# SOFTWARE SUPPORT REQUIREMENTS

## OFFICE PRODUCTS

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.

## Offices

### NORTH AMERICA

**Headquarters**
1943 Landings Drive
Mountain View, CA
94043
(415) 960-3990
Telex 171407

**Detroit**
220 East Huron
Suite 209
Ann Arbor, MI 48104
(313) 971-0667

**New York**
Park 80 Plaza West-1
Saddle Brook, NJ 07662
(201) 368-9471
Telex 134630

**Washington, D.C.**
11820 Parklawn Drive
Suite 201
Rockville, MD 20852
(301) 231-7350

### EUROPE

**United Kingdom**
INPUT, Ltd.
Airwork House
35 Piccadilly
London, W1V 9PB
England
01-439-8985
Telex 23116

**France**
La Nacelle
Procedure d'abonnement 1-74
2, rue Campagne Premiere
75014 Paris
France
322.56.46
Telex 220064 X5533

**Italy**
PGP Sistema SRL
20127 Milano
Via Soperga 36
Italy
Milan 284-2850
Telex 310352

**Sweden**
Athena Konsult
P.O. Persson & Co. AB
Box 22114
S-104 22 Stockholm
Sweden
08-52 07 20
Telex 17041

### ASIA/AUSTRALIA

**Japan**
Overseas Data Service
Company, Ltd.
Shugetsu Building
No. 12-7 Kita Aoyama
3-Chome Minato-ku
Tokyo, 107
Japan
(03) 400-7090
Telex 26487

K.K. Ashisuto
Daini-Suzumaru Bldg., 6th Floor
8-1, Nishi Shimbashi
3-Chome Minato-ku
Tokyo, 105, Japan
(03) 437-0654
Telex 781 26196

**Singapore**
Cyberware Consultants (PTE) Ltd.
2902 Pangkor
Ardmore Park
Singapore 1025
734-8142

# INPUT
Planning Services For Management

# SOFTWARE SUPPORT REQUIREMENTS
## OFFICE PRODUCTS

# SOFTWARE SUPPORT REQUIREMENTS
# OFFICE PRODUCTS

## CONTENTS

INPU

# SOFTWARE SUPPORT REQUIREMENTS
## OFFICE PRODUCTS

## EXHIBITS

**INPUT**

I INTRODUCTION

# I INTRODUCTION

## A. SCOPE

- It has become increasingly clear that many micro software vendors (not to speak of hardware vendors) do not understand the critical corporate marketplace. Nowhere is this more true than when dealing with support issues, especially software support.

- Consequently, in this report INPUT is focusing on the support of micro business software as it relates to the corporate user. Home and entertainment software has been excluded.

- One of INPUT's key findings is the convergence of the micro and "traditional" software markets within corporations; consequently, INPUT will spend a considerable amount of time in the 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.

**INPUT**

## B.    METHODOLOGY

- INPUT interviewed software marketing and technical management from 19 micro software firms--covering a wide range of business applications--to ascertain current and future industry practices.  The questionnaire used for this purpose is included as 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 knowledge gained from several of its special consulting studies in the areas of:

    - Software marketing practices.

    - Software maintenance business opportunities.

    - New business opportunities in computer services.

    - IS department organization and mission planning.

- A list of INPUT reports on these topics can be found in Appendix C.


## C.    SOFTWARE PRODUCTS DEFINITIONS

- Application software products are software products which perform processing to directly serve user functions.  They consist of:

- 2 -

**INPU**

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

**INPUT**

## 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 script that facilitates group communications.

- The key points of the entire report are summarized in Exhibits II-1 through II-4. On the left-hand page facing each exhibit is a script explaining the exhibit's contents.

**INPUT**

## A.    POTENTIAL OF MICRO SOFTWARE SUPPORT

- Micro software support now scarcely exists as an identified and exploited market opportunity; yet there is no reason why, at least in the corporate marketplace, micro software support could not claim as large a proportion of customer software expenditures as do mainframe and mini software support.

- Mainframe and mini software support revenues are each equal to about a quarter of software license revenues.

  - Micro software support is equal to a small fraction of this.

