking at the situation realistically, however, this is a situation that customers have learned to live with: their options are extremely limited, usually not feasible (change hardware and/or operating system), and are not guaranteed to be an improvement.

D. SUPPORT METHODS

1. CURRENT PRACTICE

- Distribution of software revisions is at once the core and culmination of software maintenance activities. Every revision is expensive to produce and creates additional expense as users adjust to the new software environment.

- It is significant that software vendors appear to have less expensive, more effective software revision distribution methods than do hardware vendors:

  - Only 11% of software vendors average three or more software product revisions annually, compared to 40% of hardware vendors, as shown in Exhibit III-11.

  - Virtually all software vendors interviewed (84%) had 90% or more of their revisions installed by customers, as shown in Exhibit III-12.

  - Three-quarters of software vendors believed that all or almost all software problems were resolved in the course of the regular software revision cycle--compared to half as many hardware vendors, as shown in Exhibit III-13.

- This superior performance by software vendors occurs even though they are much less automated in their distribution methods than are hardware vendors.

  - As shown in Exhibit III-14, fewer than 10% of software vendors use:

    . Remote diagnostics.

    . Remote fixes.

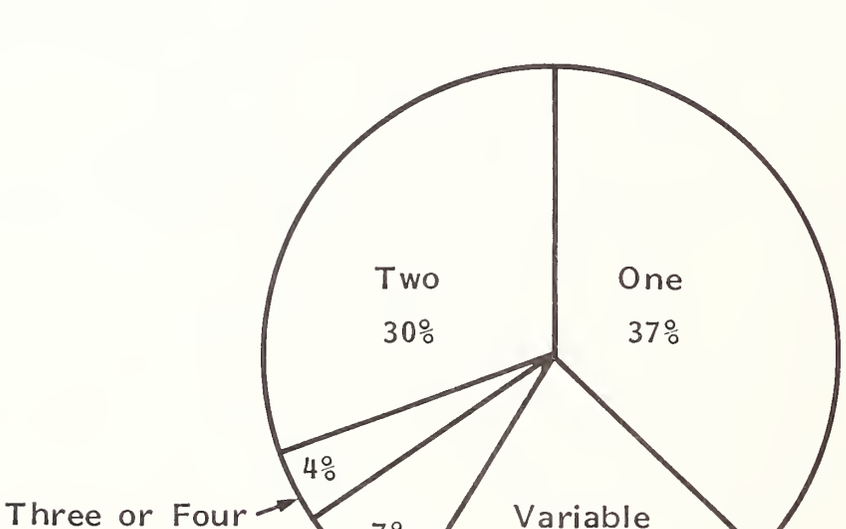
    . Downloading of software revisions.

  - Hardware vendors are five times as likely to do so.

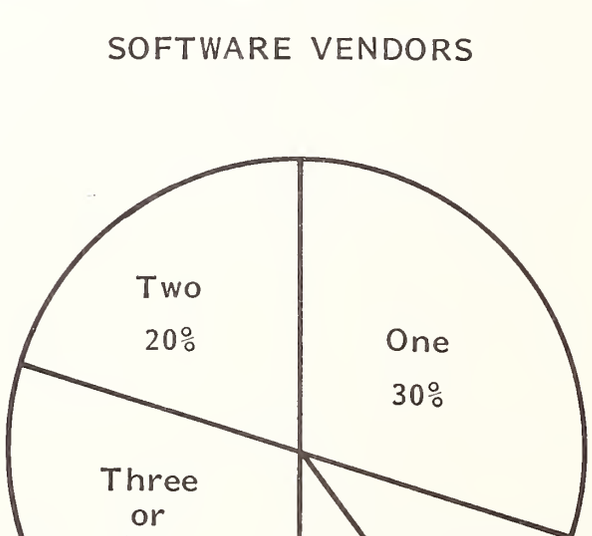
  - About half the software vendors have plans to use telecommunications for these purposes eventually, while at least 80% of hardware vendors plan to do so eventually.

EXHIBIT III-11

NUMBER OF SOFTWARE REVISIONS DISTRIBUTED ANNUALLY



SOFTWARE VENDORS

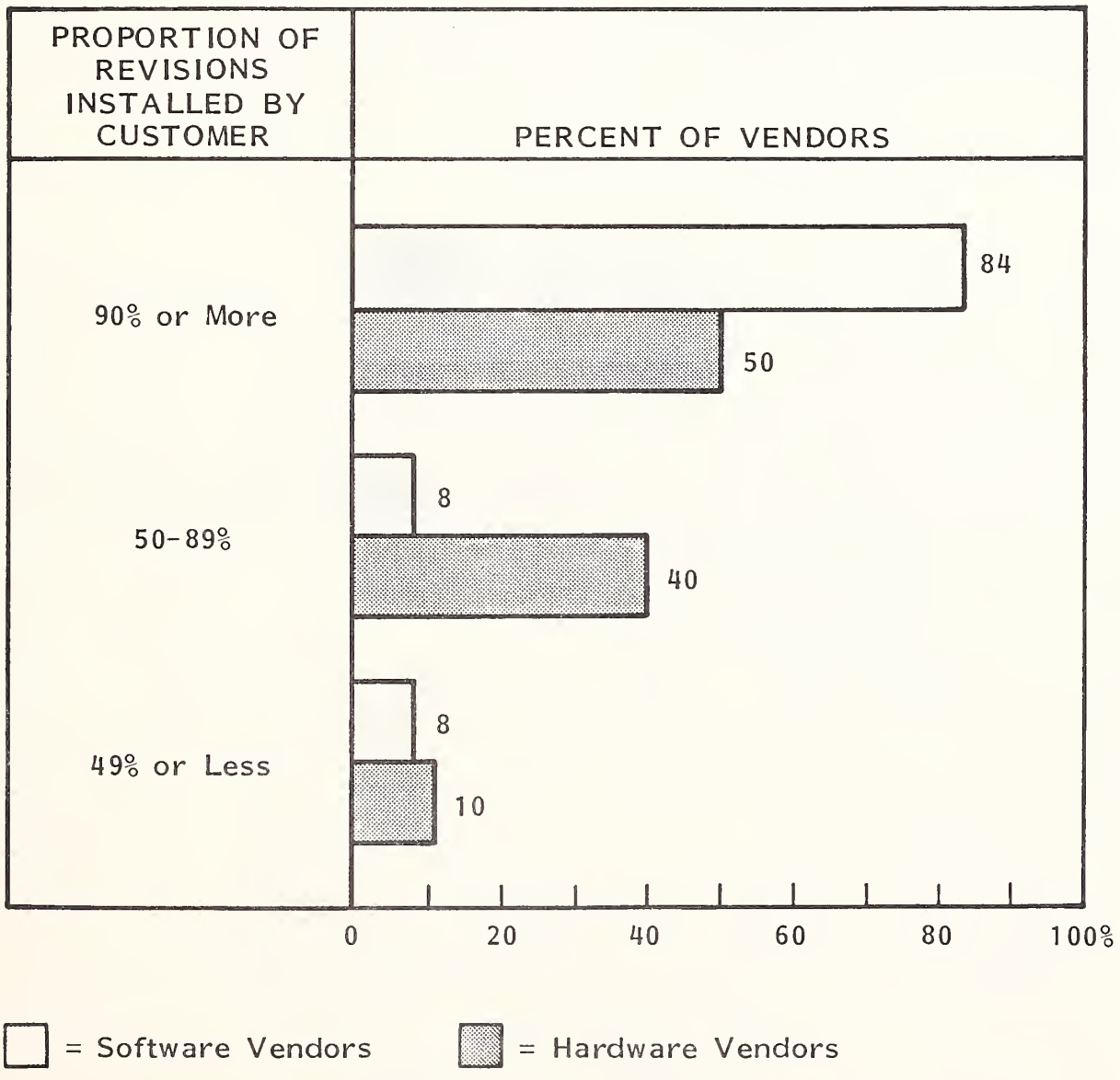


HARDWARE VENDORS

SOURCE: INPUT Survey

EXHIBIT III-12

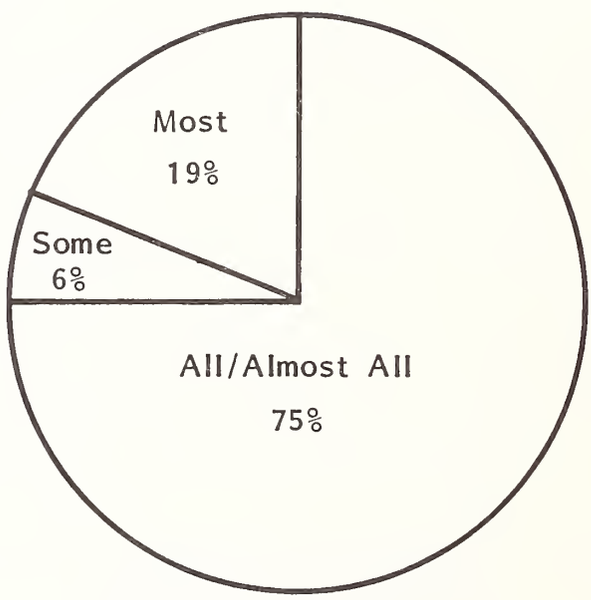
SOFTWARE REVISIONS INSTALLED BY CUSTOMER



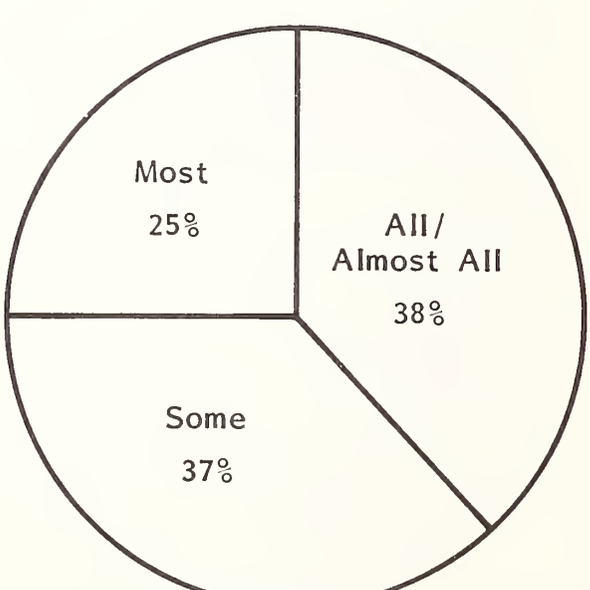
SOURCE: INPUT Survey

EXHIBIT III-13

PROBLEMS RESOLVED BY REGULAR SOFTWARE REVISION CYCLE



SOFTWARE VENDORS

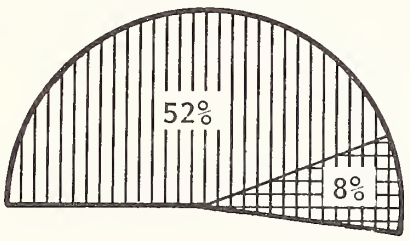
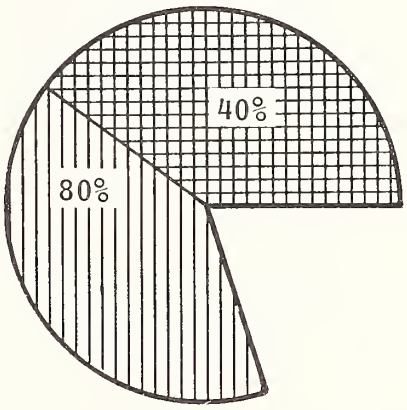
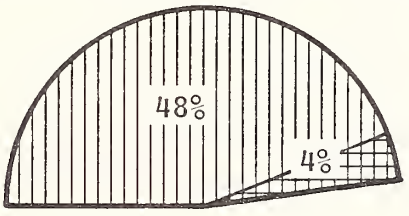
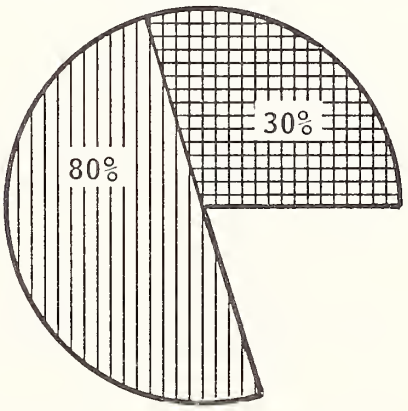
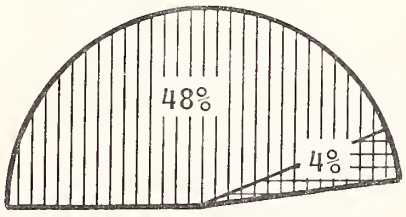
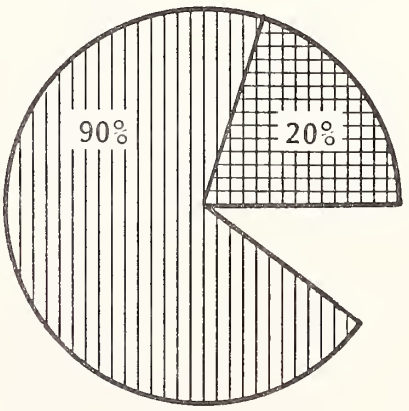


HARDWARE VENDORS

SOURCE: INPUT Survey

EXHIBIT III-14

PERCENTAGE OF VENDORS USING AND PLANNING TO USE REMOTE SUPPORT IN SOFTWARE MAINTENANCE

	SOFTWARE VENDORS	HARDWARE VENDORS
Remote Diagnostics		
Remote Fixes		
Downloading Software Revisions:		

▦ = Now ▥ = Future

Note: Percentages refer to Vendors "always" or "usually" using or planning to use

SOURCE: INPUT Survey

2. CUSTOMER VIEWS ON REMOTE SUPPORT

- As shown in Exhibit III-15, remote support is used on average in only about one-third of the companies interviewed; since this includes even the smallest amount of use, this is consistent with vendor reporting in Exhibit III-14.

- The use of automatic downloading varies significantly by company size, although process manufacturing and insurance are somewhat more likely to use it than are other industries (Exhibit III-16).

- The striking thing about automatic downloading is that almost half of respondents see little improvement in software occurring because of it (Exhibit III-17).

  - One-quarter see general improvements occurring, and about one-tenth see benefits in the form of improved quality or faster problem resolution.

- Use of remote diagnostics, on the other hand, is less related to company size (Exhibit III-18). There are fewer differences among industries.

  - Only a quarter of respondents see few benefits arising from the use of remote diagnostics (Exhibit III-19).

  - Somewhat more than a third see a general improvement or benefit occurring.

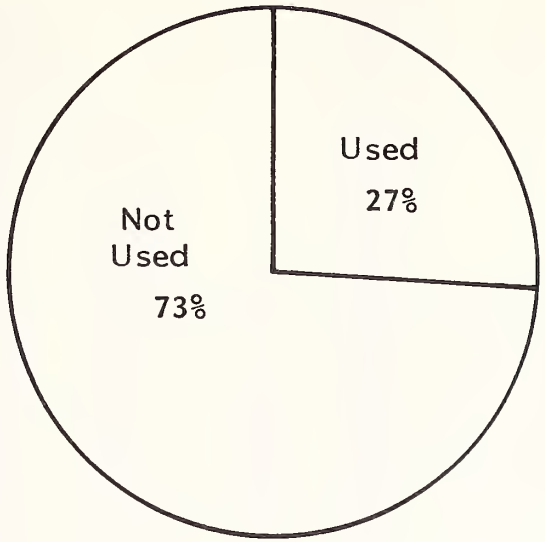
  - Expectations of specific improvements in quality or in resolution speed are both close to the 10% level.

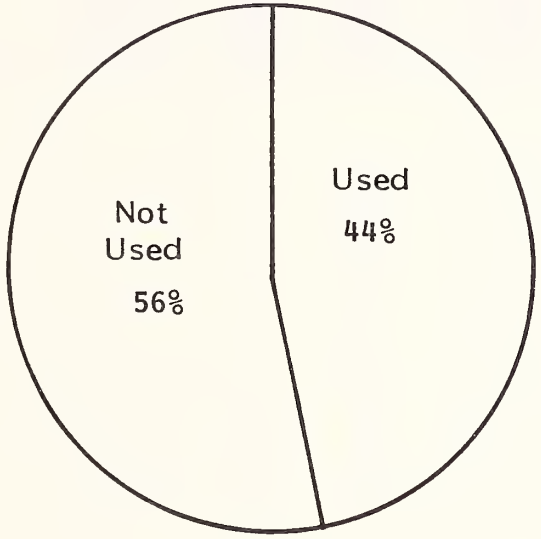
- The extent of use of remote fixes is similar to downloading, with about one-quarter of companies using this (Exhibit III-20). Company size is a moderate factor in usage, while discrete manufacturing and services/distribution show somewhat less usage.

EXHIBIT III-15

EXTENT OF USE OF REMOTE SOFTWARE SERVICING, AS REPORTED BY CUSTOMERS

Automatic Downloading





Remote Diagnostics

Remote Fixes

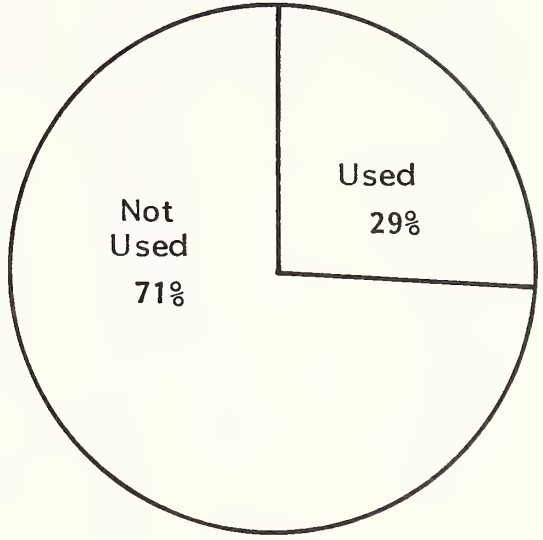


EXHIBIT III-16

USE OF AUTOMATIC DOWNLOADING, BY CUSTOMER SIZE AND INDUSTRY

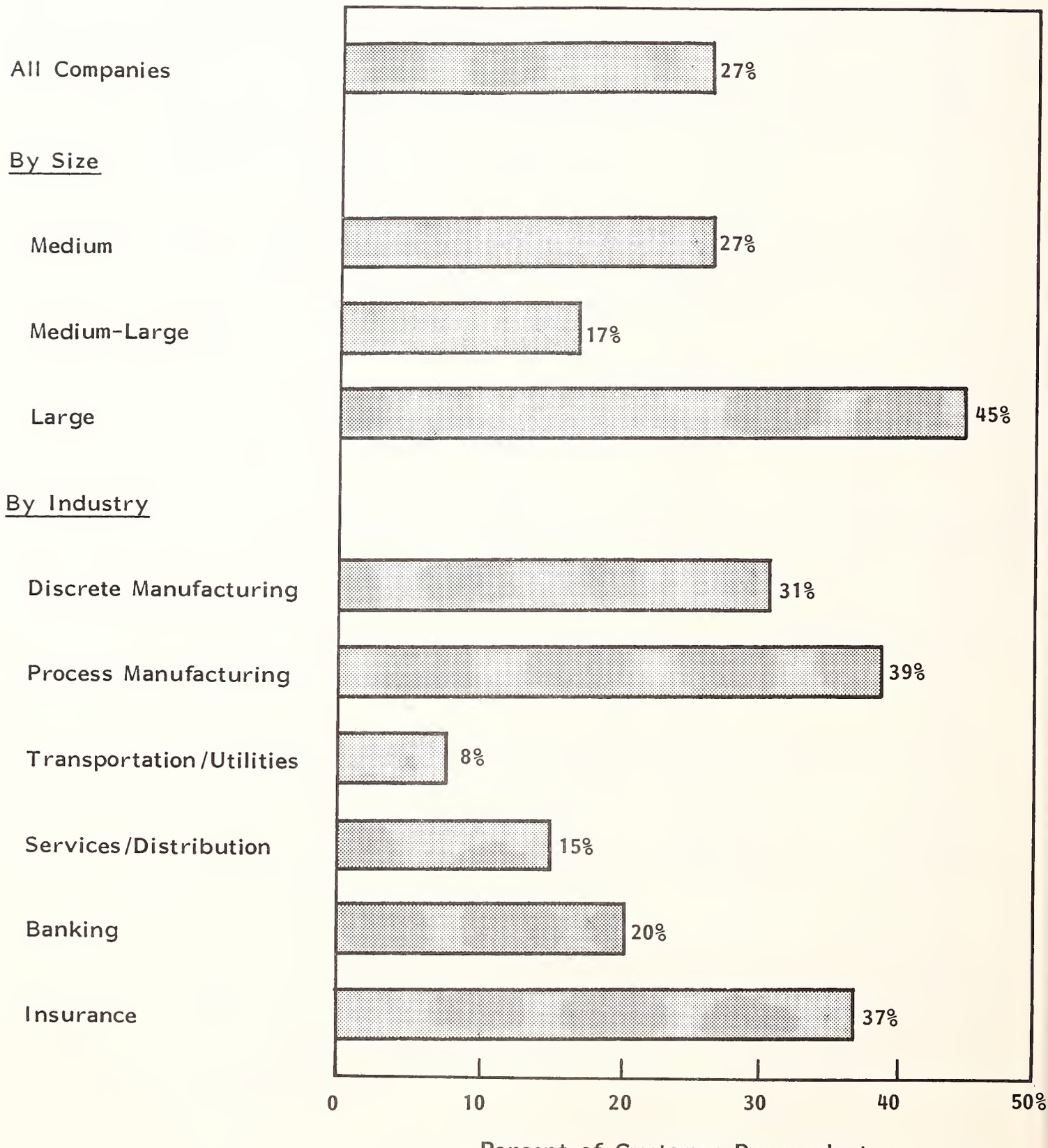
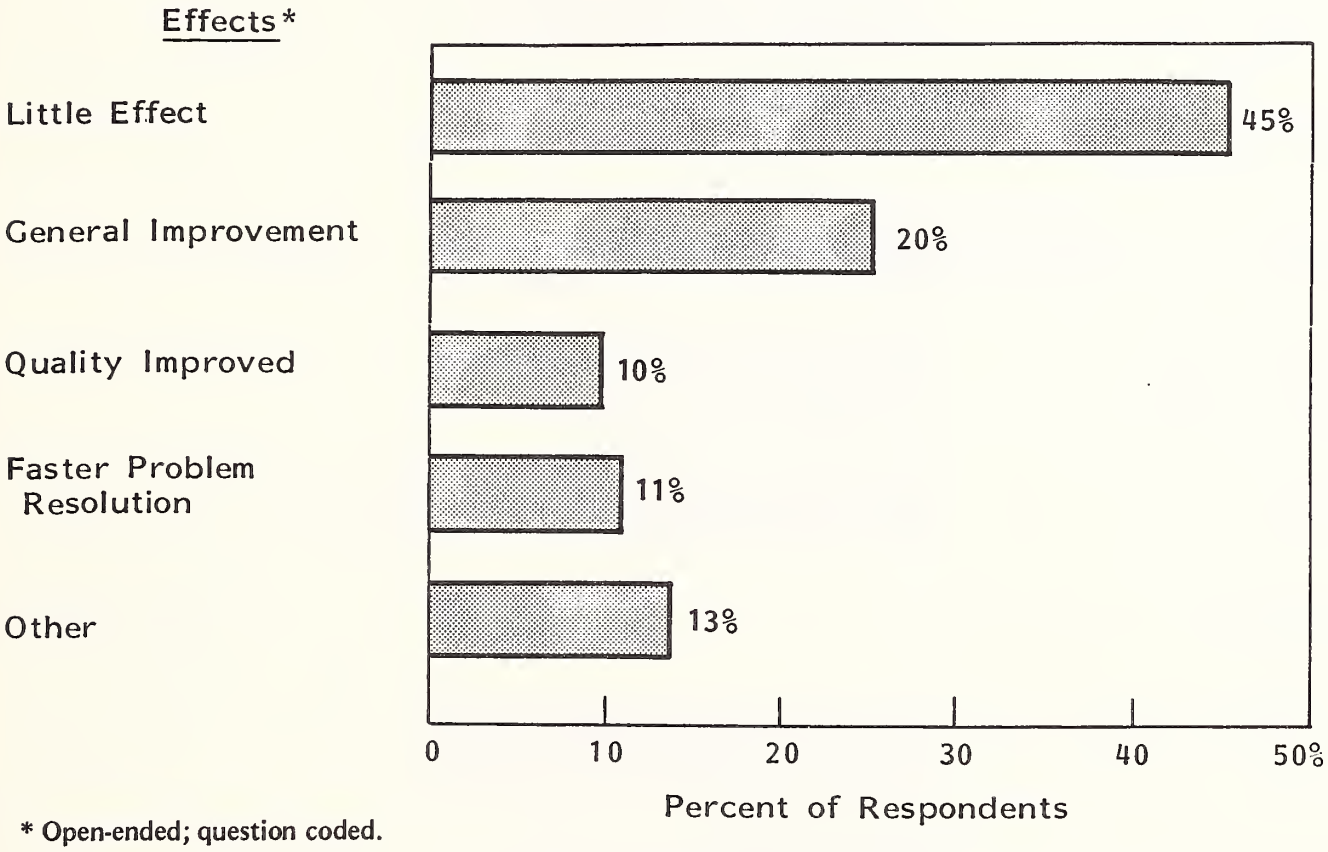


EXHIBIT III-17

BENEFITS EXPECTED BY CUSTOMERS FROM AUTOMATIC DOWNLOADING



* Open-ended; question coded.