  - More complete estimates of micro software support are not possible at this time for the same reason that this is an unexploited opportunity: a very small proportion of both customers and vendors have reliable data on micro software expenditures or receipts.

- However, the opportunity for more micro support exists. There is a large and growing need for a full range of micro support services in corporations that goes far beyond package maintenance, which is itself also not fully exploited.

- The need is especially great since most corporations do not have the resources to provide these services themselves, yet are under increasing pressure to make good on the promise of the PC.

- 6 -

**INPL**

EXHIBIT II-1

- 7 -

# POTENTIAL OF MICRO SOFTWARE SUPPORT

- **Package Maintenance**

- **Additional Software Sales**

- **Consulting and Training**

- **Custom Software Development**

- **Information Data Base Sales**

- **Micro-Mainframe Opportunities**

**INPUT**
FOP7

## B.     MICRO SOFTWARE SUPPORT: OPPORTUNITY OR OBLIGATION?

- Is micro software support a burden or an obligation?  In the course of INPUT's research for this report it became clear that a large number in each market group didn't know.

- The first generation micro software vendor is ambivalent about software support.

    - The hard core of "old timers" wishes it would go away so they could have more time to produce the next VisiCalc on a shoe string; the hard core is a dwindling minority, though.

    - Most of the rest of the first generation see support either as a necessary evil or as charity.  Few see it as a useful and profitable business.

- The corporate customer is in a quandary similar to that of the vendors:

    - Many end users and a decreasing number of information systems (IS) departments haven't thought about the issue at all--until something has gone wrong.

    - Many IS departments are aware of the broad range of support needed but have not thought out in concrete terms what is needed and/or do not have sufficient control or influence over corporate micro practices to do very much.  This, however, is changing.

- As these issues are clarified in customers' minds, the market will be open to a broad range of support services.  The question is:  Will vendors be ready to fill the need?

INPL

EXHIBIT II-2



**MICRO SOFTWARE SUPPORT:
OPPORTUNITY OR OBLIGATION?**
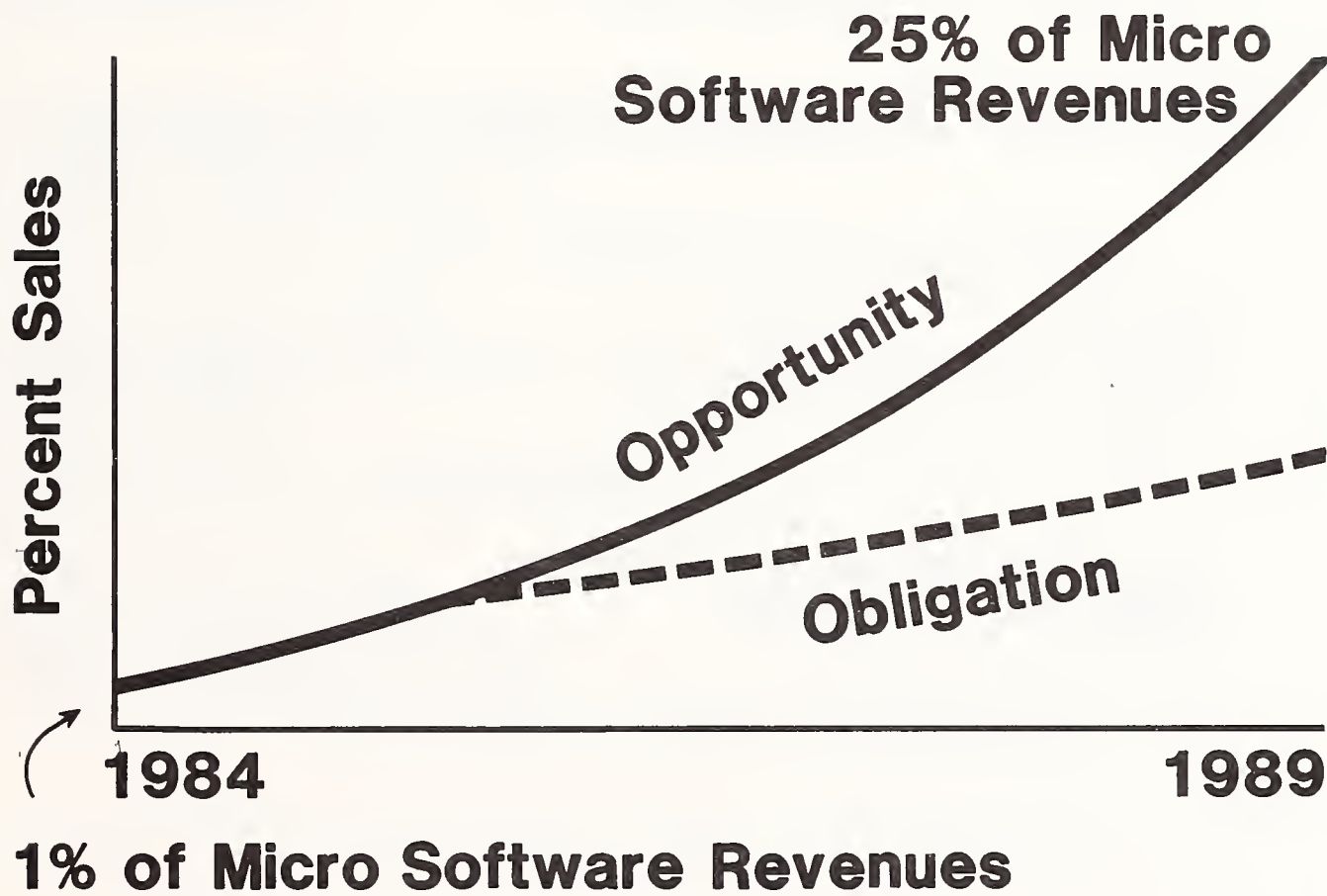
**INPUT**
FOP7

## C. SOFTWARE SUPPORT MARKETS

- Given the scarcity of vendor resources, how should vendors allocate them?

- Supporting individual end users has given support a bad name.

    - Many customers are untutored and costs are high.

    - Piracy is highest in this area.

    - Support is an expensive and difficult telephonic process.

    - This is an expensive and difficult market to sell to and to service.

- Corporate departments and small businesses are easier to sell to and to service.

- The most attractive option, however, is centralized support by the IS department:

    - IS professionals can serve as a support screen.

    - IS can also serve as a distribution and administrative point.

    - IS understands the need for support, which can be sold on a one-time basis for multiple applications.

- In future, micro-mainframe support will be another large market.

INP

EXHIBIT II-3

# SOFTWARE SUPPORT MARKETS

| Market | Vendor Difficulty | Vendor Opportunity |
|--------|-------------------|--------------------|
| Individuals | High | Low |
| Corp. Departments, Small Businesses | Medium | Medium |
| Corporate MIS (Individual Centralized Support) | Low | High |
| Corporate MIS (Micro-Mainframe) | High | High |

INPUT
FOP7

## D. CENTRALIZED SOFTWARE SUPPORT—AN IMMEDIATE OPPORTUNITY

- Currently, software support is being hindered by a lack of cohesion between users and information systems departments within corporations. Not only does this hinder effective software management, but it also hinders software support vendors from effectively determining corporate-wide software support needs.

- Contributing to this lack of cohesion within the corporation is the IS department's lack of understanding of microcomputers. Users have traditionally assumed complete responsibility for microcomputer hardware and software acquisition, use, and eventually, support. Only very recently has corporate IS begun to assume some purchase and support control over microcomputer use, driven by the unquestionable general growth of microcomputer use and by the growing trend toward network and mainframe-linked applications.

- In spite of this, microcomputer investment, both hardware and software, is growing dramatically as users are drawn to both the independence and ease of use afforded them by the microcomputer. The key to continuing this growth will be the quality of support that software vendors provide to corporations.

- To improve user satisfaction with software support and improve software support vendor productivity (and eventual profitability), both the user and vendor need to work together in centralizing software support and control within one organization in the corporation--most logically in IS, given the trend toward networked and mainframe-linked systems. Software vendors should provide inducements to corporations (e.g., large-quantity discounts) in order to facilitate this centralization.