EXHIBIT III-18

USE OF REMOTE DIAGNOSTICS, BY CUSTOMER SIZE AND INDUSTRY

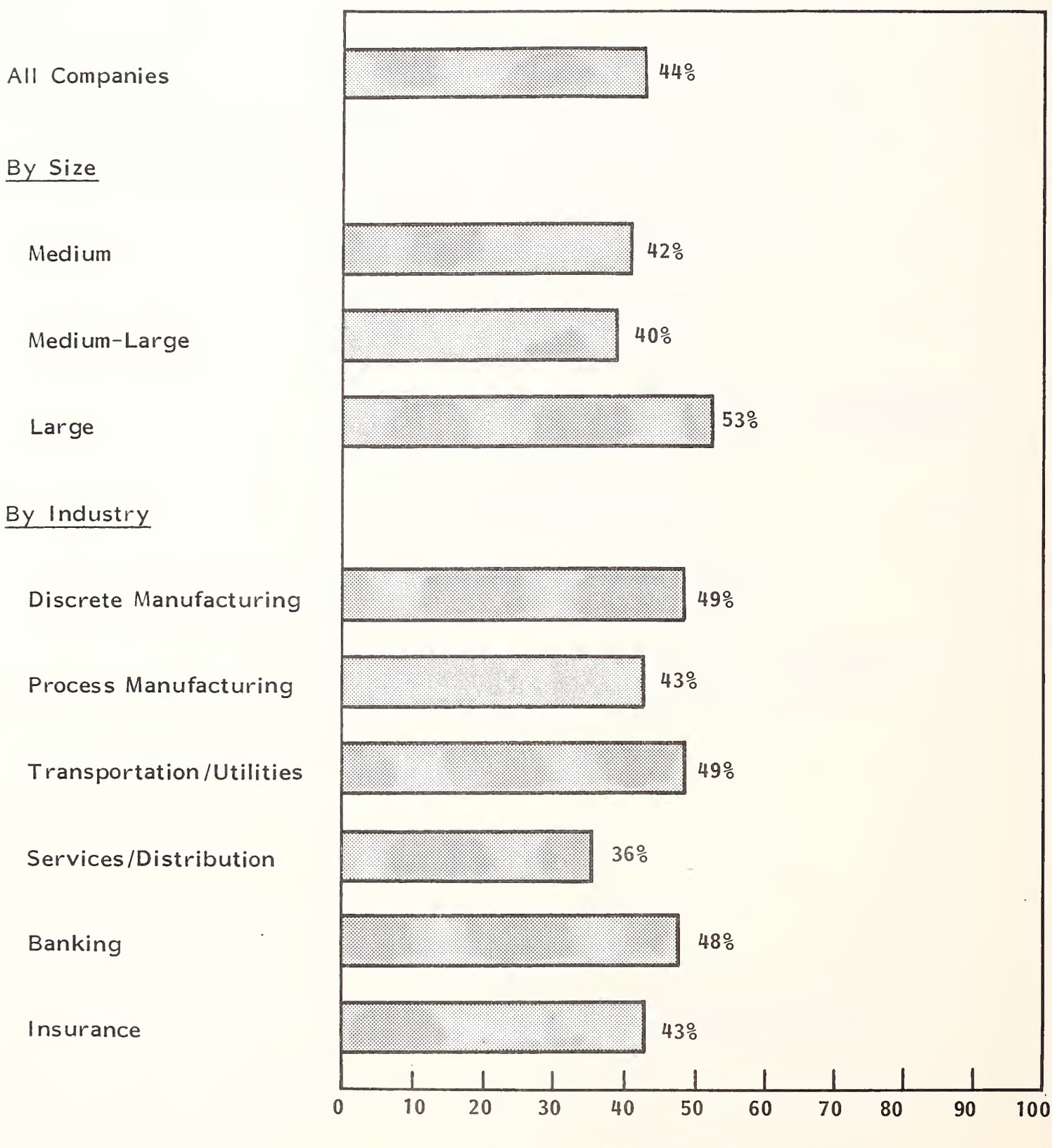
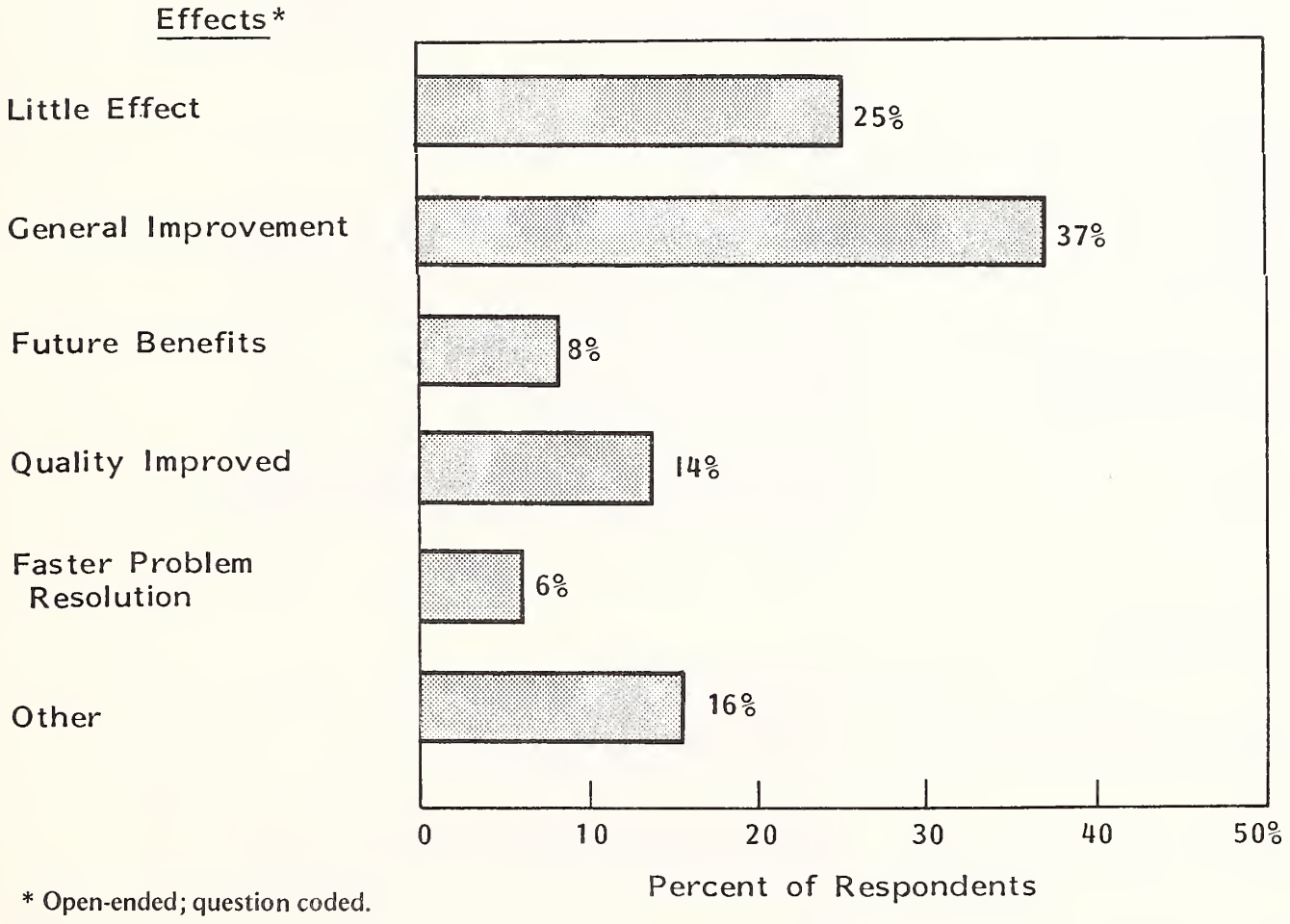


EXHIBIT III-19

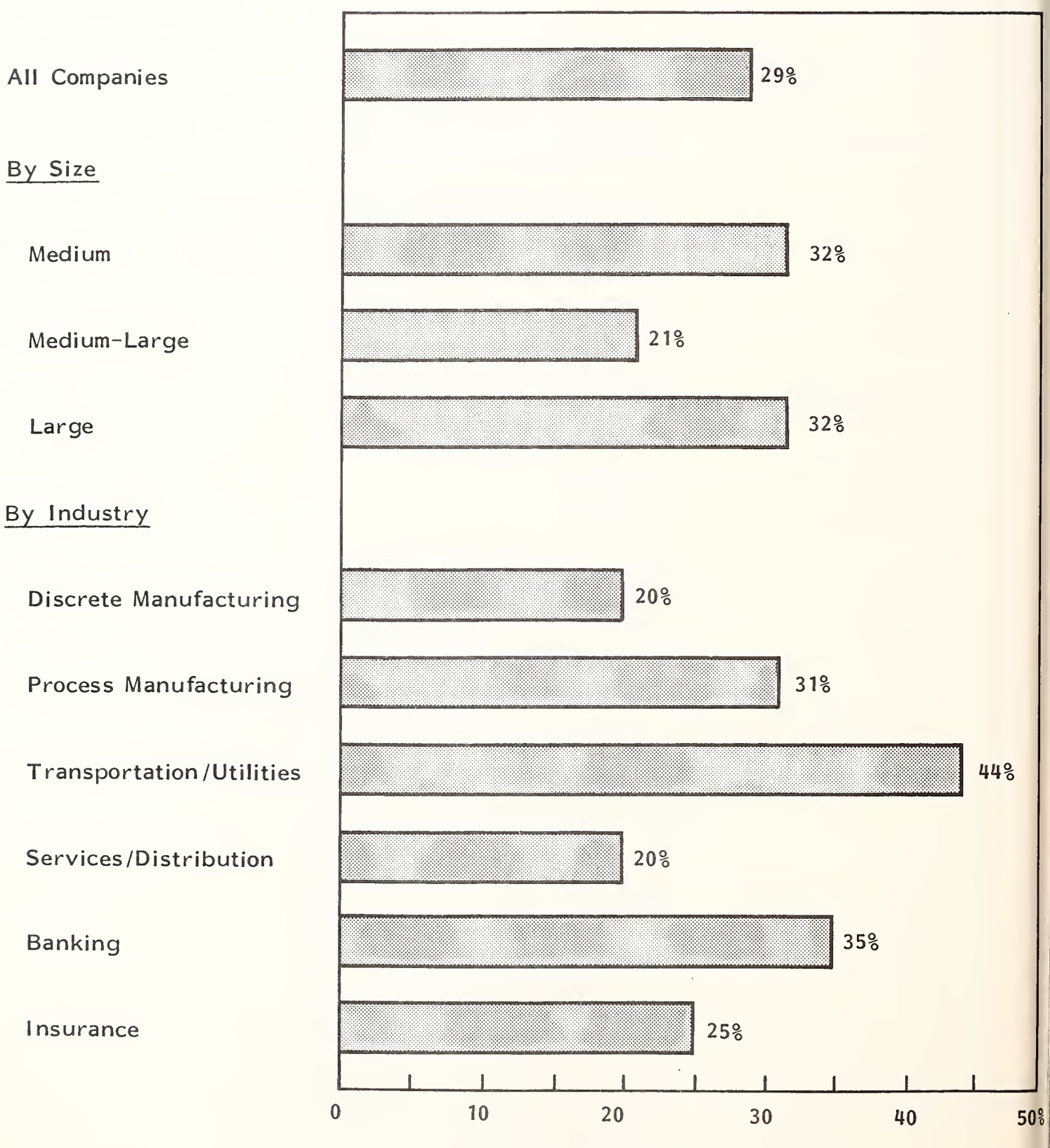
BENEFITS EXPECTED BY CUSTOMERS FROM REMOTE DIAGNOSTICS



* Open-ended; question coded.

EXHIBIT III-20

USE OF REMOTE FIXES BY CUSTOMER SIZE AND INDUSTRY



- Expectations of the benefits arising from the use of remote fixes, like those for automatic downloading, are low (Exhibit III-21).

- The general response to electronic support must be described as tepid, with some variations depending on the type of support and on company characteristics.

  - One interesting and potentially useful finding is the absence of customer concern for costs or pricing. This could be beneficial to vendors, who can effect significant savings to themselves using electronics distribution: based on the evidence gathered here, customers do not expect to see price declines or to share in any savings. Of course, customers may not believe there will be any significant savings, indicating that when vendors discuss publicly the benefits of electronic distribution, they should focus on the benefits to customers.

3. CUSTOMER SELF-SUPPORT

- Self-support is one of the true frontier areas for corporate customers. While forced self-support for micro software is rarely attractive, a blend of vendor support and self-support often is.

- There is an appreciable amount of self support by customers.

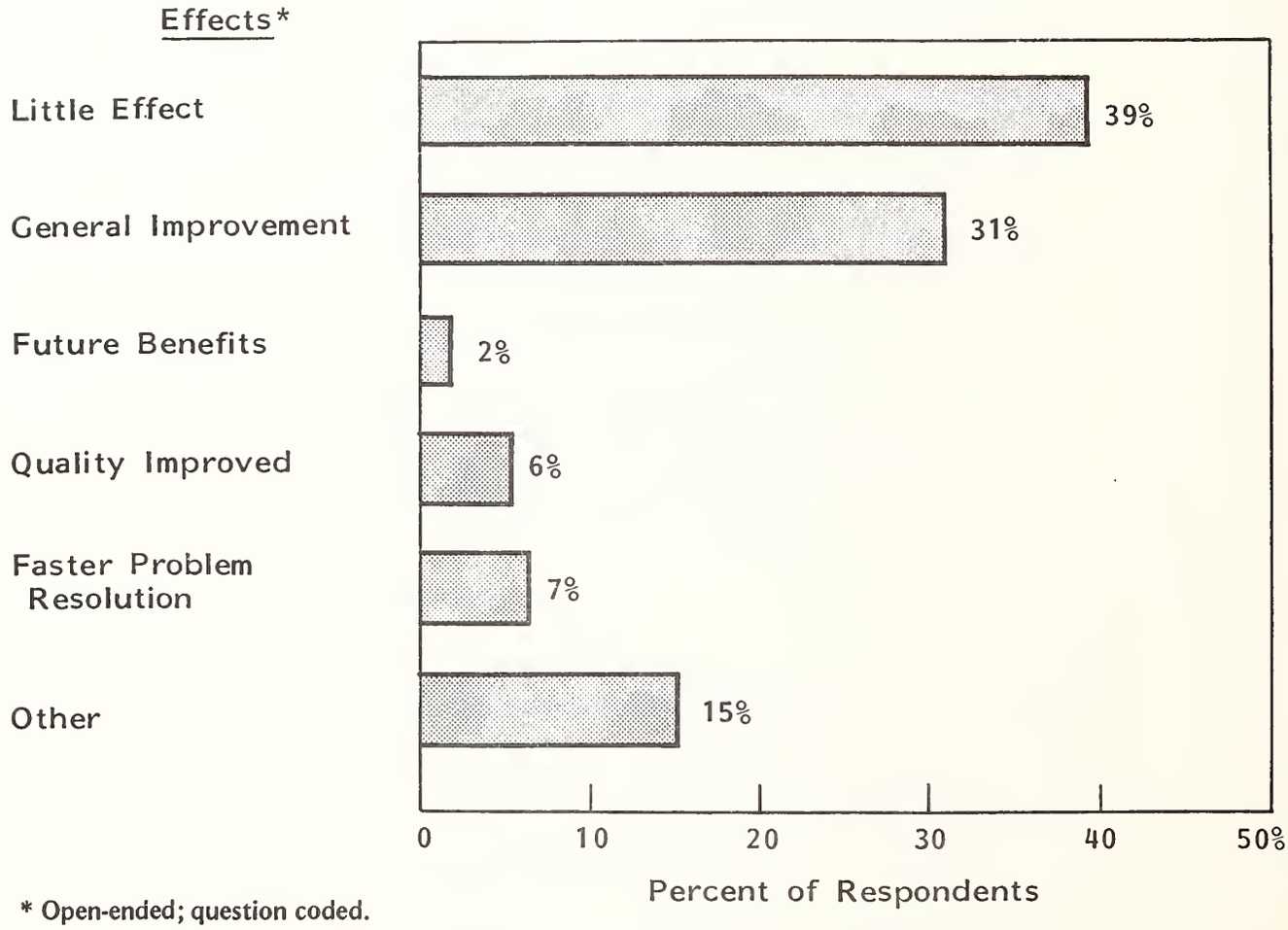
  - Almost all customers install their own release updates (Exhibit III-22).

  - Four out of five usually install initial releases as well.

  - As would be expected, a much lower percentage modify packages or fix errors themselves.

EXHIBIT III-21

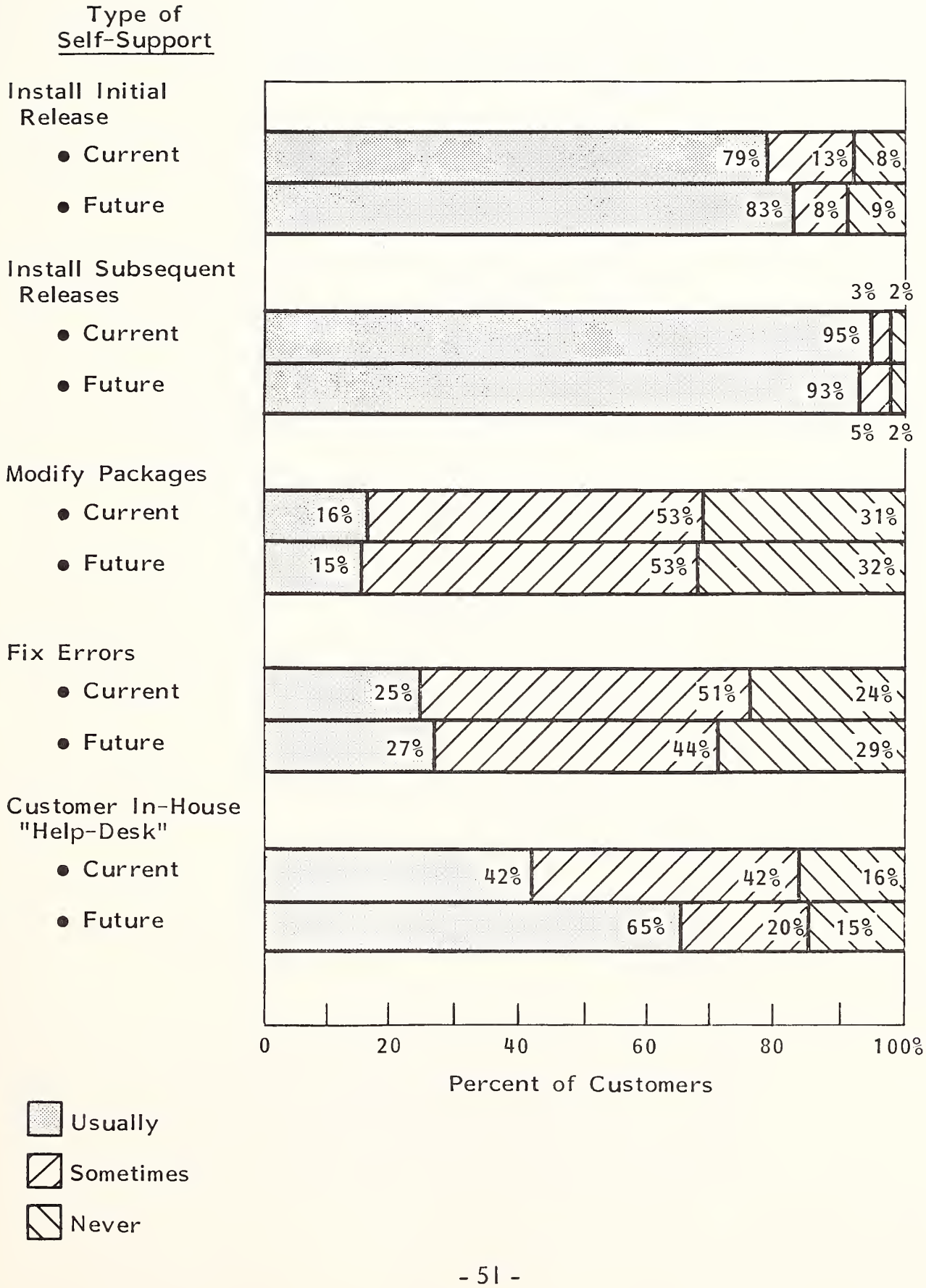
BENEFITS EXPECTED BY CUSTOMERS FROM REMOTE FIXES



* Open-ended; question coded.