INPI

EXHIBIT II-4

- I3 -

# CENTRALIZED SOFTWARE SUPPORT - AN IMMEDIATE OPPORTUNITY

- **Corporate End Users: Fragmented and Drifting**

- **IS Department: Little Understanding of or Control Over Micros**

- **Micro Investment: Increasing**

- **IS-Centralized Support Promotes**
  - **Control**
  - **Good Economics for Vendor and Customer**

**INPUT**
FOP7

# III MICRO SOFTWARE COMPONENTS

# III  MICRO SOFTWARE COMPONENTS

## A.  MICRO SOFTWARE SUPPORT EVOLUTION

- The microcomputer hardware and software industry is currently going through what is variously termed as a shakeout or maturation process. INPUT feels that when this is complete, the industry will look a good deal different than it does now.

- One of the chief changes will be in the software support area. Based on INPUT's research and analysis, software support will be the most changed of any micro area, because currently, micro software support is either not offered at all or is of uncertain quality.

- The most attractive micro software market--the corporate market--will not long be able to live with things as they are now. 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.

**INPUT**

- Consequently, as time goes on, the corporate market will demand micro software support that looks increasingly like that traditionally offered to corporate customers, i.e., mainframe and mini software support. And as in the case of mainframe and minicomputer software, the availability and quality of micro software support will become a critical factor in the selection of microcomputer software.

- Exhibit III-1 illustrates the evolution of micro software support as seen by the corporate micro user.

## B.    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 of IS departments' expectations.

## 1.    THE VENDOR VIEW

- Virtually all vendors agree that fixing software errors is included in software support, as shown in Exhibit III-2. 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.

**INPU**

EXHIBIT III-1

## MICRO SOFTWARE SUPPORT EVOLUTION

| SUPPORT COMPONENT | 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 |

INPUT
FOP7

# EXHIBIT III-2

## FUNCTIONS INCLUDED IN VENDOR
## MAINTENANCE OF SOFTWARE

| FUNCTIONS | PERCENT OF COMPANIES "ALWAYS" OR "USUALLY" INCLUDING FUNCTION IN MAINTENANCE |
|---|---|
| Fix Errors | Software: 92, Hardware: 100 |
| Improve Features | Software: 74, Hardware: 90 |
| Add Features | Software: 71, Hardware: 80 |
| Extend Features | Software: 66, Hardware: 80 |
| Training | Software: 44, Hardware: 60 |
| Consulting | Software: 22, Hardware: 40 |
| Conversion (Hardware) | Software: 37, Hardware: 20 |
| Conversion (Operating Systems) | Software: 33, Hardware: 20 |
| Add Interface | Software: 19, Hardware: 20 |

0    20    40    60    80    100%

☐ = Software Company    ▨ = Hardware Company

SOURCE: INPUT Survey

- 18 -

**INP**
FPS3F

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

- Supplying conversion and interface assistance is 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 services" 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.

- 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 main maintenance activity, as shown in Exhibit III-3.