EXHIBIT III-22

EXHIBIT OF CUSTOMER SELF-SUPPORT



- Almost half of the customers surveyed usually use help disks, and over 80% sometimes use them.

  . This issue should be one of vital concern to all vendors who sell, or hope to sell, significant quantities of software to large, diverse organizations.

- The percentages for installation, modifications, and fixes should remain reasonably stable in the future (Exhibit III-22):

  . The proportion of firms that "usually" modify packages will stay about the same while those performing their own fixes will increase about five percentage points.

  . On the other hand, the proportion of those that "never" modify software will remain about the same, while those that "never" fix software errors will actually go up slightly.

  . This argues that fixing errors is an activity for which more commitment is necessary: as software becomes both more complex and more important, customers will be forced to choose whether they will (and can) make this kind of commitment.

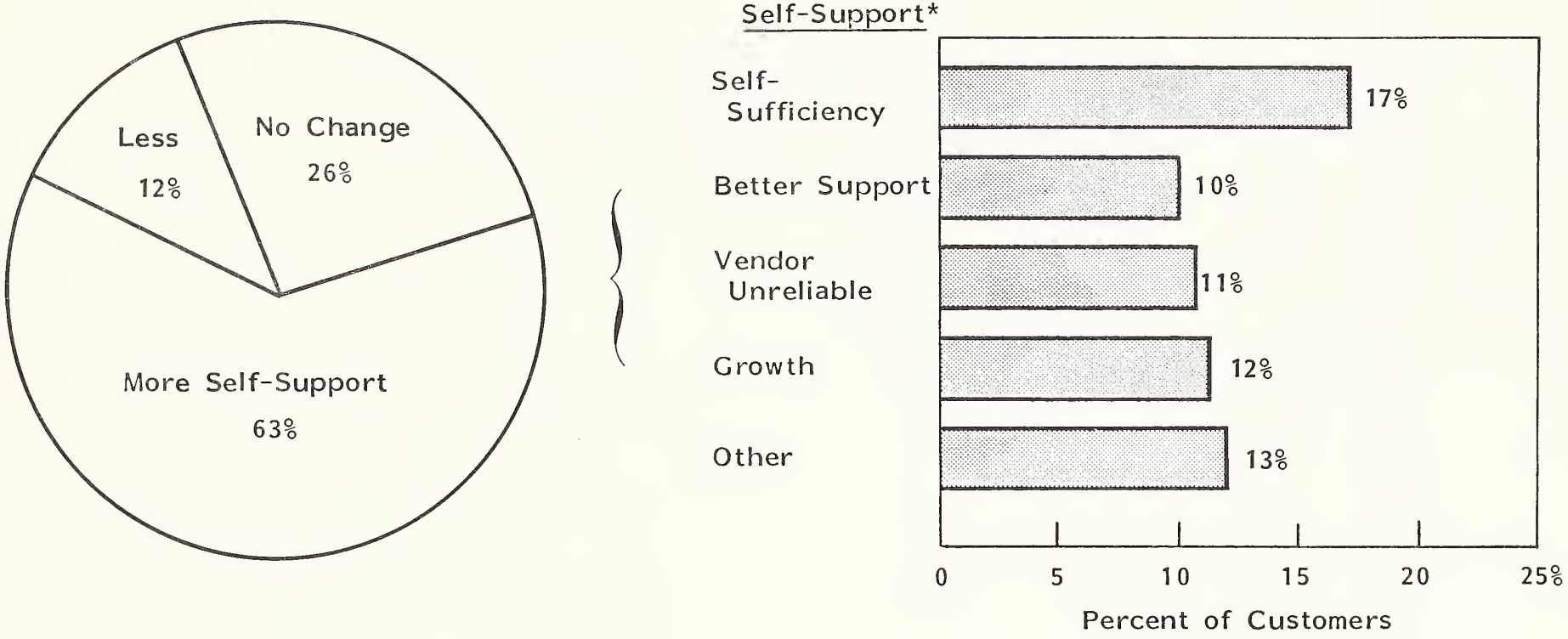
- About six in ten customers see more self-support occurring; one in ten sees less self-support (Exhibit III-23). No single reason predominates in the minds of those seeing an increase.

  - Self-sufficiency, better quality support, and vendor unreliability all play a role.

  - Underlying customer growth is also a factor, but of less importance than one might initially think; however, it should be kept in mind that software growth often does not correlate with business or even hardware growth, since software is often highly leveraged.

EXHIBIT III-23

TRENDS IN CUSTOMER SELF-SUPPORT AS SEEN BY CUSTOMERS



* Open-ended; responses coded.

- There is a significant gap between incentives offered for customers to take over some of their software support, and what is desired (Exhibit III-24).

  - Around one-quarter of respondents receive at least one incentive; over half of respondents desire some type of incentive.

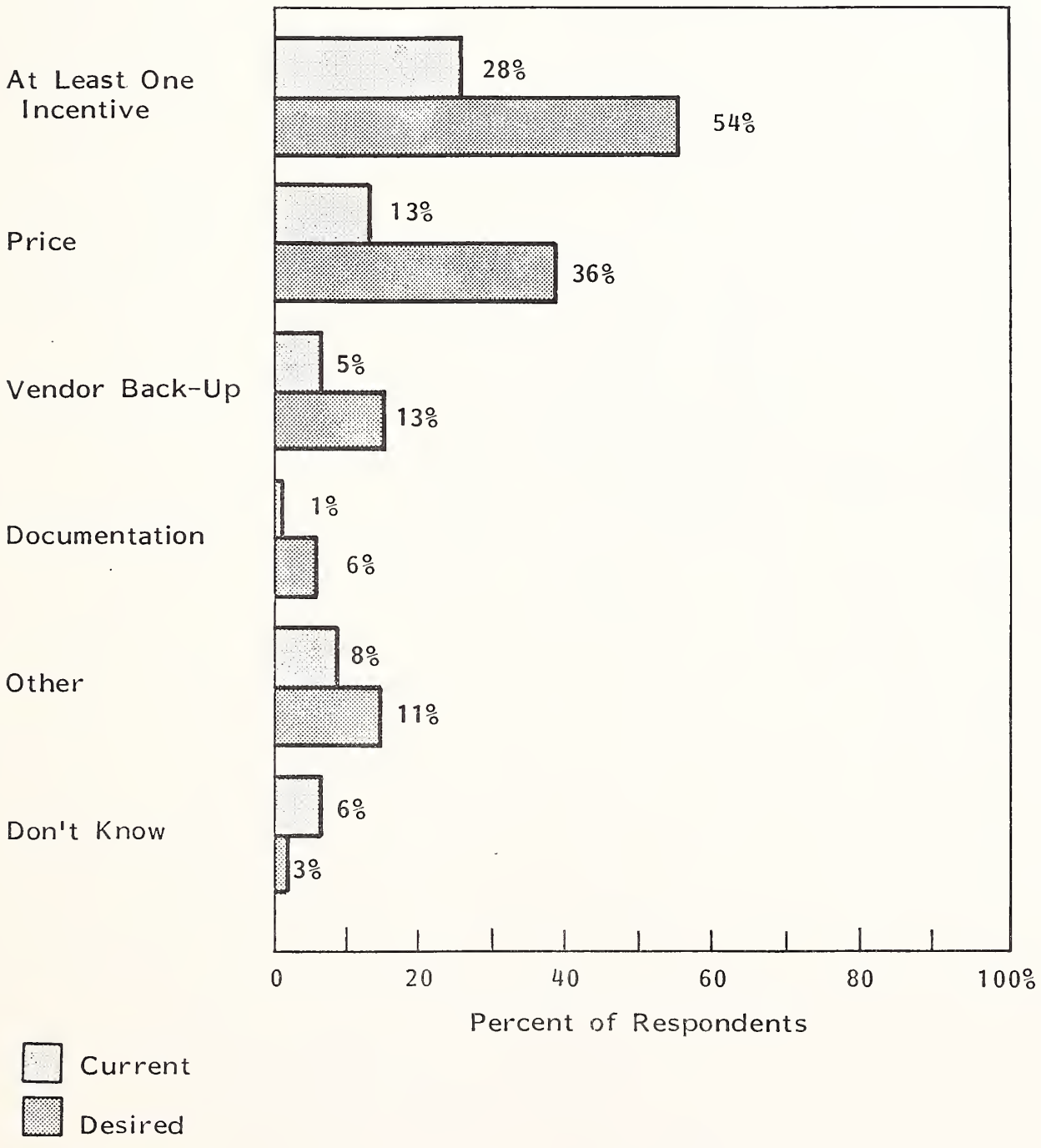
  - Price is currently the most often offered incentive, but is only offered to one in eight customers; three times this number would like price incentives.

  - Vendor back-up and documentation lag substantially behind as self-support incentives.

EXHIBIT III-24

INCENTIVES OFFERED TO PERFORM SELF-SUPPORT FUNCTIONS

(Customer Responses)



Note: "Desired" totals more than 100% due to multiple responses.

*Open-ended; responses coded.

IV SOFTWARE SUPPORT PRICING AND REVENUE ISSUES

IV SOFTWARE SUPPORT PRICING AND REVENUE ISSUES

- This chapter examines key issues and findings relating to software support pricing and revenue, including:
  - Pricing, from both the vendor and customer perspective.
  - Enhancing an existing product compared to repacking as a new product.
  - Extended support services, i.e., selling services beyond those in a standard support contract.

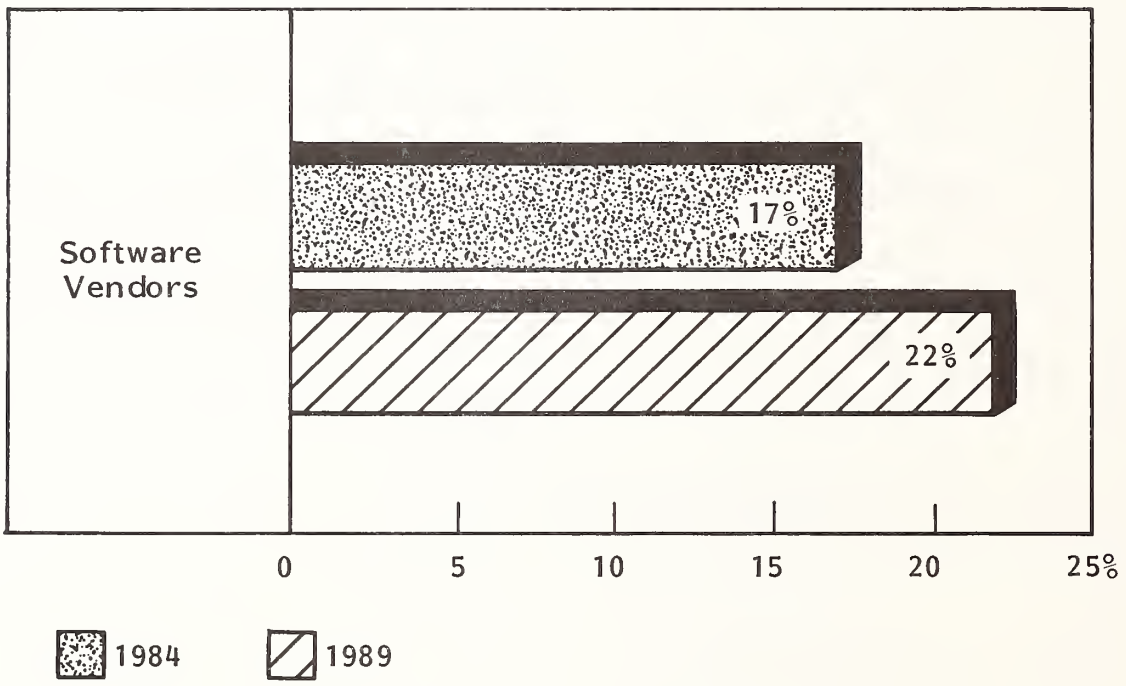
A. SOFTWARE SUPPORT PRICING

1. VENDOR PERSPECTIVE

- Vendors' current estimates of the proportion of their software revenue that comes from software support range from 4% to 50%. Vendors who still bundle their software or software maintenance are not included.
  - The support portion of software vendors' revenue is 17%, as shown in Exhibit IV-1.

EXHIBIT IV-1

PROPORTION OF SOFTWARE VENDORS'
REVENUE COMING FROM SOFTWARE SUPPORT



- Software vendors see a modest growth in this proportion over the next five years, while hardware vendors see the software support share of their revenue increasing by a factor of four.

- There is certainly room for justified increases in software and software support prices. INPUT's ongoing custom research in this area has shown that, across industry and product groups, price is not now a major consideration for most customers.

  - Customers' high priorities are functionality, flexibility, and support. Customers will buy a software product that they perceive to be over-priced (from a supplier cost/profit standpoint) if it meets these needs better than competing products.

  - Vendors typically ascribe more importance to price than customers do.

- In general, vendors ascribe equal importance to each of the factors in pricing software maintenance, shown in Exhibit IV-2:

  - Value to customers.

  - Percent of software price.

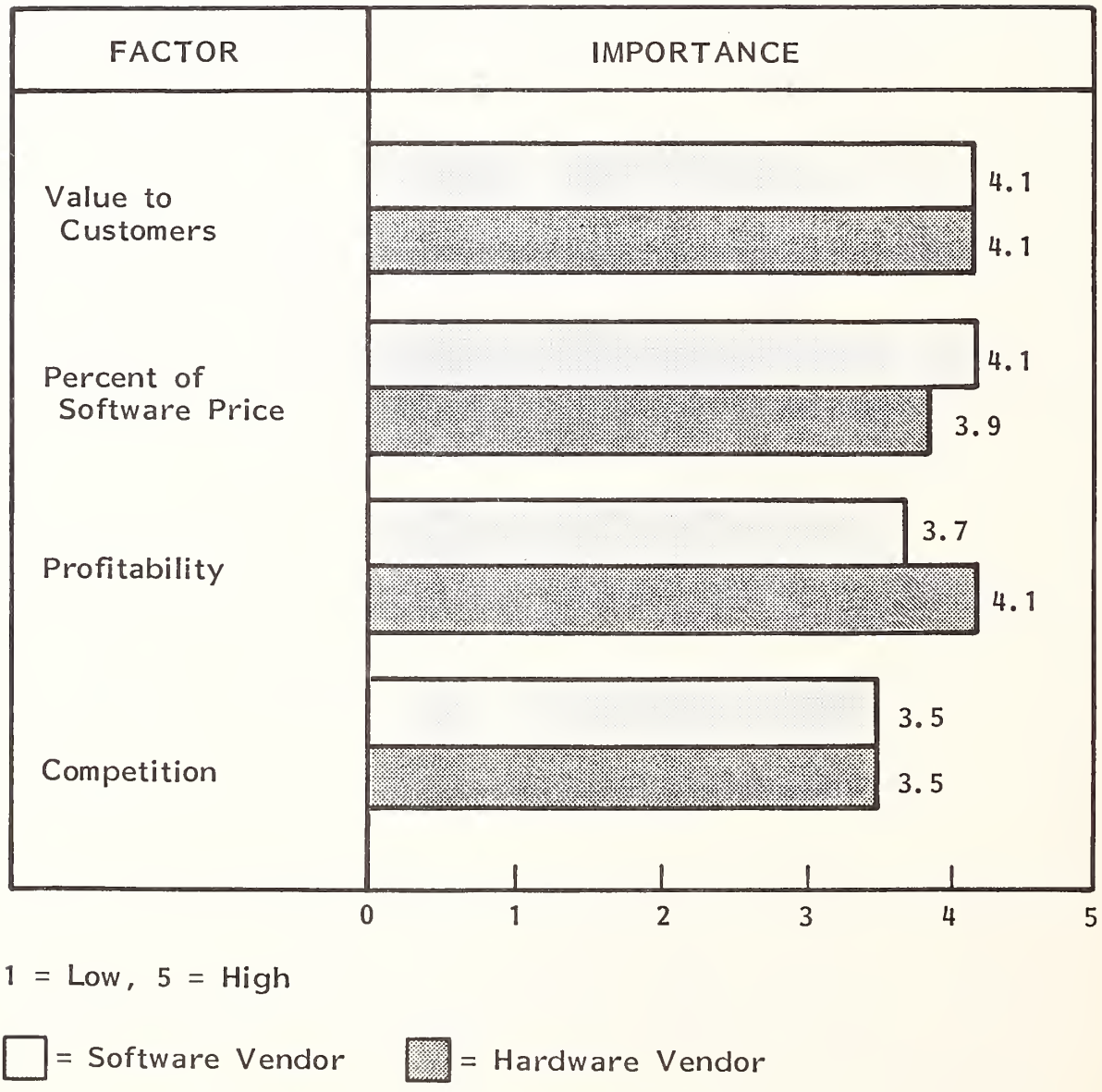
  - Profitability.

  - Competition (industry norm).

- However, 84% of vendors interviewed only used one method to determine pricing for software maintenance. Most companies use a mechanistic approach to pricing--either a percent of the package price or a profitability target, as shown in Exhibit IV-3. This means that maintenance pricing may be too low or too high.

EXHIBIT IV-2

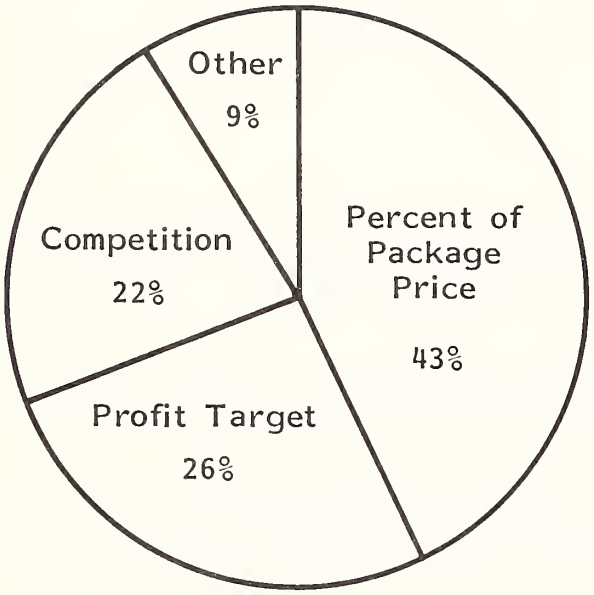
FACTORS DETERMINING
SOFTWARE MAINTENANCE PRICING



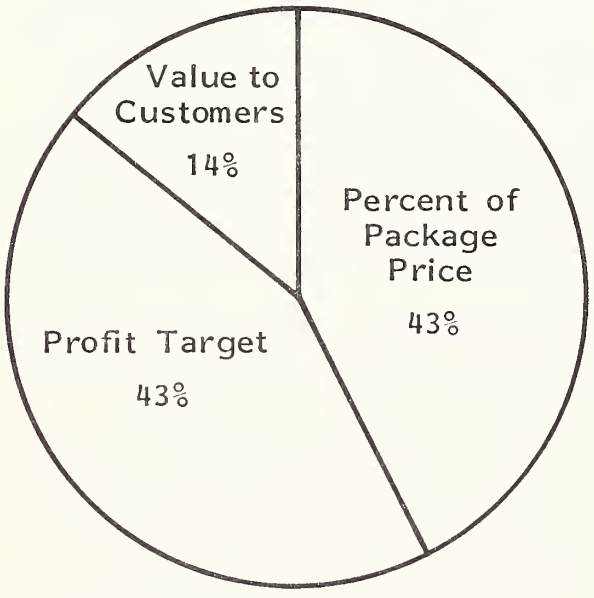
SOURCE: INPUT Survey

EXHIBIT IV-3

METHODS OF DETERMINING
SOFTWARE MAINTENANCE PRICING



SOFTWARE COMPANIES



HARDWARE COMPANIES

SOURCE: INPUT Survey

- Pricing too low leaves money on the table.

- Pricing too high may cause some customers to avoid vendor maintenance, thereby possibly reducing total software maintenance revenue. This may cause even more serious long-range problems, as analyzed in Chapter V.

2. CUSTOMER SPENDING

- Overall software support costs now account for over one-quarter of software license costs (Exhibit IV-4).

  - This proportion does not vary greatly by customer size, but shows significant variation among industries.

  - An industry's support outlay and the amount of ongoing software license expense can be affected by:

    . Adoption of a one-time license fee with ongoing support costs.

    . Purchasing a package to use as a "shell," with no support planned.

    . A package purchased from the end-user budget with support costs from MIS (or vice versa).

  - There are enormous variations from firm to firm within industries as well.

- In many cases, support is a nearly invisible expense, with over half of support expenses included in the license fee (Exhibit IV-5). With the exception of process manufacturing and services/distribution, this figure does not vary appreciably among industries.

EXHIBIT IV-4

SOFTWARE SUPPORT COSTS AS A PROPORTION OF LICENSE COSTS, AS REPORTED BY CUSTOMERS (By Company Size and Industry)

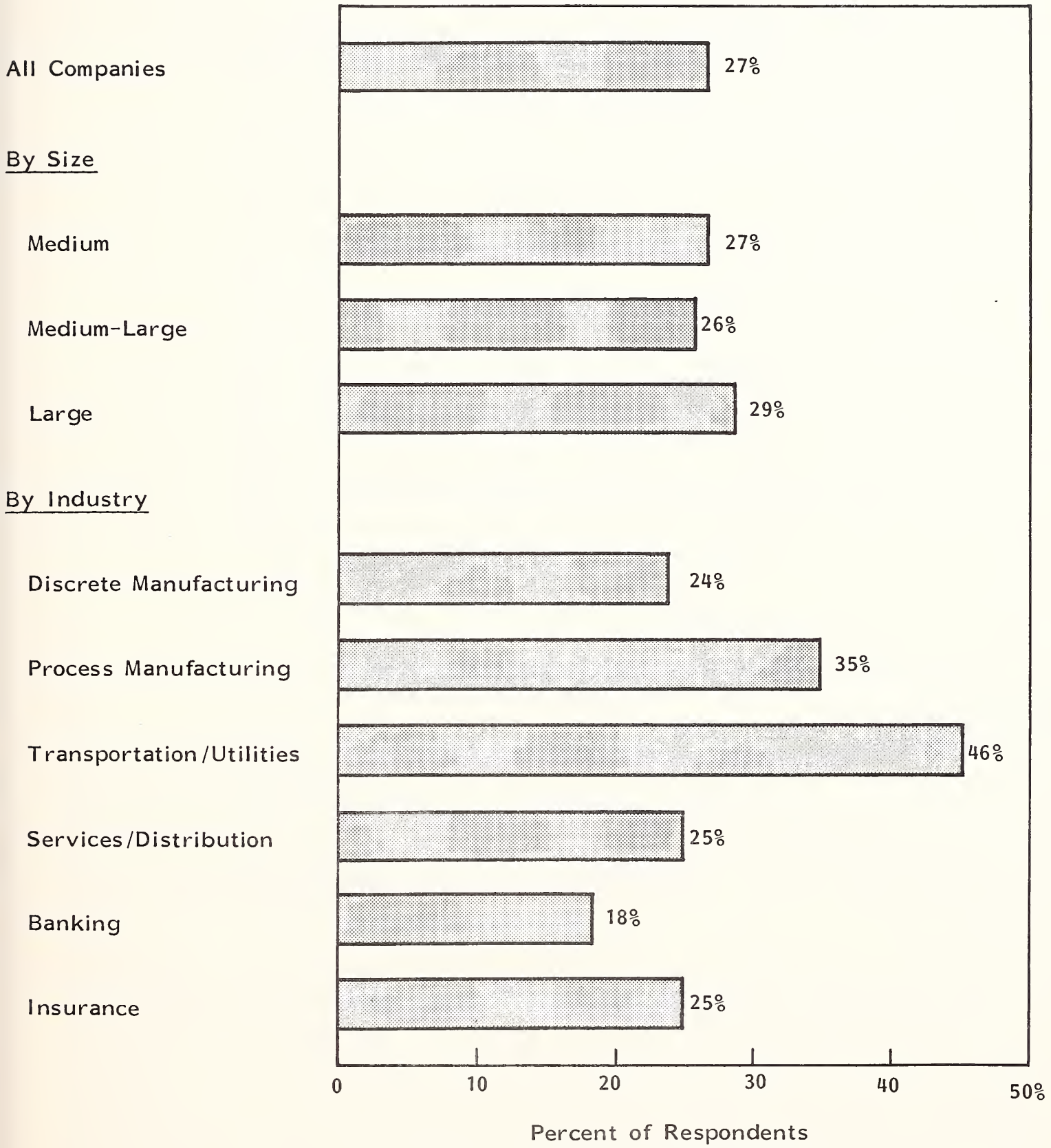
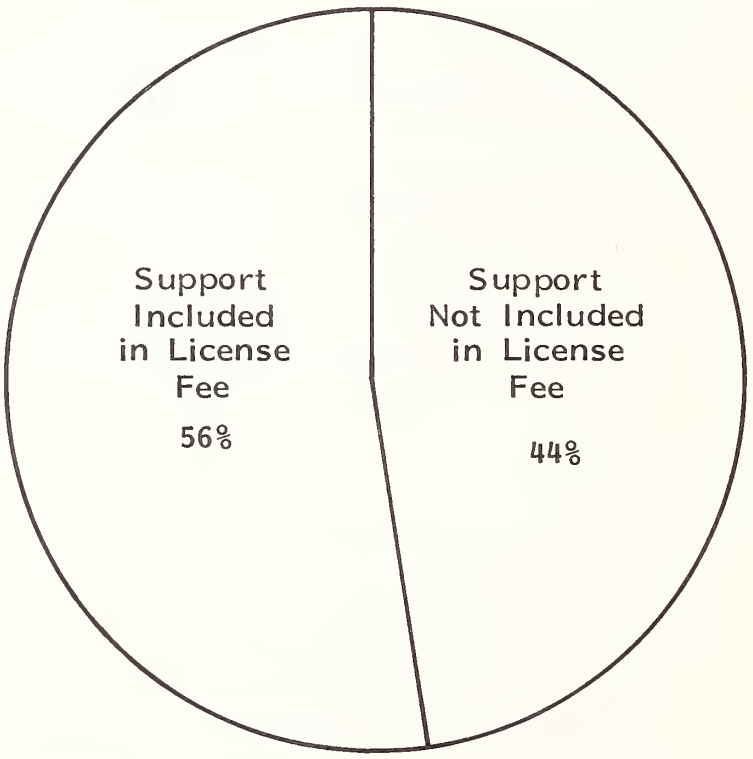


EXHIBIT IV-5

PROPORTION OF SUPPORT INCLUDED IN
LICENSE FEE, AS REPORTED BY CUSTOMERS



- Support is usually quoted separately, but sometimes is "bundled" in the license fee for administrative convenience.

- Generally, customers expect the current rate of increase in software support costs to continue (Exhibit IV-6).

- Customers expect, on the average, to have their software support spending increase at nearly the same rate as their spending on software licenses.

  - A word of caution: while these overall rates are stable, there is significant variation in total software expenditures within companies from year to year.

  - These changes reflect the "lumpy" nature of major software acquisitions. The rate of growth for support is more stable.

  - The primary reason for perceived support cost increases is the acquisition of new software (Exhibit IV-7).

  - Price increases as the reason for support cost increases (including those not related to inflation) are less significant in customers' minds.

  - Hardware growth is another secondary factor.

  - The acquisition of additional software is of more significance to smaller organizations than to larger ones as a reason for increased support fees, and is very important to service/distribution organizations (Exhibit IV-8).

B. NEW VERSUS ENHANCED SOFTWARE PRODUCTS

- One of the barriers to making software support into a functioning profit and loss (P&L) center is that some of the most attractive enhancements to

EXHIBIT IV-6

CUSTOMER EXPECTATIONS OF SOFTWARE
SUPPORT COST INCREASES

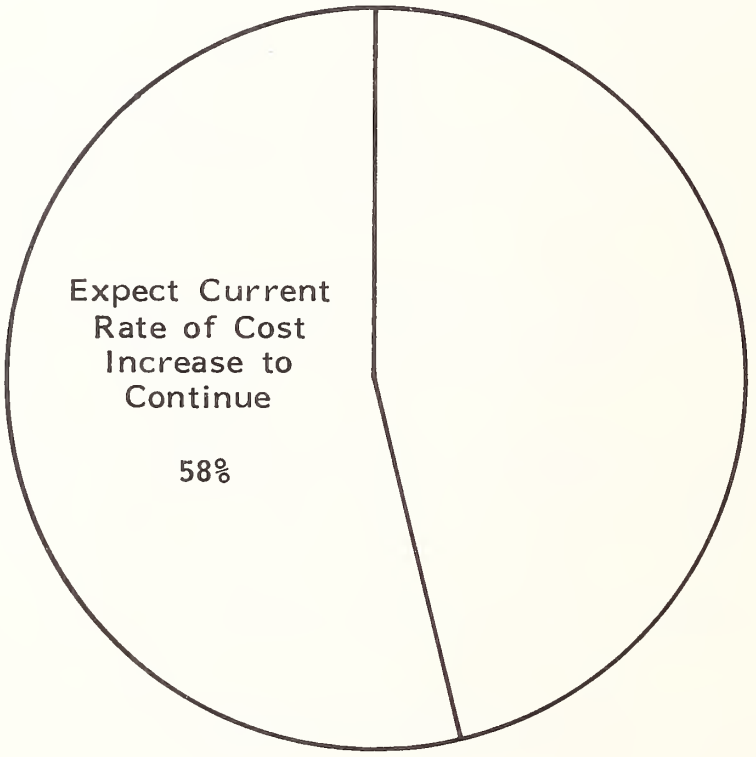
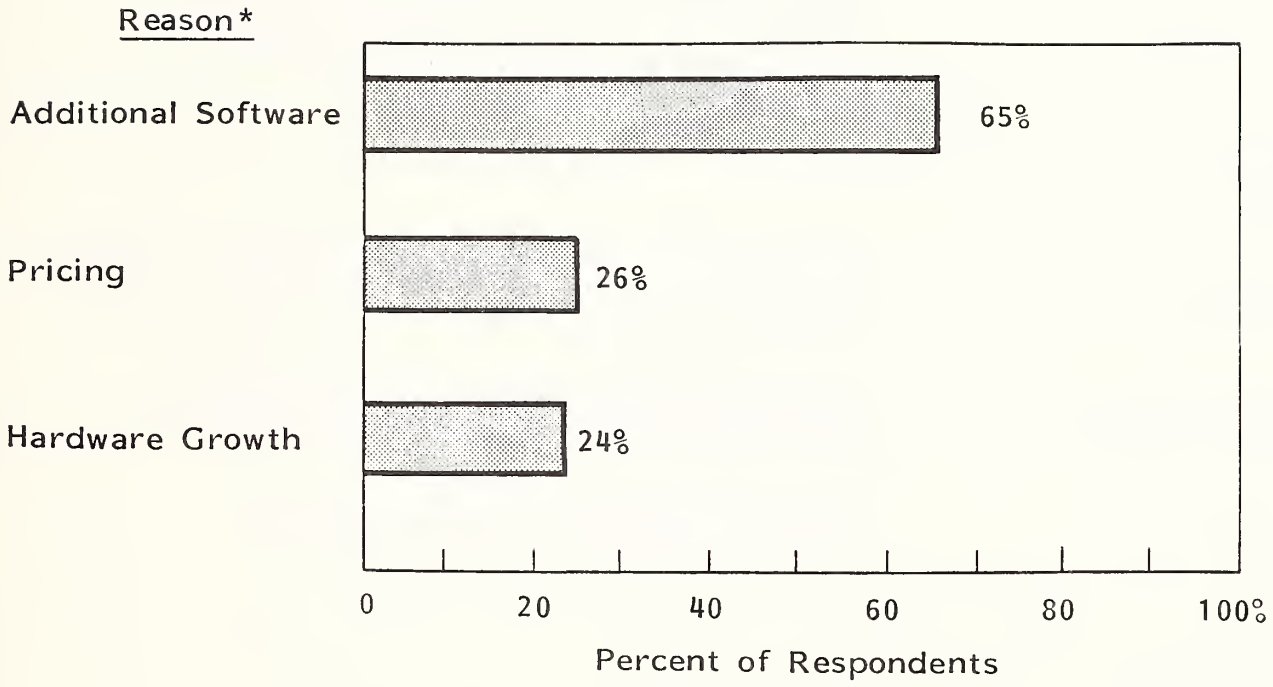


EXHIBIT IV-7

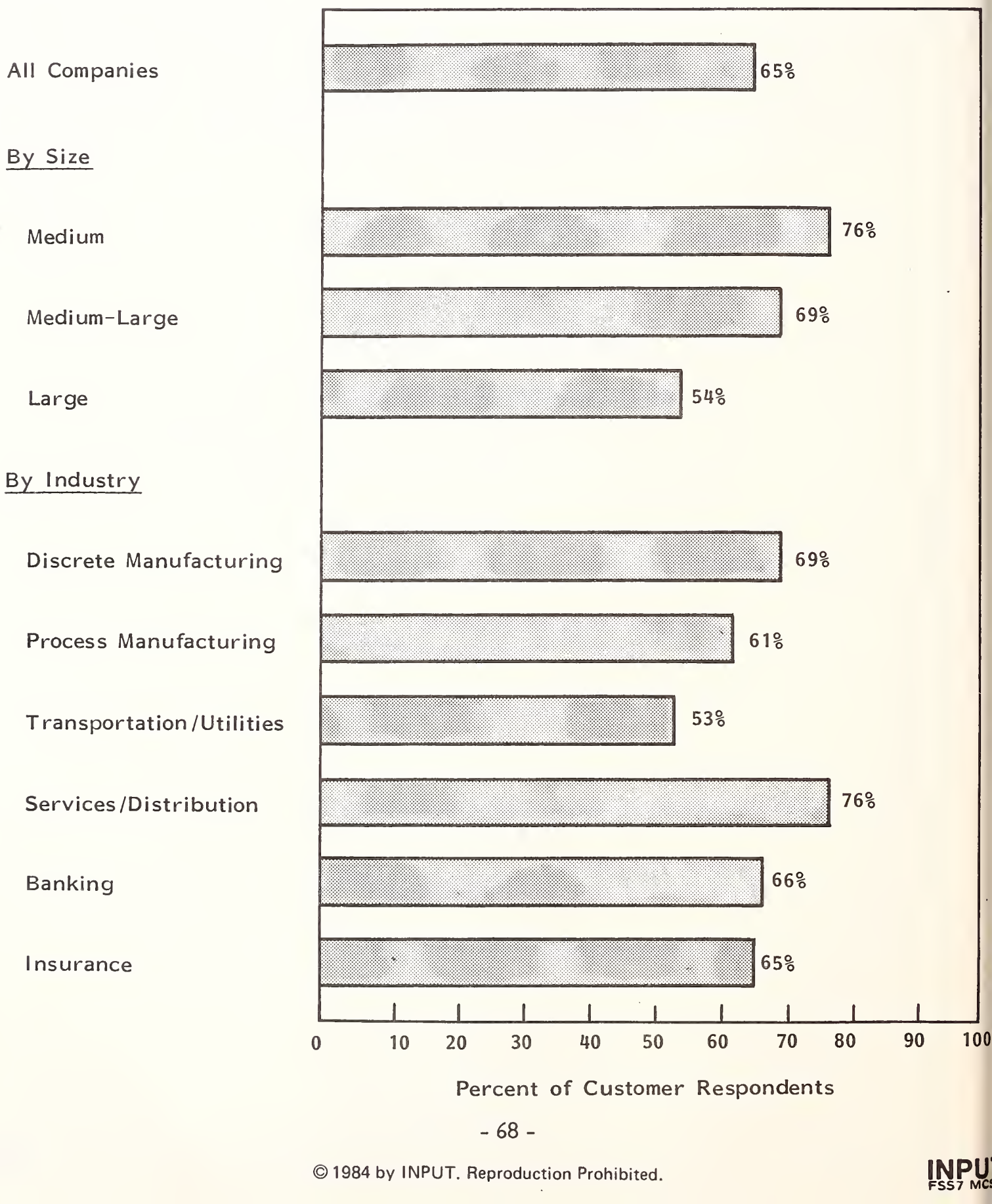
CUSTOMER PERCEPTIONS OF REASONS FOR
SOFTWARE SUPPORT FEES INCREASING



* Open-ended; question coded.

EXHIBIT IV-8

ADDITIONAL SOFTWARE AS A REASON FOR SOFTWARE SUPPORT COSTS INCREASING



existing software can just as easily be packaged as new products. If this is done, the benefits do not accrue to the software support organization.

- Many software planners freely admit that their firms do not have hard and fast rules for deciding when a bundle of capabilities represents a new product as opposed to an enhancement, or for what constitutes a major, as opposed to a minor, enhancement.

- Existing customers would of course benefit most by having all possible product additions considered enhancements and included as standard revisions covered by their maintenance contracts. Older customers (and some long-time vendor personnel) identify with the bundled software era, when everything was "free."

  - In reality, customers have little or no contract protection from vendors announcing an "improved" software product, and charging current customers a significant portion of list price, if not the full list price.

  - The only barrier to this (but a strong one) is the long-term damage it will do to the vendor's standing in the marketplace. Some vendors have damaged their reputations in this way, usually because of short-term actions taken to relieve serious financial pressures.

- Some vendors adopt a middle path, announcing a higher-priced, improved product, while including many of the new features as maintenance revisions to current products.

  - This approach must be well thought-out from a marketing standpoint so that satisfying current customers does not undermine future sales.

  - There is a long-term technical burden in maintaining two or more similar, but not identical, products.

- Many vendors make expensive new products available to customers at substantial discounts, especially when the old product, having reached a technical dead end, will not attract many new sales.

  - Negative incentives can also be applied by announcing that support of the old product will be stopped soon (generally in less than a year).

  - This will get the new product off to a rousing start by giving it an instant track record.

- Over half of customers had a recent experience of being offered a "new" product rather than an upgrade. Half of such companies felt that the vendor handled the situation well (Exhibit IV-9).

  - Where things were not handled well, cost was not a problem (Exhibit IV-10)--it was the technical end of things, in spite of the fact that almost half the time no discount at all was received; the upgrade was free in only about one-eighth of considered cases (Exhibit IV-11).

- Two out of three customers see such replacements becoming more common in the future (Exhibit IV-12).

  - Technical changes and general trends are seen as the most important motivating forces.

  - Increased revenues are also given weight, but by only one-quarter of respondents.

- Consequently, INPUT sees replacement products as having considerable potential as revenue enhancers, given several key assumptions:

  - The replacement product delivers additional, needed functionality (the "needed" is important).

EXHIBIT IV-9

CUSTOMER ATTITUDES ON BEING OFFERED A NEW PRODUCT INSTEAD OF AN UPGRADE

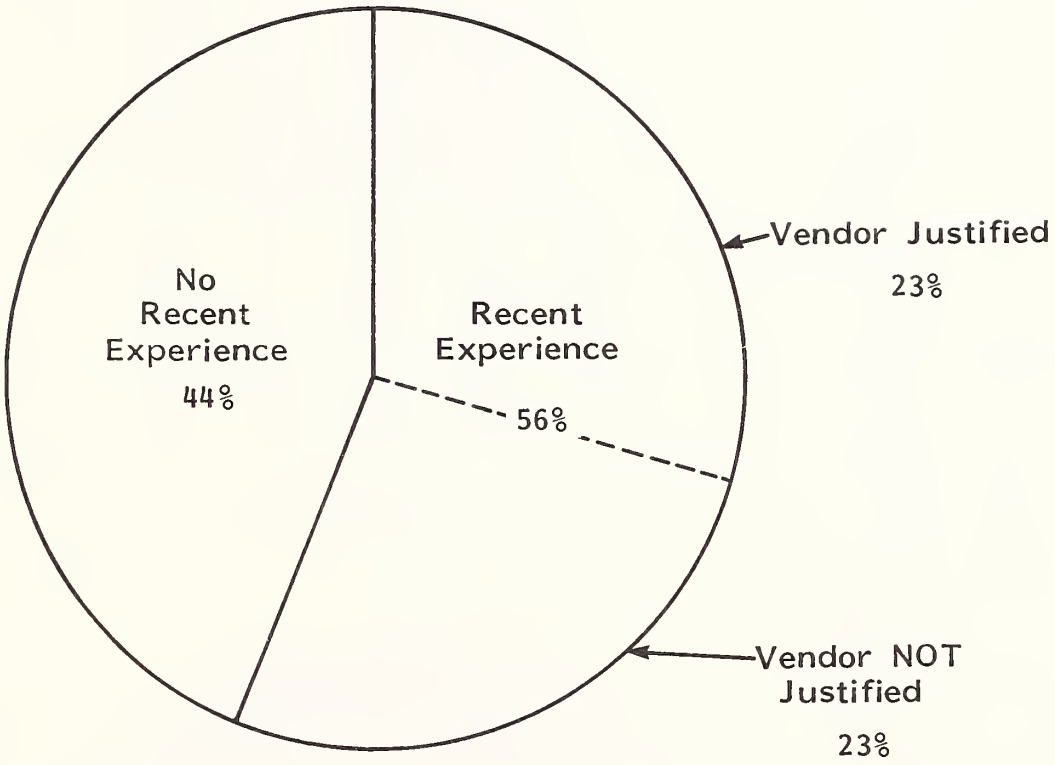
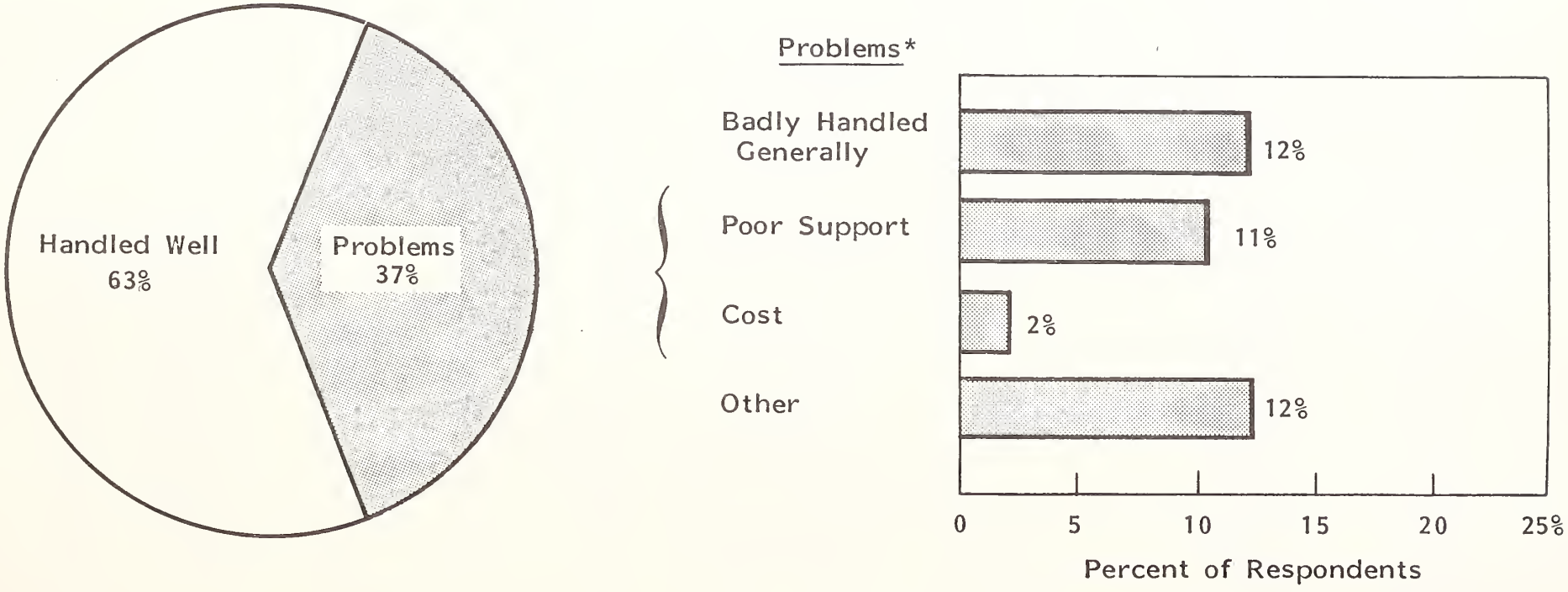


EXHIBIT IV-10

ASSESSMENT BY CUSTOMERS OF VENDOR REPLACING
EXISTING PRODUCT WITH A NEW PRODUCT



* Open-ended; responses coded.