- 19 -

**INPUT**

EXHIBIT III-3

CAUSES OF SUPPORT ACTIVITY BY VENDORS

- 20 -

INP
FPS3 F
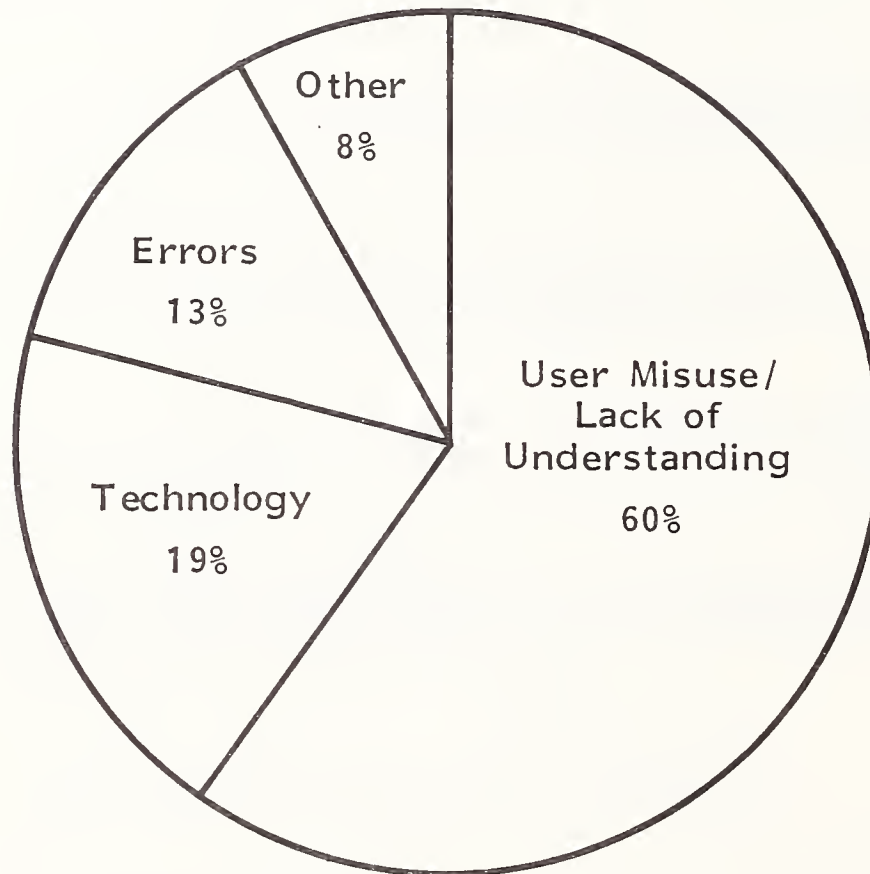
- Error correction accounts for only 13% of activities. (Note: this is within the 10-20% range commonly reported for in-house maintenance.)

- 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-4). 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.

    - The bad news is that satisfaction with error correction does not match its importance.

- 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.