EXHIBIT IV-11

PRICING EXPERIENCE WHERE A NEW PRODUCT REPLACED AN EXISTING PRODUCT
(As Reported by Customers)

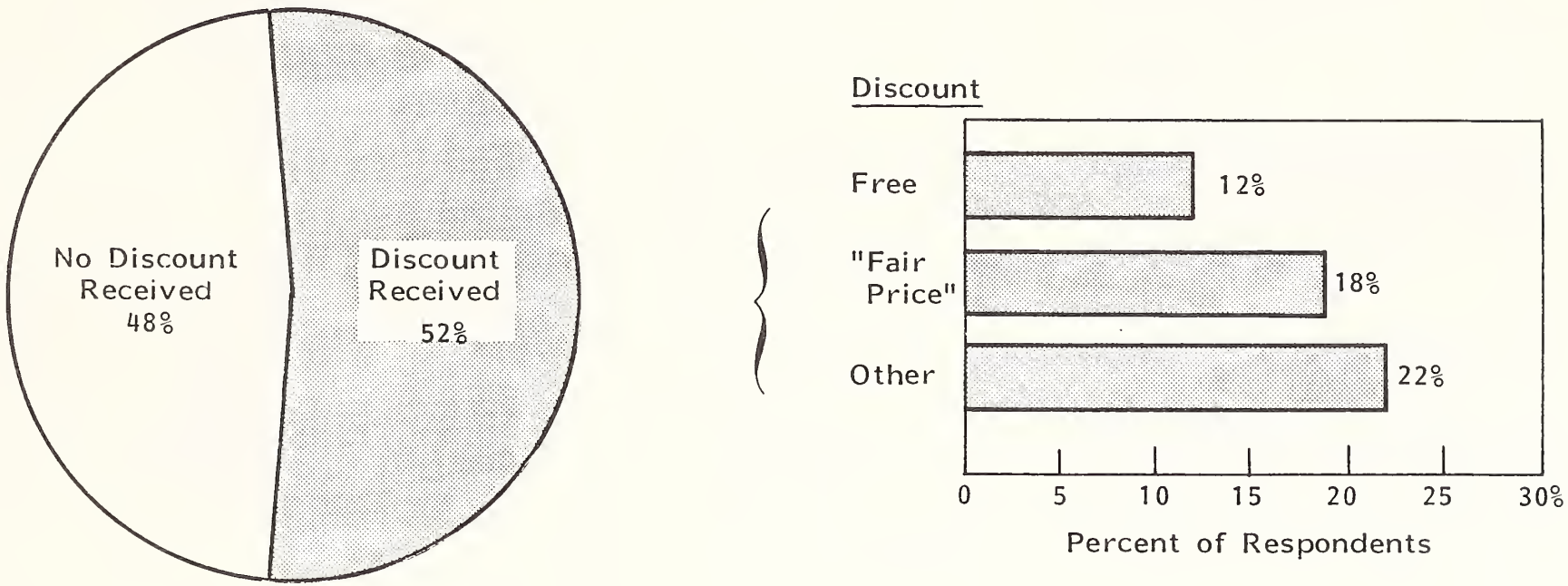
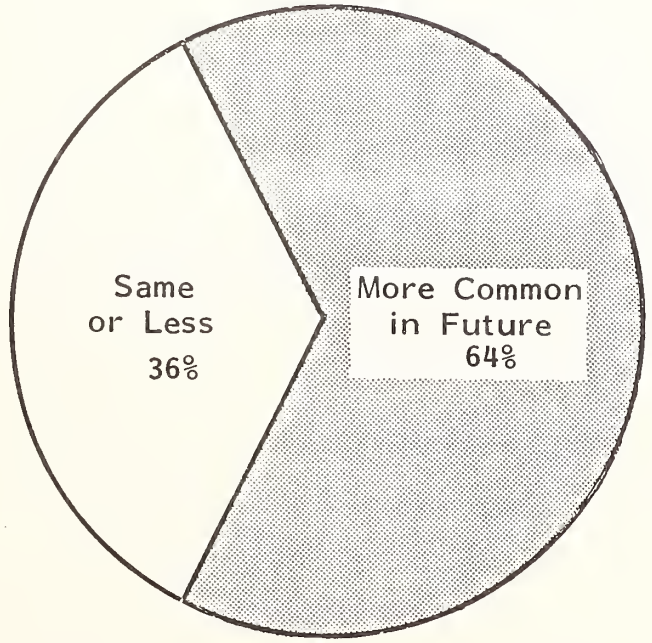
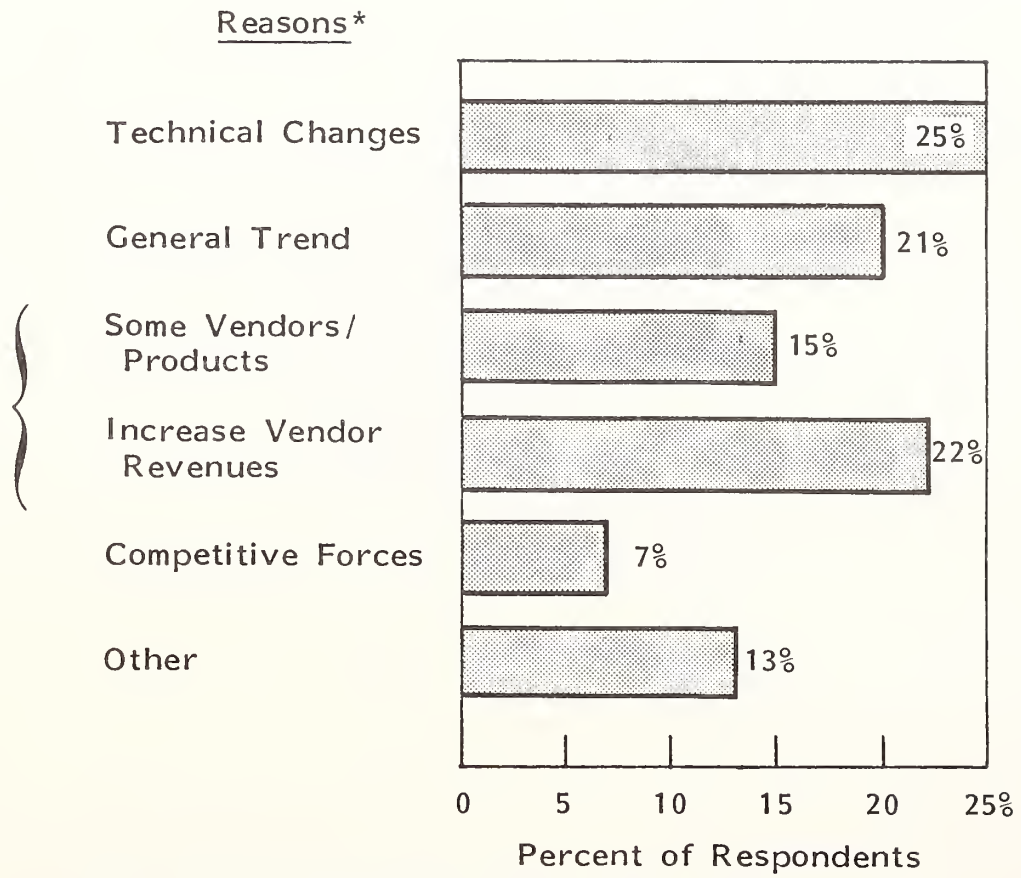


EXHIBIT IV-12

CUSTOMER EXPECTATIONS OF VENDORS REPLACING
RATHER THAN UPGRADING SOFTWARE PRODUCTS





Note: Totals more than 64% due to multiple responses.

* Open-ended, responses coded.

- The replacement product required nontrivial development resources.

- Some, but not extensive, conversion is needed between the two products.

- The technical transition is handled well.

- The price (if any) to current customers takes the preceding factors into consideration.

C. EXTENDED SUPPORT SERVICES

- On the average customers spend a substantial amount on additional support services, an amount equivalent to a quarter of their standard contract commitment (Exhibit IV-13). These are generally the "soft" services of training and consulting (Exhibit IV-14).

  - For many vendors this should represent an untapped stream of revenue.

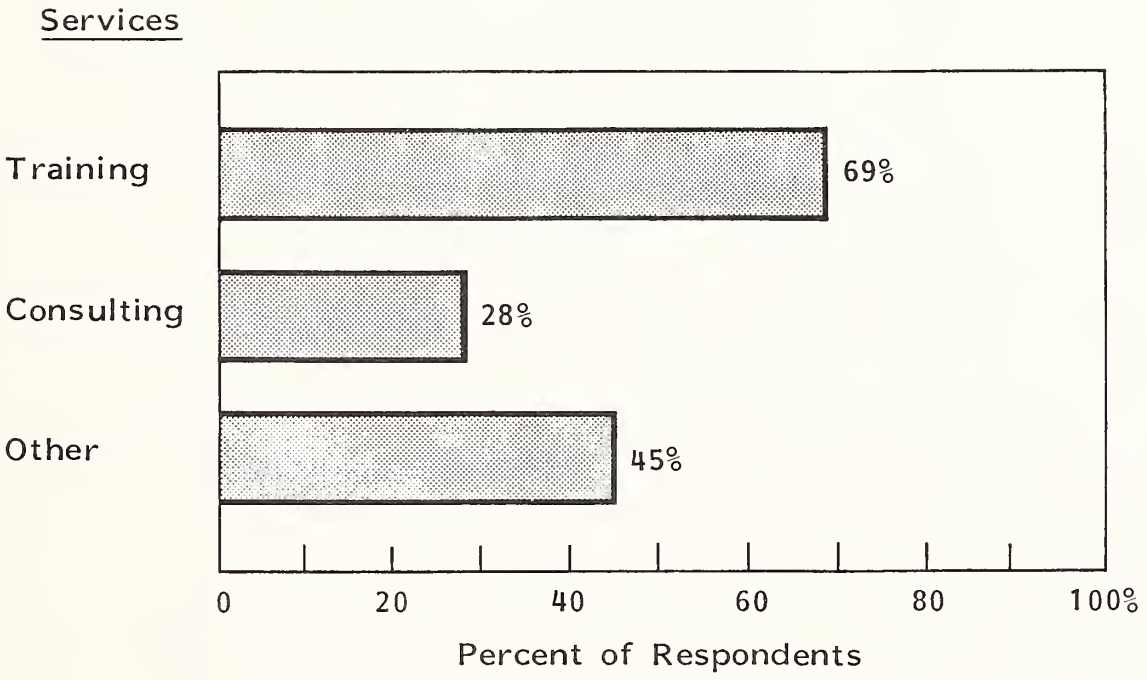
  - In some cases, vendors are providing such services, but for a standard cost, or even free of charge.

EXHIBIT IV-13

EXTENDED SUPPORT SERVICES SPENDING AS A PERCENTAGE OF STANDARD SUPPORT SERVICE CONTRACTS (AS REPORTED BY CUSTOMERS)

EXHIBIT IV-14

ADDITIONAL VENDOR SERVICES OFFERED



Note: Answers total more than 100% due to multiple offerings.

V SOFTWARE SUPPORT STRATEGIES

V SOFTWARE SUPPORT STRATEGIES

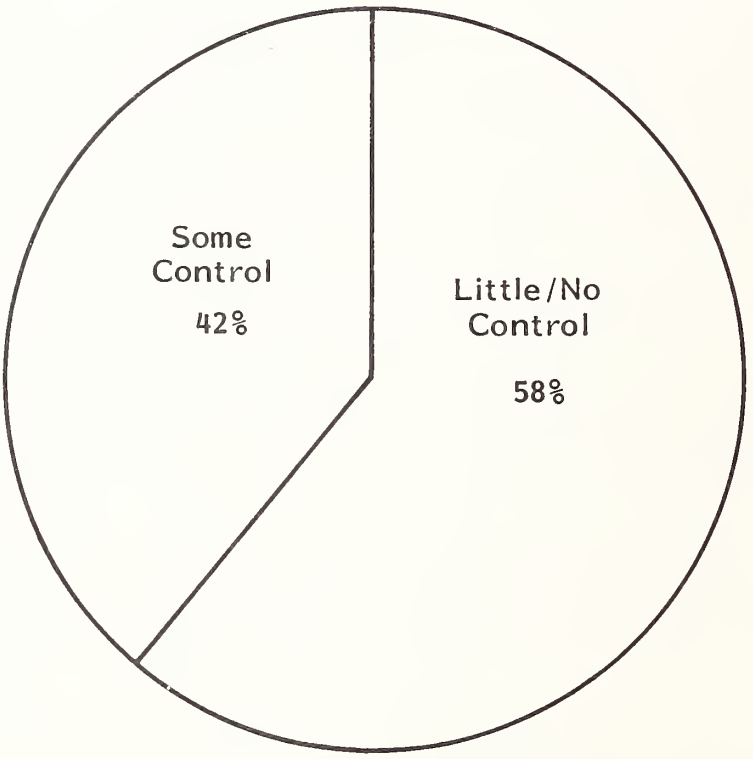
- This chapter discusses the key elements that constitute an effective software support strategy, for example:
  - Analyzing vendor-customer relationships.
  - Customer expectations, especially concerning pricing.
  - Vendor resource commitments and how they will impact the ability to deliver services.
  - Most important are the strategic options and INPUT's recommendations of specific approaches in improving the software support business.

A. VENDOR-CUSTOMER RELATIONSHIPS

- Over half of customers believe they have little or no control over the type and amount of support provided by vendors (Exhibit V-1).
  - This is a serious problem that more alert vendors are trying to deal with.

EXHIBIT V-1

CUSTOMERS' PERCEIVED CONTROL
OVER SOFTWARE SUPPORT



Percent of Customer Respondents

- Many customers have no idea how they would actually work with a vendor (Exhibit V-2).

- Typically, vendor-customer relationships are defined by the software support contract's terms and conditions.

- Generally speaking, customers express satisfaction with current terms and conditions (Exhibit V-3). This satisfaction does not vary greatly by customer characteristics.

- Where there is dissatisfaction, it is because the terms are imprecise or generally favor the vendor. Cost factors are relatively unimportant (Exhibit V-4). Lower prices, tighter warranties, and guaranteed resolution times are the three major desired areas of improvement (Exhibit V-5).

- It is interesting to contrast the general satisfaction with contractual terms with the fact that most firms attempt to modify terms and conditions, over half of customers doing so "often" or "always" (Exhibit V-6).

- The terms that customers seek to modify cover a wide range (Exhibit V-7):

  - Taken together, the related areas of warranty/liability and legal/ownership are the most important, reflecting the legal/administrative nature of such documents.

  - Level of support is next in importance, with cost issues in third place, being cited by almost one-quarter of respondents.

- Companies say they are almost always successful in seeking to modify contractual terms (Exhibit V-8). Success is quite consistent across different size and industry groupings.

EXHIBIT V-2

THEORETICAL AND ACTUAL STEPS TO INFLUENCE
VENDOR SOFTWARE SUPPORT, AS REPORTED BY CUSTOMER
(Percent of Customer Respondents)

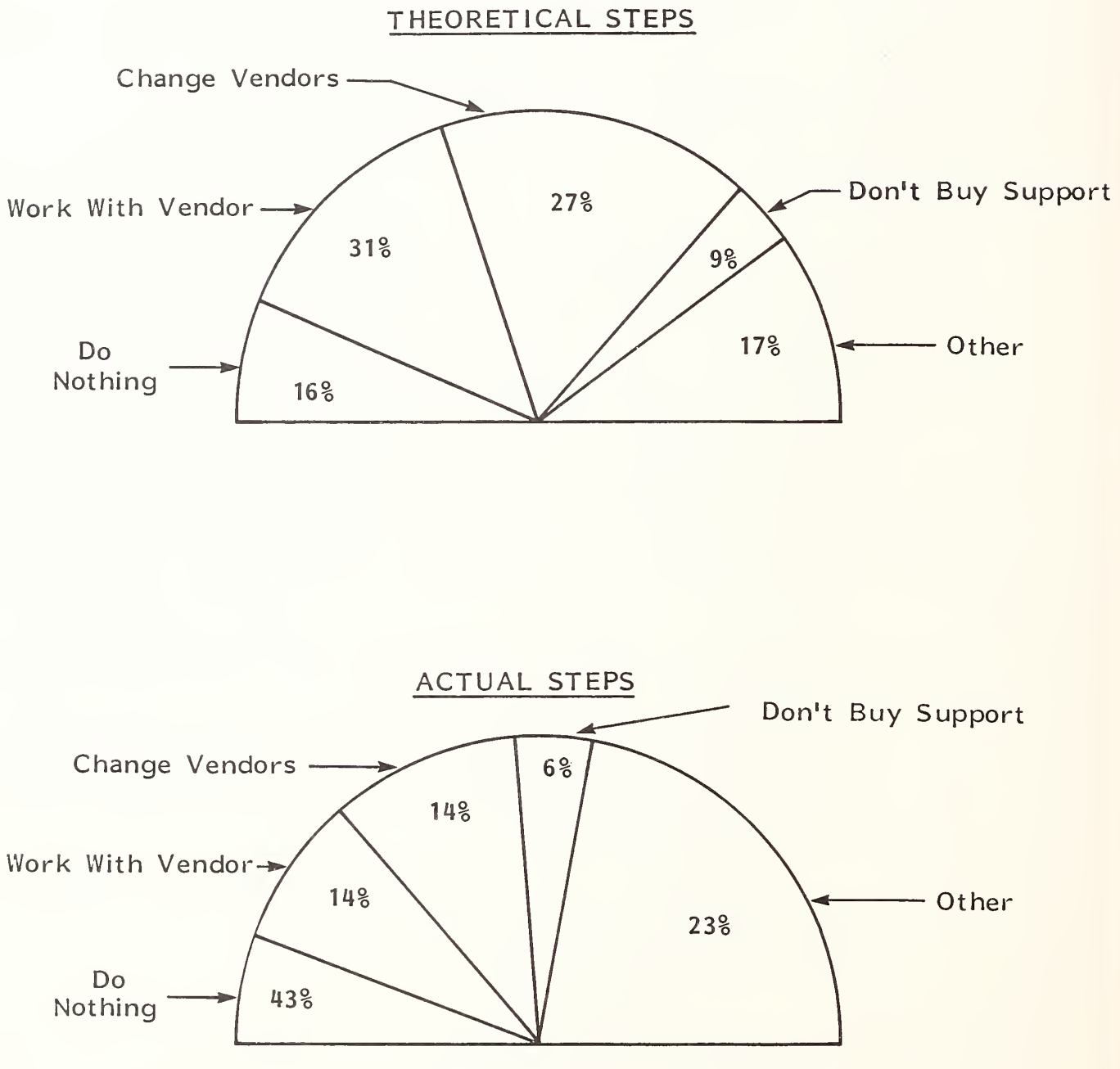


EXHIBIT V-3

EXTENT TO WHICH CONTRACTUAL TERMS ARE SATISFACTORY

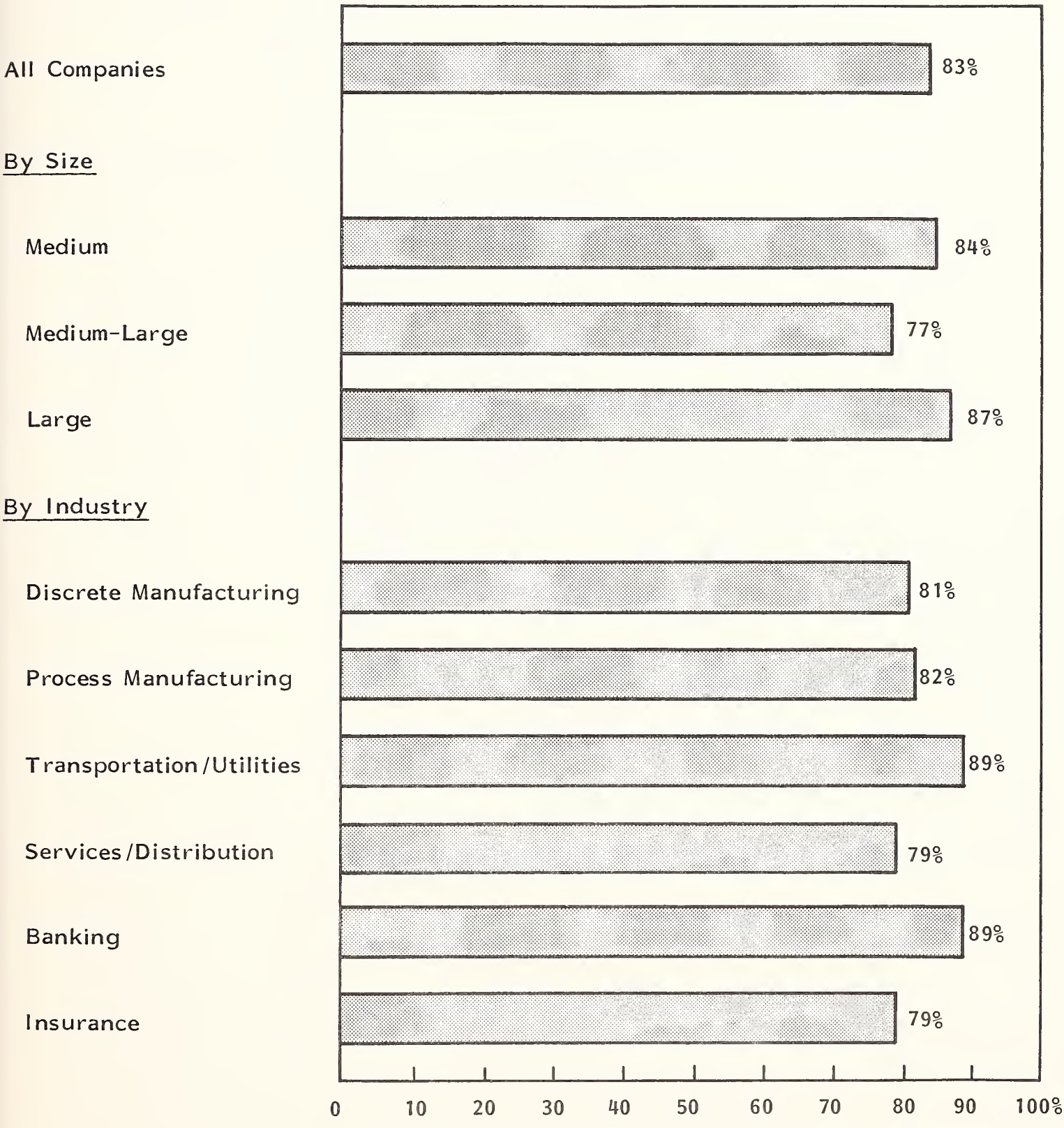
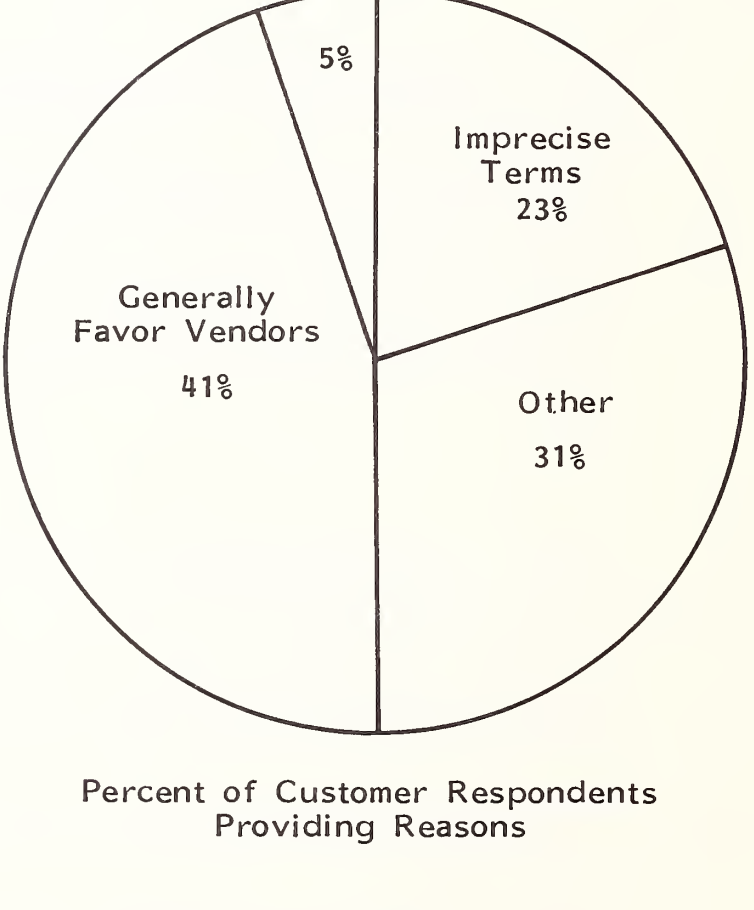


EXHIBIT V-4

PERCEIVED REASONS FOR
UNSATISFACTORY CONTRACTUAL TERMS

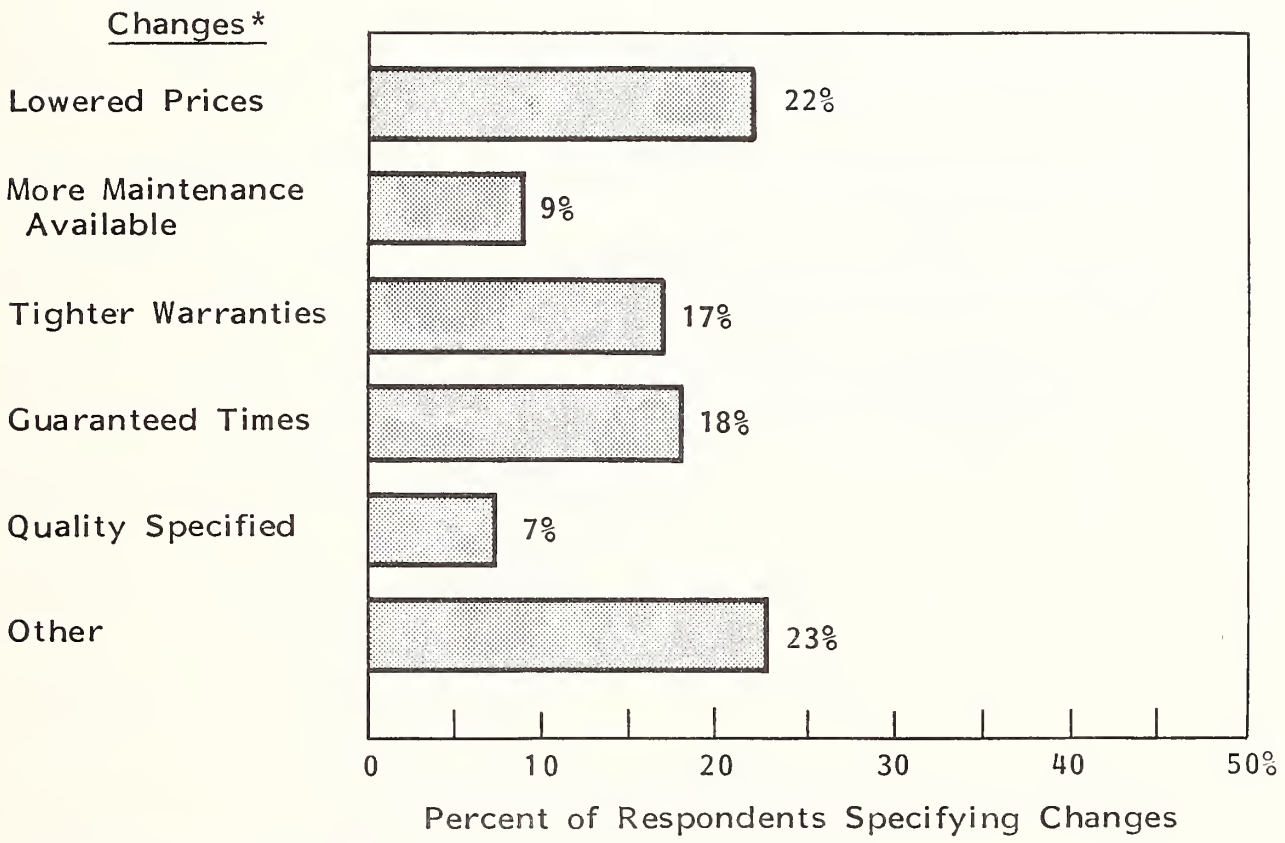


Percent of Customer Respondents
Providing Reasons

Note: Open-ended; responses coded.

EXHIBIT V-5

CHANGES IN CONTRACTUAL TERMS DESIRED BY CUSTOMERS



* Open-ended; responses coded.

EXHIBIT V-6

EXTENT TO WHICH CUSTOMERS SEEK TO MODIFY CONTRACTUAL TERMS

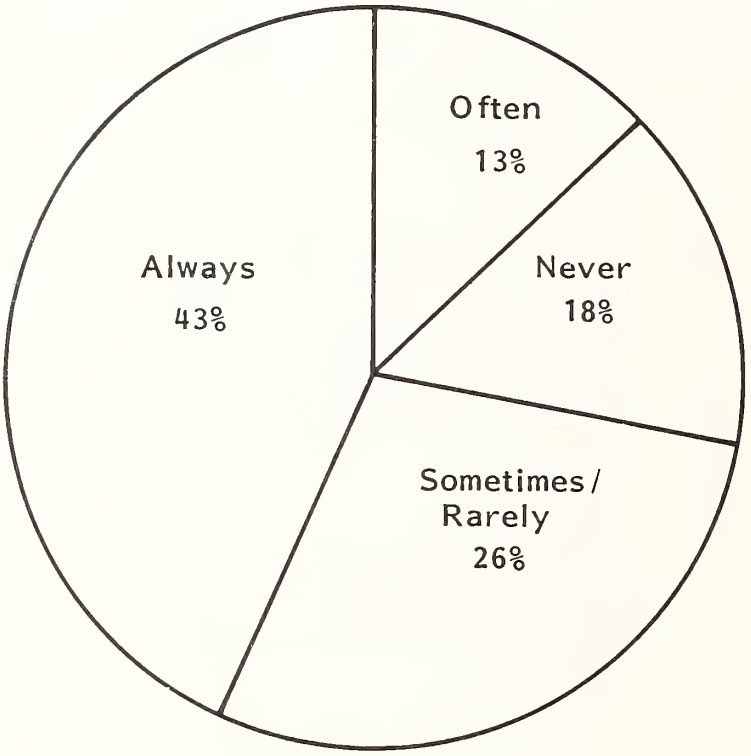


EXHIBIT V-7

CONTRACTUAL TERMS THAT CUSTOMERS TRY TO MODIFY

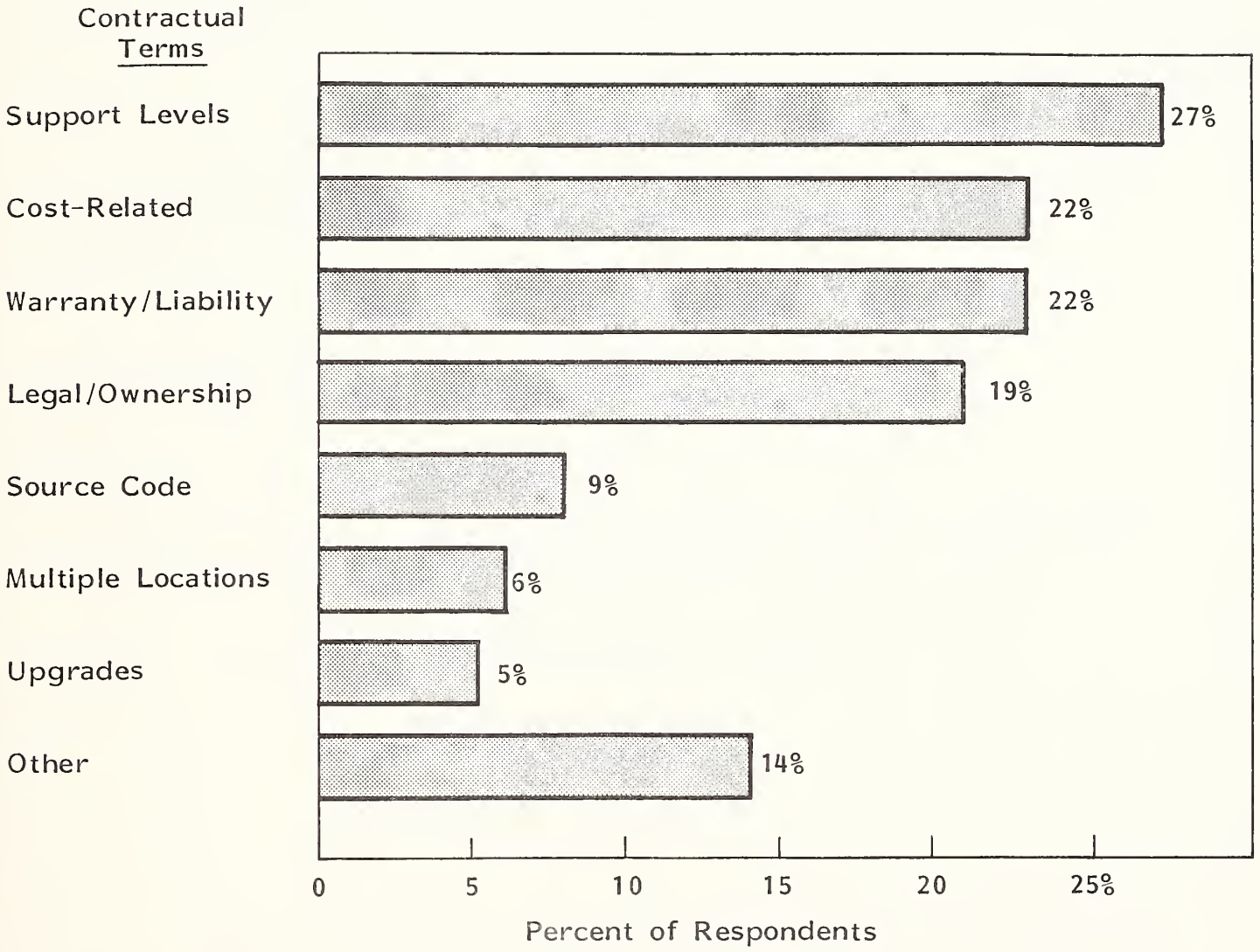
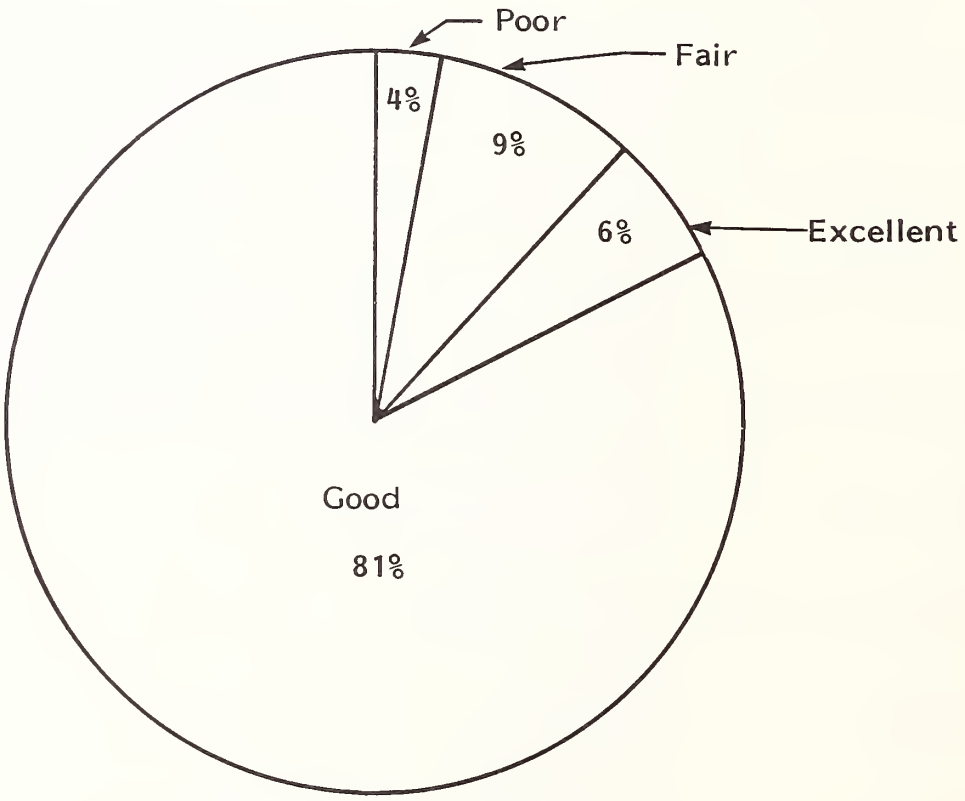


EXHIBIT V-8

DEGREE OF CUSTOMER SUCCESS IN SEEKING TO MODIFY CONTRACTUAL TERMS



Percent of Customers

- It is significant that six out of ten customers do not know what kind of changes in terms and conditions are planned by vendors (Exhibit V-9).

  - Vendors have been successful in seeking to keep such plans proprietary.

  - However, if customers were consulted beforehand, perhaps they would not be forced to make so many changes in terms and conditions. That so many of the changes are successful shows that prior consultation would probably be beneficial to both sides.

  - Note that two out of ten customers believe that vendors are not planning changes in terms and conditions. This almost certainly reflects a misperception.

B. CUSTOMER EXPECTATIONS

- Customers volunteered the issues that they saw as important support issues; these were then classified into major categories, as shown in Exhibit V-10.

  - The "quality" issues come through very clearly:

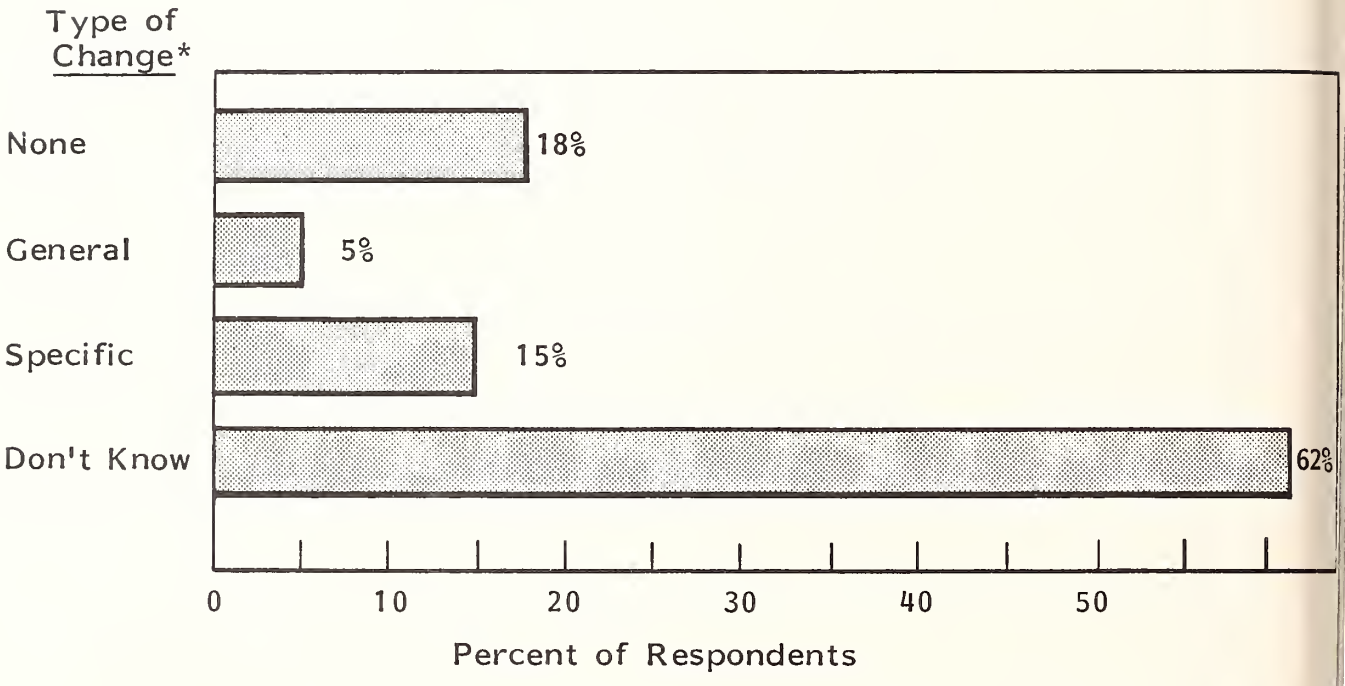
    . Quality of service.

    . Quality of underlying product.

  - Costs and pricing were volunteered by only a very small proportion of respondents. Because this question was raised <u>after</u> respondents had been sensitized to cost issues, INPUT believes that the issue has positive implications for product planners.

EXHIBIT V-9

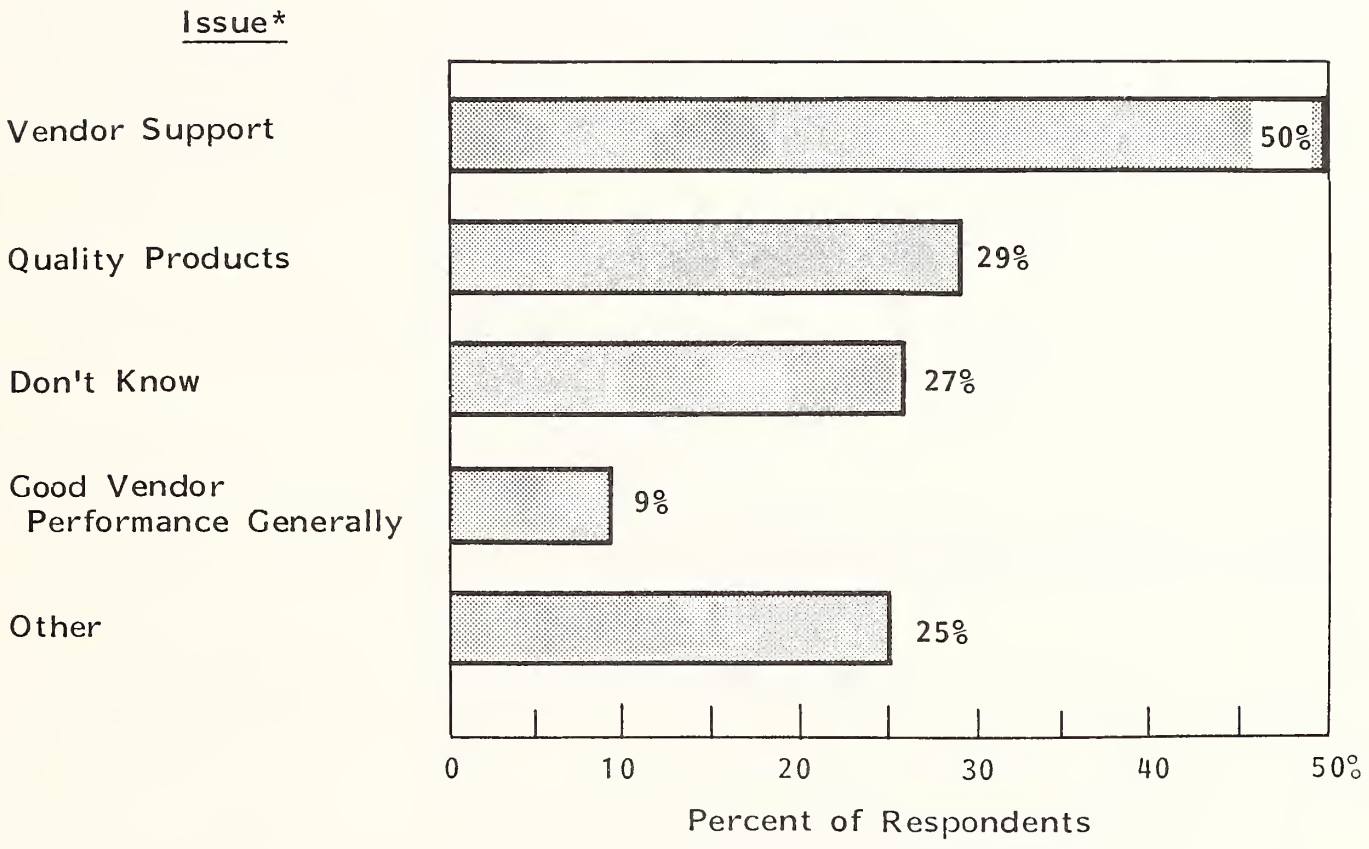
CUSTOMER PERCEPTIONS OF
CONTRACTUAL CHANGES PLANNED BY VENDORS



* Open-ended; question coded.

EXHIBIT V-10

SOFTWARE SUPPORT ISSUES IMPORTANT TO CUSTOMERS



* Open-ended; question coded.

- It is interesting to contrast the issues of importance to customers to the changes that customers see as occurring (Exhibit V-11).

  - A significant number of customers simply don't know what will be happening; in contrast, virtually all customers have views on what they consider to be important.

  - One out of five customers sees less support needed (as opposed to less support being offered). This group tends also to see less reason to pay at existing pricing levels unless vendor support improves qualitatively. Note, though, that only 3% of customers spontaneously assert that support quality will improve.