**INPUT**

# EXHIBIT III-4

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

Support
Functions

Fix Errors — 4.7 / 3.7

Improve Features — 3.5 / 3.2

Add Features — 3.3 / 3.2

Extend Features — 3.3 / 3.2

Training — 3.5 / 2.9

Consulting — 3.0 / 2.8

```
        1          2          3          4          5
      Low                                         High
   Importance                                  Importance
```

☐ Importance

▨ Satisfaction

- 22 -
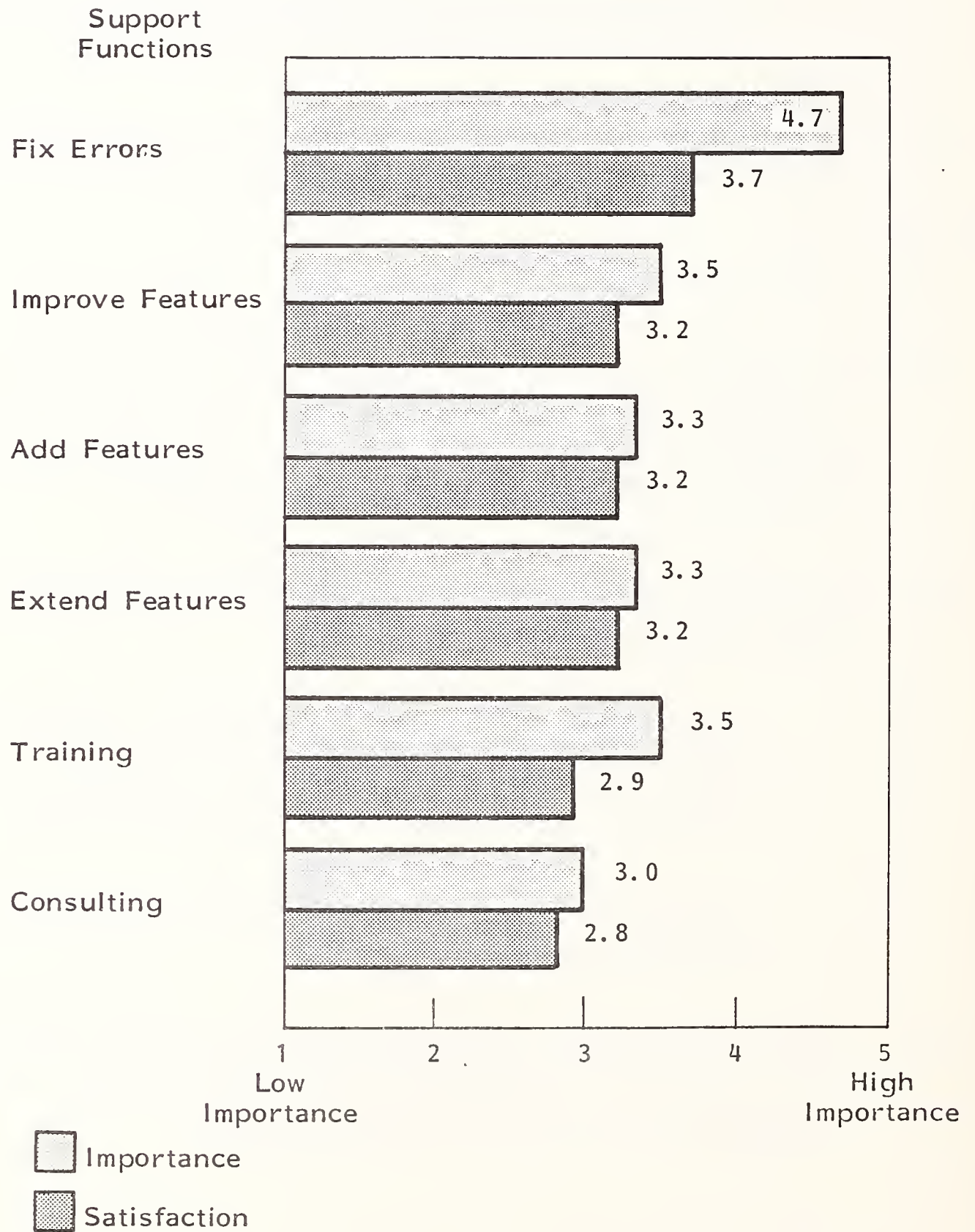
## C.    PRICING OF MICRO SOFTWARE SUPPORT