  - Customers see technical changes occurring, especially in the increased use of electronic support.

C. VENDOR RESOURCE COMMITMENTS

- Almost half the vendors interviewed (48%) use a formal budget process to allocate resources for software support.

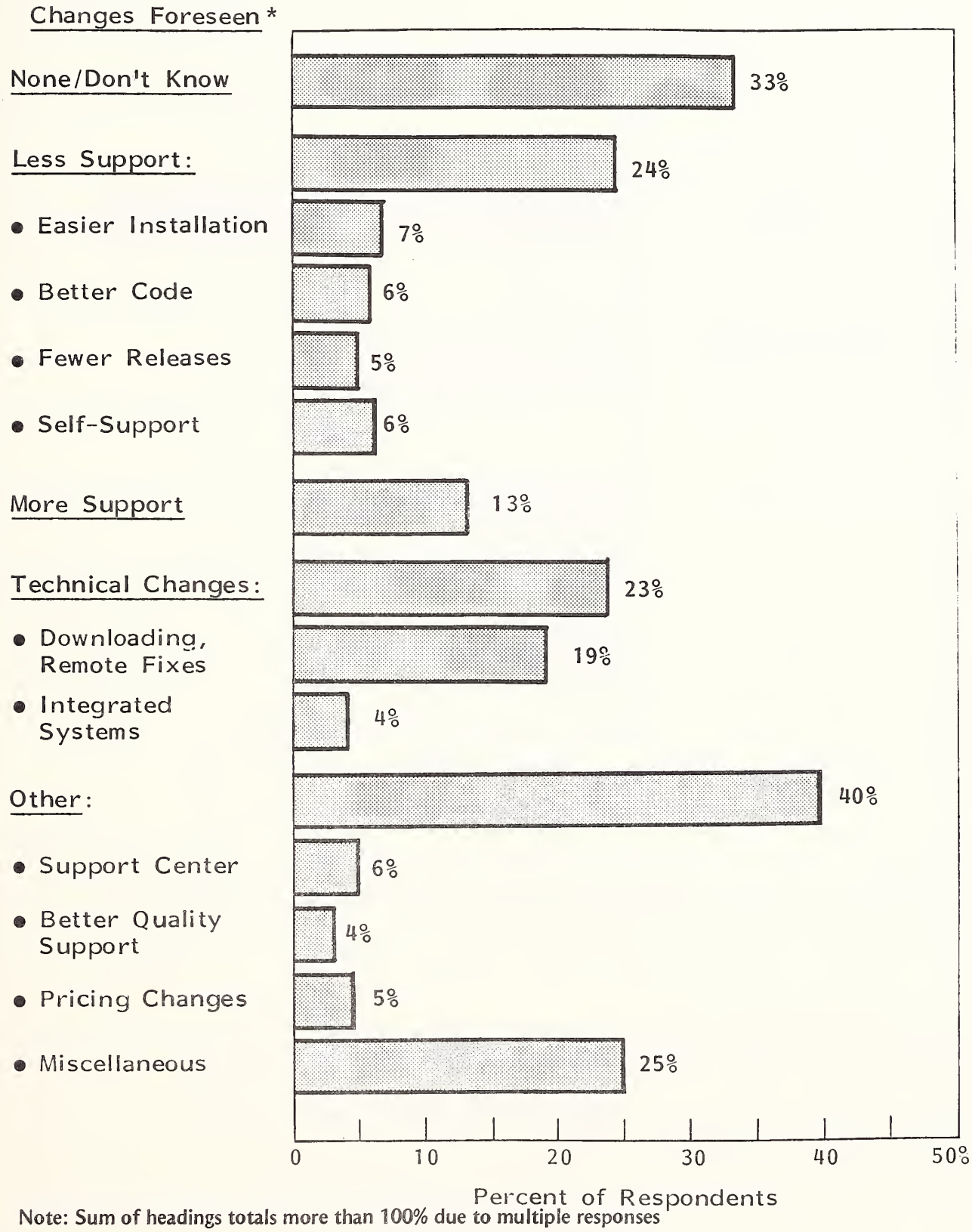
  - The software vendors that use a budgeting process are generally satisfied with it.

  - While 60% of hardware vendors use a budgeting process, they are less satisfied than the software vendors. This appears to be related to the greater number of competing demands for resources within a hardware company.

- Various methods are used to allocate resources, as shown in Exhibit V-12. The main methods are:

EXHIBIT V-11

CHANGES FORESEEN BY CUSTOMERS IN SOFTWARE SUPPORT

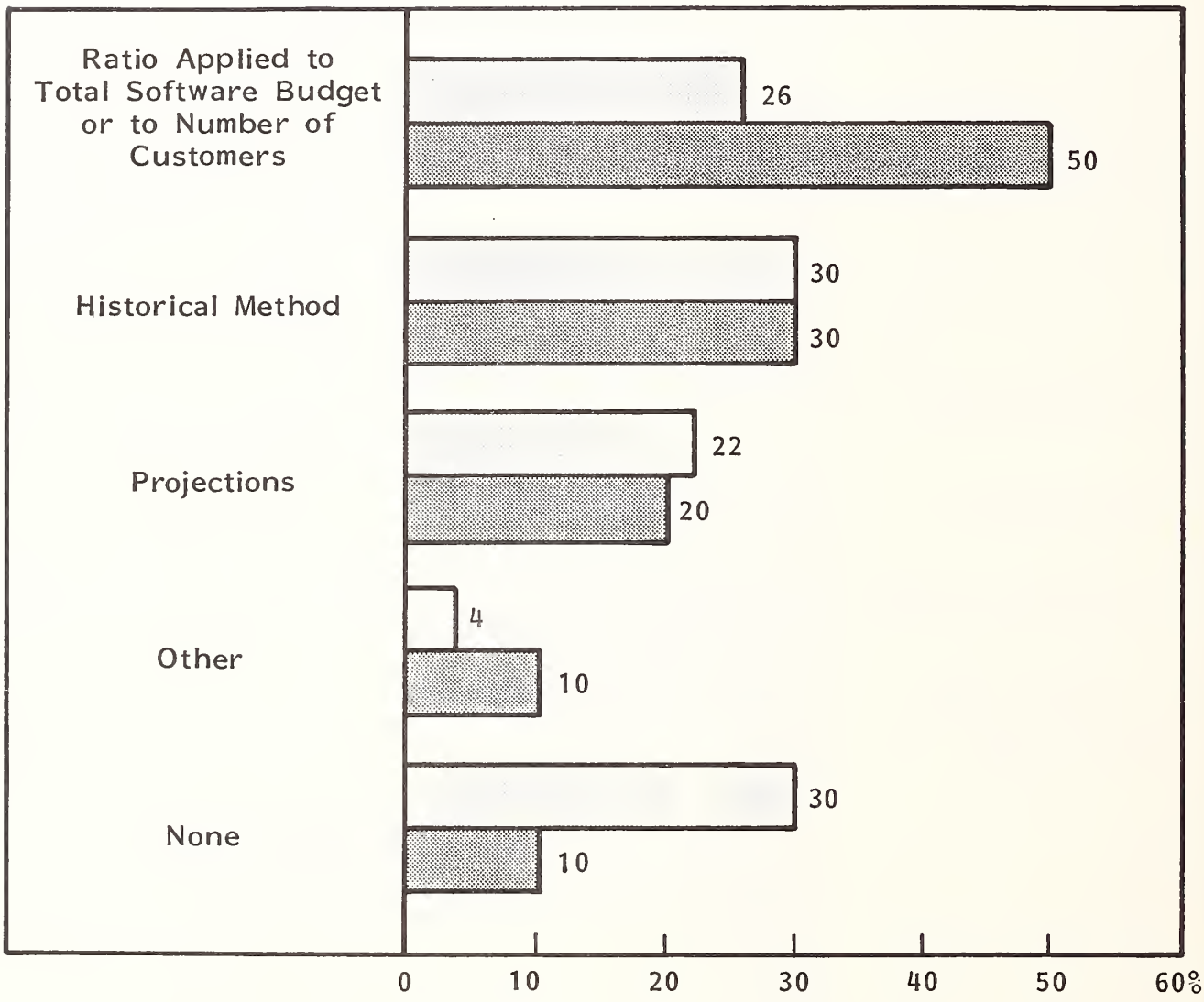


Note: Sum of headings totals more than 100% due to multiple responses

* Open-ended; responses coded.

EXHIBIT V-12

METHODS OF ALLOCATING RESOURCES FOR SOFTWARE MAINTENANCE



□ = Software Vendors ▒ = Hardware Vendors

Note: Total is more than 100% due to some firms' use of multiple approaches.

SOURCE: INPUT Survey

- A percent or ratio applied to the overall software budget or against the total number of customers.

- A historical method, modifying the prior year's budget upward or downward.

- Projecting future requirements.

- Some companies use more than one method. All methods are somewhat arbitrary, given the difficulty of predicting what changes will be necessary.

  - Some companies attempt to deal with this by planning to introduce in the course of a planning cycle:

    . New products.

    . Major revisions.

    . Minor revisions.

  - This logical approach can usually yield at least general cost estimates; however, it may result in unacceptable lead times and larger or smaller changes than the market needs.

- Resource allocations are not immutable (nor should they be). Three-quarters of respondents report shifting resources between the development and support areas.

  - Support personnel represent an emergency source of resources for development (and vice versa).

- A major product enhancement can be either an addition to an existing product or a new product.

- Whereas this flexibility is useful, it can interfere with personnel and product planning. Equally important, it can undermine the software maintenance function's rationale and organizational standing.

- Although the level of software maintenance revenue is expected to increase, few companies expect to raise the relative level of resources devoted to software maintenance, as shown in Exhibit V-13. In fact, more companies expect decreases than increases.

- Resource levels change for a combination of reasons--for example, plans to make software a profit and loss (P&L) center.

  - About 30% of the companies interviewed now have software maintenance as a separate P&L center, as shown in Exhibit V-14. Another 25% have plans to do so in the future.

  - The feasibility of making software maintenance a P&L center will vary from company to company, depending on how much control the center is given over costs, products, and revenue.

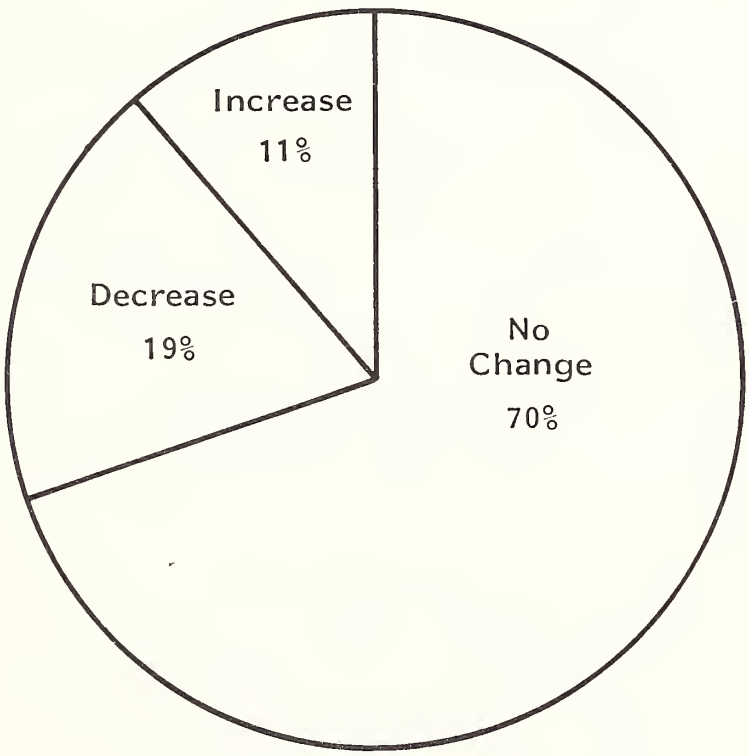
D. STRATEGIES AND RECOMMENDATIONS

1. ASSESSING SOFTWARE MAINTENANCE OPPORTUNITIES

- Not all software packages are created equal, from a software support standpoint.

EXHIBIT V-13

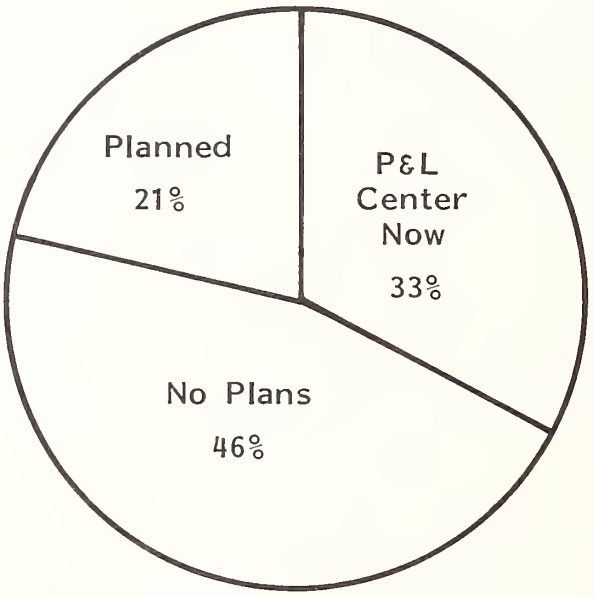
CHANGES SEEN IN LEVEL OF RESOURCES
COMMITTED TO SOFTWARE MAINTENANCE



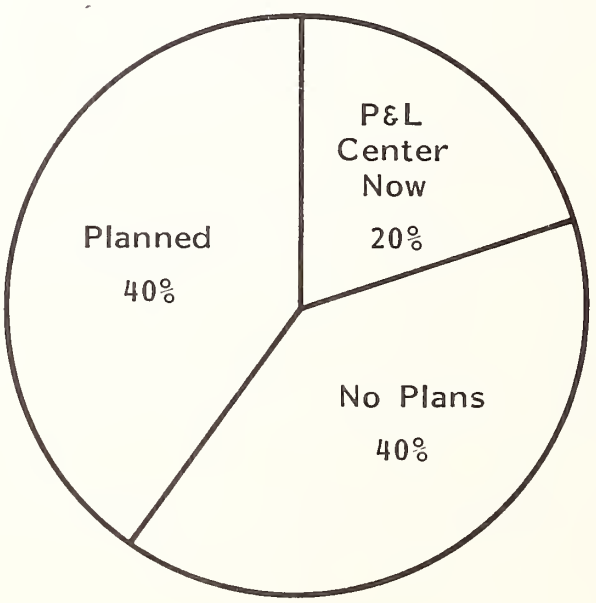
SOURCE: INPUT Survey

EXHIBIT V-14

SOFTWARE MAINTENANCE AS A P&L CENTER



SOFTWARE VENDORS



HARDWARE VENDORS

SOURCE: INPUT Survey

- Few customers will want to go "bare" on operating system maintenance, even if they have the chance.

- On the other hand, many purchasers of large, industry-specialized packages buy the package intending to modify it extensively. For them, maintenance is just a tax on the purchase price.

- A buyer of small, stable packages that have been in existence for some time will rarely feel the need for extensive maintenance.

- Maintenance is perceived as highly valuable in large, complex packages that the customer has no intention of modifying. DBMS is a good example of this type of product.

- These relationships can be graphically illustrated, as shown in Exhibit V-15.

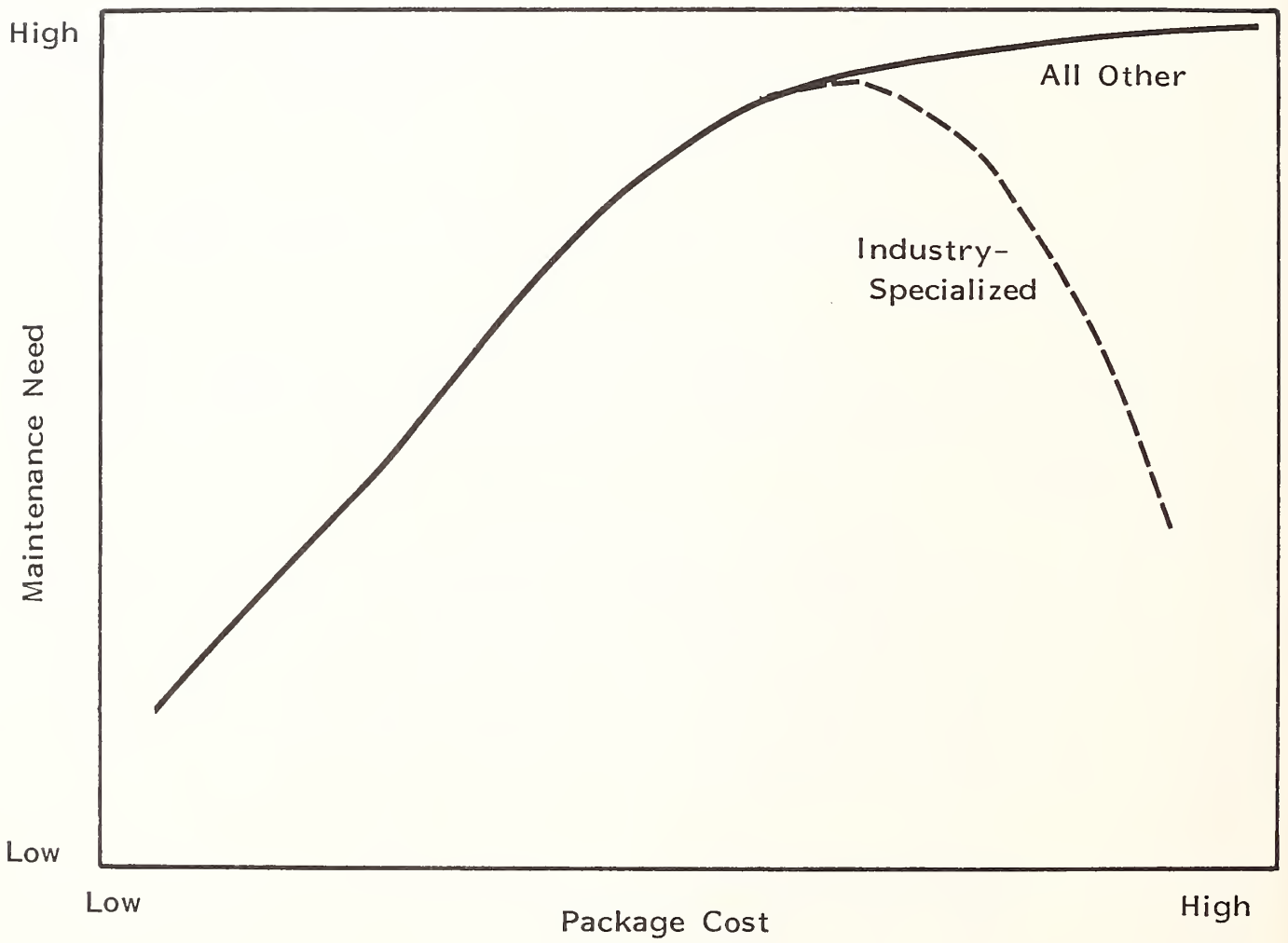
- This is not to say that vendors should ignore the low-need areas. These can in fact be the most profitable, at least in the near term. Two approaches are possible:

  - Tax: Given the relative price-insensitivity of customers to software, if customers see a need for a package at $X, they will not usually balk at paying an additional $.1X per year. If the vendor has an attractive product, there should be a mandatory maintenance requirement, at least for several years.

  - Insurance Policy: The other approach, useful for small, stable packages, is to have a nominal maintenance price, covering error fixes only. At the right price, customers will buy the insurance for at least several years.

EXHIBIT V-15

SOFTWARE MAINTENANCE NEEDS



2. IDENTIFYING AND ADDING VALUE TO SOFTWARE SUPPORT

- Pricing will be the key continuing issue in software maintenance.
  - Vendor costs, perceived value to the customer, and customer price insensitivity act together to push prices up.
  - Competition and customer price sensitivity act to push prices down.
  - These forces act on both the price floor and price ceiling.
- The trends and competitive forces discussed in the previous section of this chapter will act together to sensitize customers to software support pricing.
- This will place a heavier burden on perceived value than previously. Customers will begin to evaluate exactly what they are receiving as "software support."
- One approach that could be useful to vendors and customers alike is to break software support down into its constituents. While the constituents may vary from product to product, the following categories will serve most analyses:
  - Error correction/prevention.
  - Improvements to features.
  - Improving performance/adapting to new operating environments.
  - Training and consulting.
- Vendors could make fairly precise projections on what customers would expect to receive in the last three categories. True software support could then be sold.

- A further step would be to unbundle each constituent (or group of constituents) and sell them separately.

  - This would be especially attractive for training and consulting. Currently, this is the largest demand area of the software support organization. However, this demand is denigrated and termed "customer misuse". This is because it is usually "free" and, therefore, there are no rewards for supplying it.

  - To be economical, most training and consulting cannot be supplied "live" on a one-to-one basis. New approaches will be needed.

- Seminars and presentations would be more economical, but unwieldy and still expensive.

  . Video conferencing would be more efficient, but it will be years before most customers will have the necessary facilities.

  . New developments in computer-controlled interactive video-based training will make new training methods much more attractive and effective. They will be expensive to create, especially during the initial phase of the technology.

- Training, probably in conjunction with an established training firm, would be a two- or three-stage process. Taking financial application systems as an example:

  - The first stage reviews general financial principles and systems.

  - The second stage focuses on a particular industry and its special operational requirements.

- The third stage would show how the software package met these requirements under differing circumstances, and how individual needs were met by particular features (and vice versa).

- These interactive materials could also be used in a slightly modified form to supplement and perhaps supplant live hotline personnel.

3. HARNESSING TECHNOLOGY

- Software support is second only to marketing in labor intensiveness. This labor intensiveness not only adds to costs, but also threatens product quality, e.g.:

  - Relying on people to provide hotline information and training often prevents customer questions from being answered correctly or at all.

  - Identifying and fixing software problems, besides being time consuming, is no guarantee that a new error will not be created. Software testing is at best only partially automated, and is all too often short-circuited to save time and money.

- The next generation of interactive training devices should go a long way to upgrade customer training and problem resolution. A better, standardized product would be supplied at what would ultimately be a cheaper price; initially, costs would be about the same.

4. REMOTE SUPPORT SERVICES

- Of concern to vendors should be the relatively low and diffuse value which customers place on remote support. There are two dangers here:

  - Usage levels remaining low.

- Perceived benefits remaining nonconcrete and resulting pressure to receive some tangible benefits, e.g., a price reduction.

- Part of this problem arises from the fact that most vendors have not gotten beyond seeing electronic distribution as a replacement for human intervention or hard copy documentation. Often, electronic support is nothing more than a transmission medium.

- Ironically, software vendors have made the same implicit mistake in this case as have software developers: they have been content to automate a manual system rather than to use computers in breaking new ground. It is doubtful, under these circumstances, that support systems can provide much, if any, benefit in most situations.

- Exhibit V-16 shows a conceptual view of a remote support system of the future. To the best of INPUT's knowledge, no vendor is yet taking this comprehensive a view toward support, although some parts of it have been implemented in a few instances (e.g., problem data base, electronic response).

  - The natural language interface/expert system front end is only feasible for products that warrant significant investment. Exhibit V-17 shows the factors involved and the need to have most of these determinants close to the high end of the scale.

  - Although it might not always be cost effective to have a computer-driven expert system, the natural language interface can assist customers in putting their problems into commonly understood terms.

  - This would alleviate one of the problems of electronic mail: ambiguity and misunderstanding. This would make customers far more likely to use the "electronic mailbox" aspects of an electronic support system.

EXHIBIT V-16

REMOTE SUPPORT OF THE FUTURE

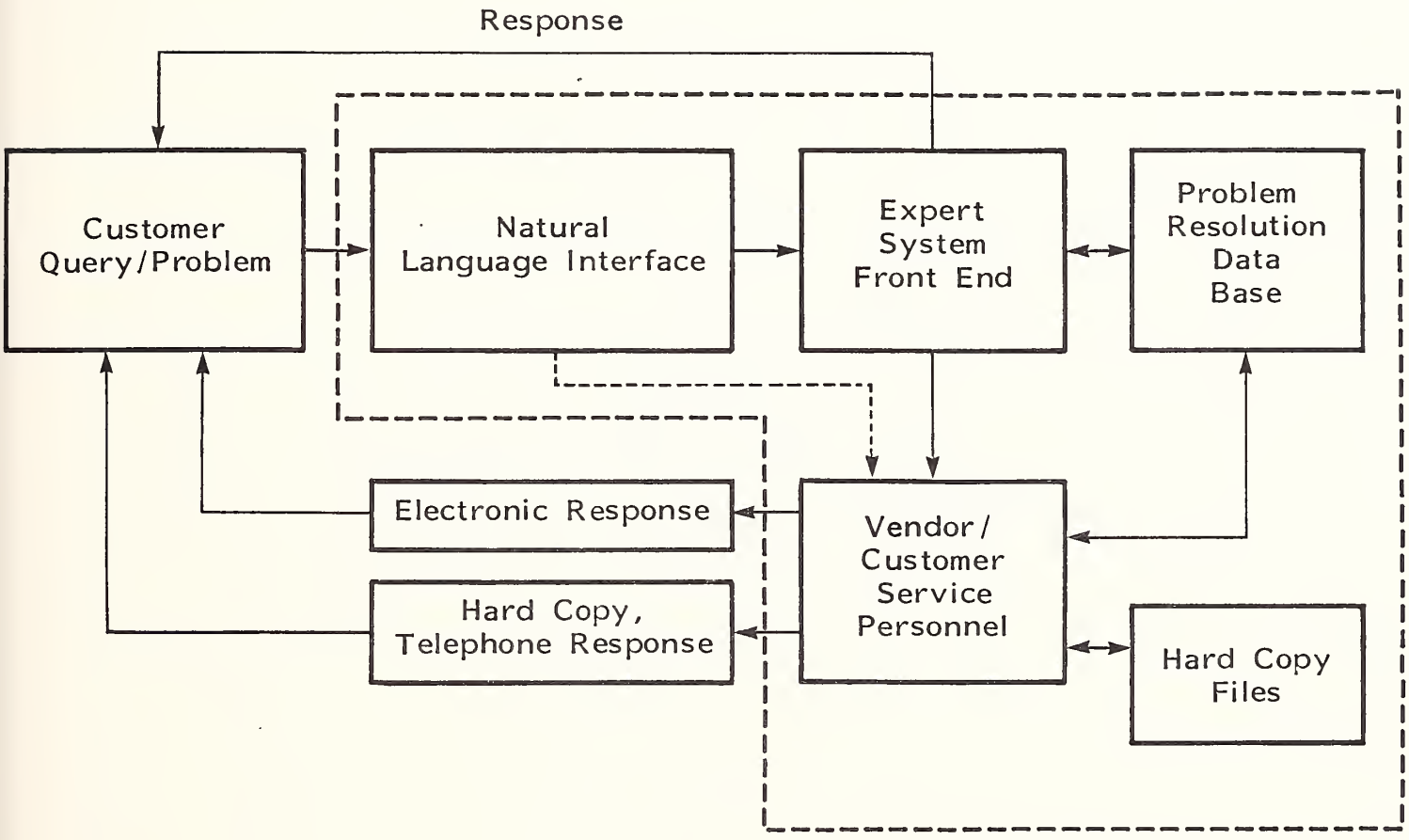
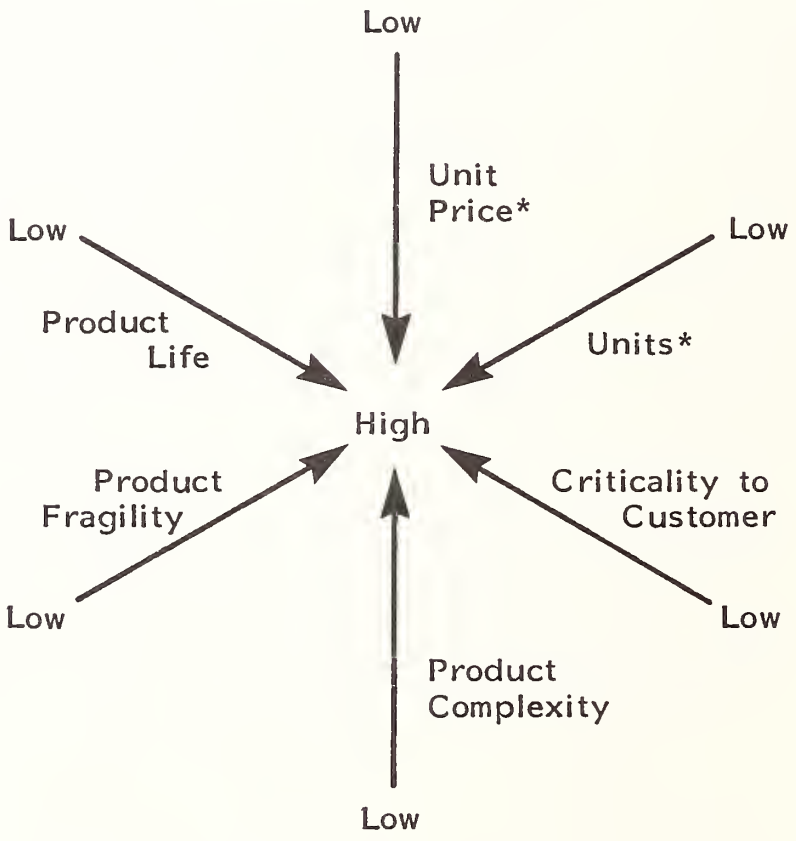


EXHIBIT V-17

REMOTE SUPPORT SYSTEM: INVESTMENT DETERMINANTS



* Critical

- Eliminating initial person-to-person contact would help vendor support operations in:

  . Smoothing time-of-day/week peaks.

  . Ranking problems.

  . Documentation.

  . Assigning problems to the correct specialist.

- The perceived benefits would include:

  - Much faster response to known problems, especially if the expert system interface were used.

  - Much less vendor involvement in problems/queries which turn out to already be in customer documentation.

- These two benefits, taken together, could then allow support organizations to focus on the major operating system problems.

APPENDIX A: SOFTWARE SUPPORT VENDOR QUESTIONNAIRE

SOFTWARE SUPPORT VENDOR QUESTIONNAIRE

1. Which of the following software product categories does your company offer?

PRODUCT CATEGORY	NUMBER OF MAJOR PRODUCTS	NUMBER OF INSTALLATIONS
Operating systems, operating system enhancements, utilities		
Computer operations support, performance measurement and improvement		
Data retrieval/reporting, DBMS		
Communications software		
Software development (compilers, optimizers, productivity tools)		
Applications software: Industry specific (list industries)		
Applications software: Cross industry		
Accounting		
Planning/forecasting		
Other (list)		

2. I would like to understand what your organization includes under the term "software maintenance." For each of the following functions, tell me whether each one is always, usually, sometimes, rarely or never considered to be part of software maintenance. (READ LIST AND FILL IN EACH LINE.)

2a. Software Maintenance Definitions

	PART OF MAINTENANCE*	EXAMPLE*
Fixes to programming errors		
Conversion to run on different hardware		
Conversion to run under different operating system		
Making existing features work better		
Extending existing features		
Adding new features		
Adding interfaces to other software products		
Training		
Consulting		
Other (describe)		

* WHERE "USUALLY, "SOMETIMES" OR "RARELY" ARE GIVEN AS ANSWERS, HAVE RESPONDENT GIVE AN EXAMPLE OF WHAT WOULD BE INCLUDED AND EXCLUDED FROM MAINTENANCE.

2b. Has your firm's definition of software maintenance changed in the past several years?

( ) YES ( ) NO

- If YES, please explain:

_____

_____

2c. Do you expect your definition to change in the next several years?

( ) YES ( ) NO

- If YES, please explain:

_____

_____

3a. What type of software problems or maintenance occur most frequently? Approximately what percentage is each and is the trend up or down?

PROBLEM	PERCENT	TREND

3b. Do you believe that software customers generally (not just your customers) are satisfied with the type of software support and maintenance they are receiving?

( ) YES ( ) NO

- Why?

_____

_____

4a. I would like to get a better understanding on how your organization performs software maintenance. For each of the functions below could you tell me the name of the organization unit responsible and the number of full time and part time employees assigned? (If you know the full-time equivalents (FTE), please tell me that instead.)

FUNCTION	ORGANIZATION UNIT NAME	NUMBER OF PEOPLE		
		FULL TIME	PART TIME	FTE
Determining the cause of errors				
Fixing errors				
Enhancement analysis and design				
Coding and installing enhancements				
Revision of documentation				
Telephone contact with customers on software maintenance				
Personal contact with customers on software maintenance				
Other (describe)				

4b. What problems, if any, has your organization had with your internal organizational arrangements for software maintenance?

4c. What changes, if any, are planned in organizational responsibilities or reporting relationships?

4d. To what extent does the software development organization become involved in software maintenance?

- How satisfactory is this?
- What changes, if any, are planned in their involvement?

5a. How do you decide the amount of resources (dollar, manpower, etc.) that will be devoted to software maintenance?

_____

_____

_____

5b. Is there a formal budget for software maintenance?

( ) YES ( ) NO

- If YES, how effective has this been in managing the software maintenance function?

  _____

  _____

- How easily can the budget be modified in the course of the year?

  _____

  _____

- Is software maintenance a profit and loss center?

  ( ) YES ( ) NO

  - If YES, what are your most profitable and least profitable elements?

    Most: _____

    _____

    Least: _____

    _____

5c. Are resources shifted back and forth between software development and maintenance?
( ) YES ( ) NO

- If YES, describe the process?

_____

_____

_____

_____

5d. Do you plan to change the level of resources devoted to software maintenance?
( ) YES ( ) NO

- If YES, by what percent? _____%

- Why?

_____

_____

- How will this affect service levels?

_____

_____

5e. What aids do you now use for software maintenance?

_____

_____

- What has been their impact (please quantify, if possible)?

  _____

  _____

- What other aids do you expect to use in the future?

  _____

  _____

6. How important is each of the following methods to your firm for identifying software problems and potential enhancements? How important do you think each will be in the future? Why? (5 = High Importance, 1 = Low Importance)

METHOD	IMPORTANCE		REASON
	NOW	FUTURE	
Salesforce Feedback			
Support Staff Feedback			
User Groups			
Surveys			
Hot Lines			
Field Visits By Software Staff			
Analysis of Problem Reports			
Other (Describe)			

7. I would like to understand the process used to get software revisions to customers.

7a. How often do you release revisions to software products?

_____

_____

To what extent does this differ by product? (Describe)

_____

_____

7b. What percent of the time do the customers apply the software revisions themselves? _____%

IF LESS THAN 100%: Who applies the revisions in other cases and why?

_____

_____

7c. How frequently do customers have problems that can't be handled by the usual software revision cycle?

_____

_____

- What causes this?

_____

_____

_____

- How are these cases handled?

_____

_____

_____

- Are these exception cases increasing or decreasing? Why?

_____

_____

_____

8. To what extent do you use telecommunications to either identify software problems ("remote diagnostics"), solve them or automatically download software revisions? How much do you expect this to increase in the future? Why?

TELECOMMUNICATIONS USAGE	AMOUNT USED*		REASON
	NOW	FUTURE	
Identify software problems			
Solve software problems			
Download software revisions			

* ALWAYS, USUALLY, SOMETIMES, RARELY, NEVER; OR PERCENT.

9. How price conscious is the typical customer of software maintenance? (5 = High Price Consciousness, 1 = Low Price Consciousness) _____

- How do you know?

_____

_____

- Are customers becoming more or less price conscious?

_____

_____

10a. What is the general process for determining the pricing of software maintenance?

_____

_____

_____

_____

10b. How important is each of the following for your firm in determining software maintenance pricing? (5 = High Importance, 1 = Low Importance)
(READ LIST AND ASK REASON)

CRITERIA	RATING	REASON
Profitability on resources used		
Percent of current software price		
Value to customer		
Competitors' pricing		
Other (describe)		

11. What percent of your firm's overall software revenues now come from software maintenance?
_____%

- What do you expect this percent to be in five years?
_____%

  - Why? _____
_____

  - IF UNWILLING TO ANSWER ABOVE: What do you expect the average annual growth rate of your firm's software revenues to be over the next five years? _____%

    Why? _____
_____

12. Do you feel that software <u>in general</u> has become more reliable in the last five years?
( ) YES ( ) NO

- Why?

_____
_____
_____

- What has been your firm's experience?

_____
_____
_____

- What kind of measurements do you perform to verify reliability?

_____
_____
_____

13. Do you feel that software <u>in general</u> has become more maintainable in the last five years?
( ) YES ( ) NO

- Why?

_____

_____

_____

- What has been your firm's experience?

_____

_____

_____

- What kind of measurements do you perform to verify maintainability?

_____

_____

_____

14. What percent of your software maintenance revenues would you say are derived with little or no active selling on the part of your firm? _____%

- Is this percent increasing or decreasing? _____
  - Why? _____
    _____
- Where you do have to actively sell software maintenance, what type of techniques do you use?
  _____
  _____
  - Which organizational unit(s) does the actual selling? _____
    _____
- How much more potential do you feel there is for marketing software maintenance as a product?
  _____
  _____

15. What do you feel are the most important issues currently concerning software maintenance? Why?

16. What changes do you think will have occurred in software maintenance in, say, five years?

17. Which of your software support services do you find that your customers are most receptive to? Why?

18. Could you send me:

- Description of your major software products?
  ( ) YES ( ) NO
- Software product and maintenance price lists and sample contracts?
  ( ) YES ( ) NO

APPENDIX B: SOFTWARE SUPPORT CORPORATE QUESTIONNAIRE

APPENDIX B

SOFTWARE SUPPORT
CORPORATE QUESTIONNAIRE

Introduction:

INPUT is a research and consulting firm. We are conducting a study on issues and trends in packages software support and maintenance from the corporate customer's standpoint. We will make recommendations on how corporations can best deal with these issues in the coming years. We would like your organization to take part in this study by describing what you are doing now, what your plans are and what problems you see. This information will be used by IS departments in their planning and will also be used by a wide variety of information service vendors to offer more useful products and services.

None of the information that you provide will be associated with your company. In return for your taking part in this study, we will send you a summary of this study on its completion and will also send you a summary of INPUT's report PC Software Support in Large Corporations.

1. a) Are your responsible for all significant packaged software support matters in your organization?

☐ Yes ☐ No

If No to 1.a)

b) Are you knowledgeable about all significant packaged software support matters in your organization?

☐ Yes ☐ No

If No to 1.b)

Which of the following are you Responsible for or Knowledgeable about: (Note with "R" or "K")

	Operating System(s)	Other Systems Software	Application Software
Mainframe			
Minicomputer Software			
Microcomputer Software			

(NOTE: get names of other people to complete the matrix).

For the rest of this interview I would like to discuss with you your support requirements for _____ software. (If respondent is responsible for one area select that; if responsible/knowledgeable in more than one, follow instructions).

2. Who are the suppliers of your major software packages, categorized by software type (Operating Systems, Other Systems Software, and Applications Software) and hardware type? (Use following matrix).

Software Suppliers

	Software Type		
	Operating System(s)	Other Systems Software	Application Software
Hardware Type			
Mainframe			
Minicomputer - IBM Sys 38, - Series 1, - 8100			
DEC Minicomputer			
Prime Minicomputer			
Data General Minicomputer			
Other Mini _____			
Office/PC - IBM PC Family - Other			

3. a) Using these same categories, about how much did you spend in 1983 on:

- Software licenses, fees, lease or rental payments, etc? $_____
- Software support or maintenance fees either in dollars or as a percent of License fees? $_____

_____% of license fees.

b) For what percent of your software is support included in the license fee? _____%

c) What percent of your software is not supported by the vendor? _____%

d) Overall, how much do you expect these to change in 1984 and 1985? ($ or percent change)

Changes in:

	Total License Fees	Total Support Fees
1984		
1985		

e) If any of the changes in 3d were significant (i.e., 10% or more):

- What is the reason for this? _____

_____

Do you expect this amount of change to continue? _____

_____

4. a) I will read a list of functions or services that are sometimes or usually included as part of standard software support services. Please tell me how important each is to your organization generally and whether there are exceptions, depending on the type of package? Please be specific about the exception (e.g., from a particular vendor, for a particular application, at a particular location, for a particular type of machine). Please rate their importance on a scale of 1 to 5 with 1 being low importance and 5 representing high importance.

SOFTWARE SUPPORT FUNCTIONS

IMPORTANCE

Functions	Generally	Exceptions
Fix Errors		
Improve Features of Functionality		
Add Features or Functionality		
Extend Features or Functionality		
Training		
Consulting		
Other (Describe) _____		

4. b) How well have your software vendors generally met these support requirements? Have certain vendors performed much better or worse? (Note: Specific vendor names are preferred, but generic descriptions are acceptable; Please rate your satisfaction by the same functional areas (on a scale of 1 to 5).

Satisfaction with Software Support

Functions	Generally	Exceptions
Fix Errors		
Improve Features or Functionality		
Add Features or Functionality		
Extend Features or Functionality		
Training		
Consulting		
Other (describe) _____		

5. a) What kinds of services do your software vendors offer in addition to those contained in the standard support contract (e.g., additional training, consulting)? How extensive are they?

_____

_____

5. b) About how much do you spend annually on these additional services?

$ _____

c) What additional services do you expect to purchase from your packaged software vendors?

- When: _____

_____

- Why?: _____

_____

- What would this translate to in dollars? $_____

6. a) Have you experienced situations recently where a software vendor has brought out a new product rather than enhancing or modifying an existing product?

☐ Yes ☐ No

- If Yes:
  - Which product(s) was it? _____
  - Do you feel this was justified? ☐ Yes ☐ No
    Explain: _____

    _____
  - Did licensees of the old product receive a discount on the new product? ☐ Yes ☐ No
    If Yes, how much was it and was it fair in your opinion?

    _____

    _____
  - Overall, do you feel the vendor(s) handled the situation well from your standpoint? ☐ Yes ☐ No
    Why? _____

    _____

6. b) Do you think that bringing out new products in this way will be a more common situation in the future?

☐ Yes ☐ No

Why? _____

_____

If yes, will this be common for:

☐ Mainframe Software
☐ Mini Software
☐ Micro Software

7. a) Does your organization keep logs or other records of major and minor bugs or other problems in packaged software?

☐ Yes ☐ No

- If Yes:
  - How many major and minor problems are reported annually for operating systems software, other systems software and application software packages? How many are resolved? What is the average time to resolve these problems? (Use attached matrix.)

7. a) Problem Reporting or Resolution

	Package Type		
Problems	Operating System(s)	Other Systems Software	Application Software
Major Number Reported			
Number Resolved			
Average Time to Resolve			
Minor Number Reported			
Number Resolved			
Average Time to Resolve			

7. b) Overall, is this problem resolution performance satisfactory?

☐ Yes ☐ No

If No:

How should it be improved? _____

_____

To what extent do you expect it to be improved? _____

_____

7. c) How much do you expect automatic downloading and installation of new releases, remote diagnostics, and remote fixes to improve problem resolution and other services? Are these being done now at your installation? If so, what is your experience?

	Being Done Now (Yes/No)	Expected Improvements	Experience
Automatic Down-loading and Installation of New Releases			
Remote Diagnostics			

8. a) Is there one person in your company who tracks and analyzes software support contractual terms and conditions for all software products?

☐ Yes ☐ No

- If Yes:
  - How long has this been done? _____
  - How many products are covered? _____
  - What benefits has your company received? _____
- If No:
  - Do you plan to? ☐ Yes ☐ No

8. b) Do you feel that current contractual terms and conditions applying to software support and maintenance are satisfactory?

☐ Yes ☐ No

Why: _____

_____

- What sort of changes would you like? _____

_____

_____

- What kind of changes do you believe vendors are planning?

_____

_____

c) Does your firm ever seek to modify standard terms and conditions concerning software support?

☐ Yes ☐ No

Why? _____

_____

If Yes:

- How often is this attempted? _____

_____

- What terms do you try to modify? _____

_____

- What success have you had? _____

_____

9. To what extent do you feel you have little or no choice in the type or amount of software support you will be receiving?

_____

_____

_____

- What can you do about this? _____

_____

- What are you going to do about it? _____

_____

10. a) How much and what kind of self-support of packaged software is your organization currently doing?

_____

_____

Why? _____

_____

10. b) Do you usually, sometimes or never perform the following types of self-support? What are your future plans? (fill in matrix below)

Type of Self-Support	Current			Future		
	Usu.	Some	Never	Usu.	Some	Never
Install Initial Release						
Install Subsequent Releases						
Modify Packages						
Fix Errors						
Set up a Single Point in your Organization to Funnel Questions to a Vendor						

c) Do you expect to do more in the future? ☐ Yes ☐ No

Why? _____

_____

_____

If yes:

What kind of self-support? _____

_____

d) What kind of incentives do software vendors now give you to perform self-support functions?

_____

_____

_____

10. e) What additional incentives would you find attractive? _____

_____

_____

11. What other software support issues are important to you or your organization?

_____

_____

12. Overall, what changes do you see occurring in the way in which packaged software support is delivered?

_____

_____

_____