- This section examines key issues and findings relating to micro 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.

### I.    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. Vendors estimate that, on average, 17% of all micro software revenue comes from support in 1984, as shown in Exhibit III-5.

    - Software vendors see a modest growth in this proportion over the next five years, while hardware vendors see the software support share 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.

- 23 -

**INPUT**

EXHIBIT III-5

- 24 -

PROPORTION OF SOFTWARE VENDORS'
REVENUE COMING FROM MICRO SOFTWARE SUPPORT

Software
Vendors

17%

22%

| 0 | 5 | 10 | 15 | 20 | 25% |

1984    1989

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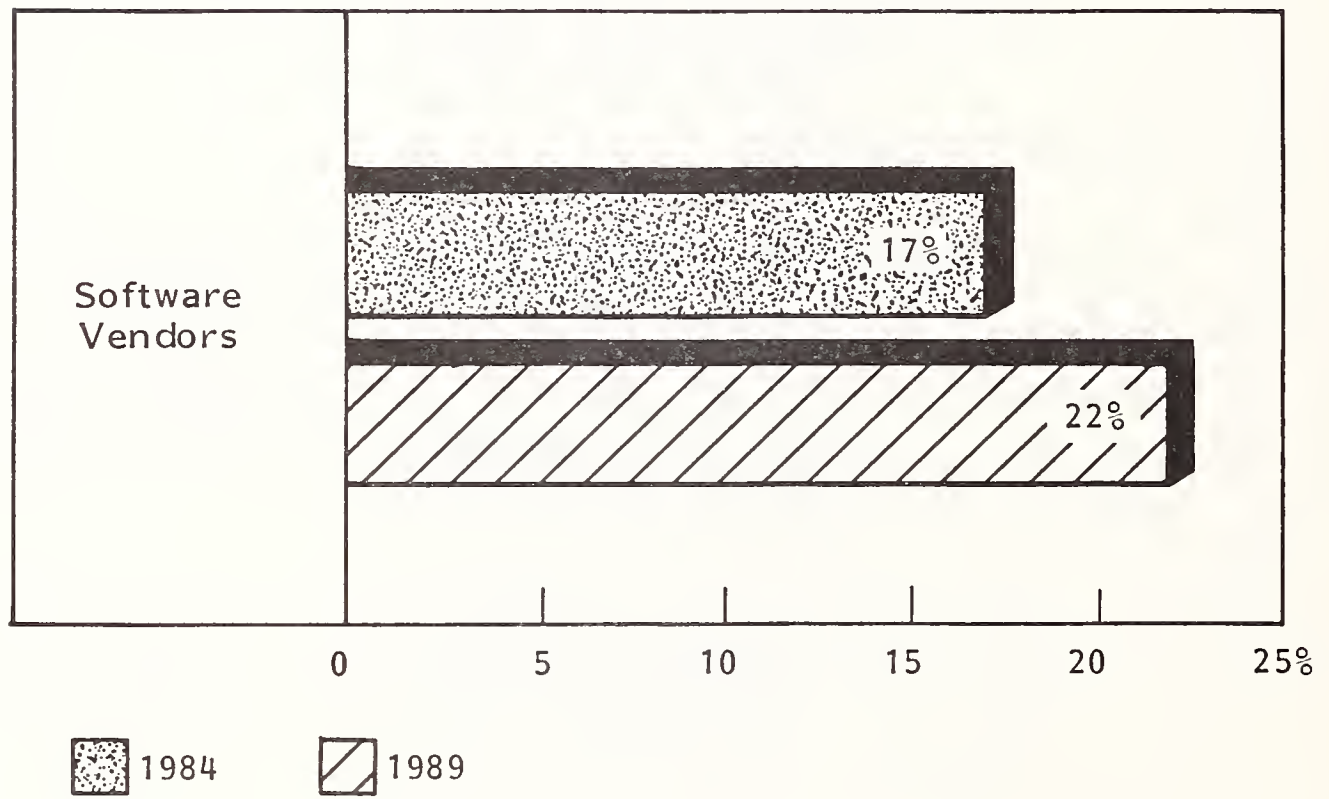
- Vendors typically ascribe more importance to price than customers do.

- In general, vendors ascribe equal importance to each of the factors in pricing software maintenance, shown in Exhibit III-6.

  - 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 III-7. This means that maintenance pricing may be too low or too high.

  - 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 serious long-range problems.

## 2. CUSTOMER SPENDING

- Overall software support costs now account for over one-quarter of software license costs (Exhibit III-8).

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

**INPUT**

EXHIBIT III-6

## FACTORS DETERMINING
## SOFTWARE MAINTENANCE PRICING

| FACTOR | IMPORTANCE |
|--------|------------|
| Value to Customers | 4.1 / 4.1 |
| Percent of Software Price | 4.1 / 3.9 |
| Profitability | 3.7 / 4.1 |
| Competition | 3.5 / 3.5 |

0    1    2    3    4    5
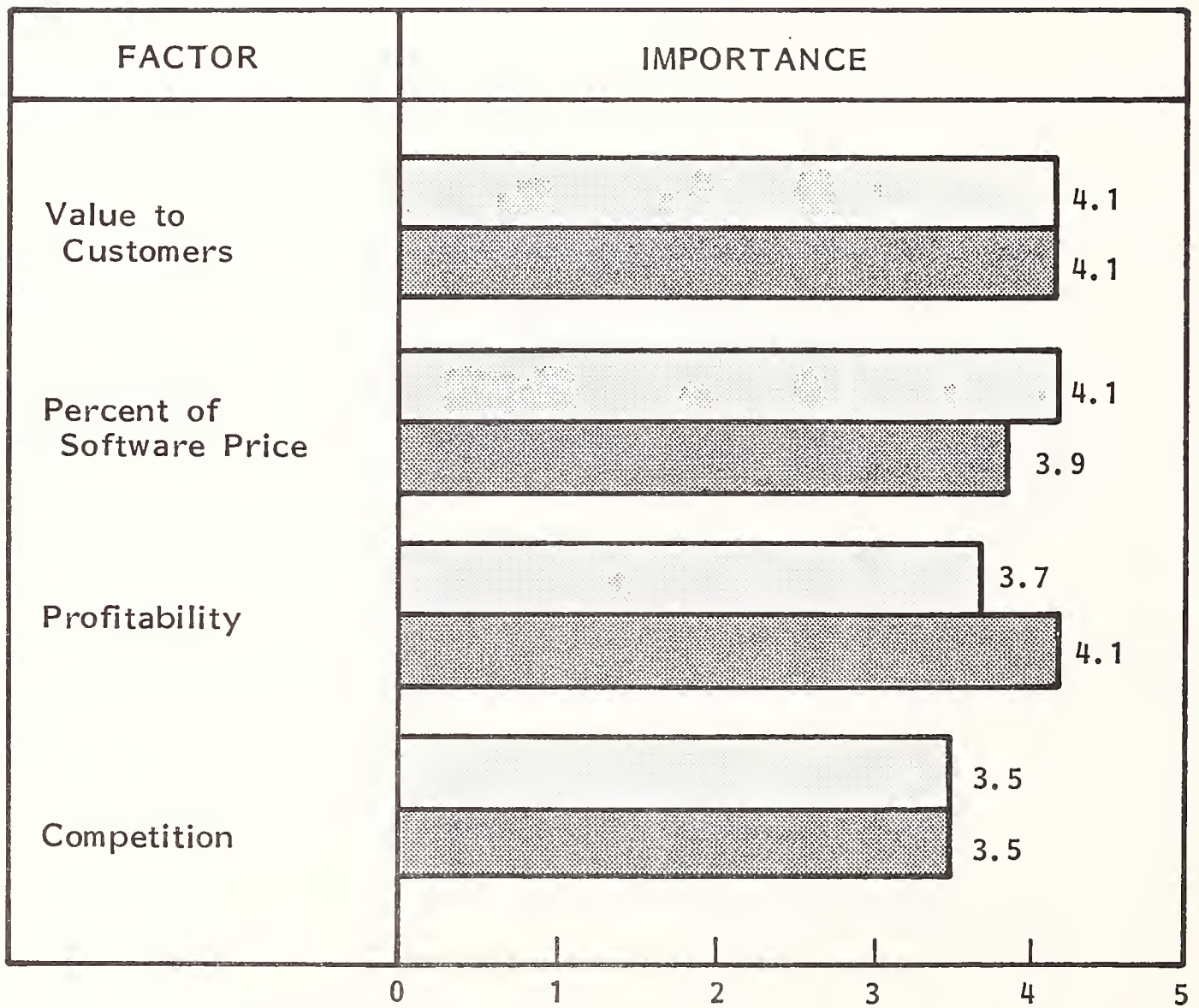
1 = Low, 5 = High

☐ = Software Vendor    ▨ = Hardware Vendor

SOURCE: INPUT Survey

- 26 -

INPU
FPS3FO

EXHIBIT III-7

## METHODS OF DETERMINING
## SOFTWARE MAINTENANCE PRICING
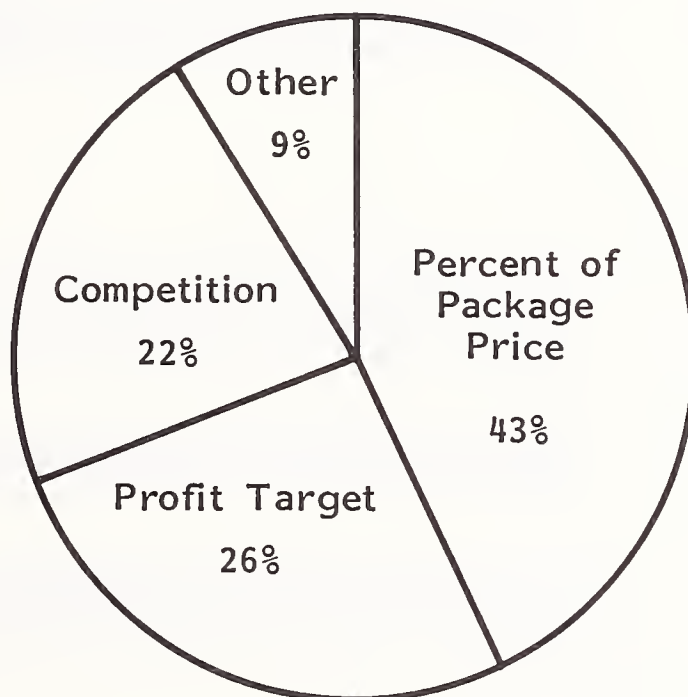


SOFTWARE COMPANIES
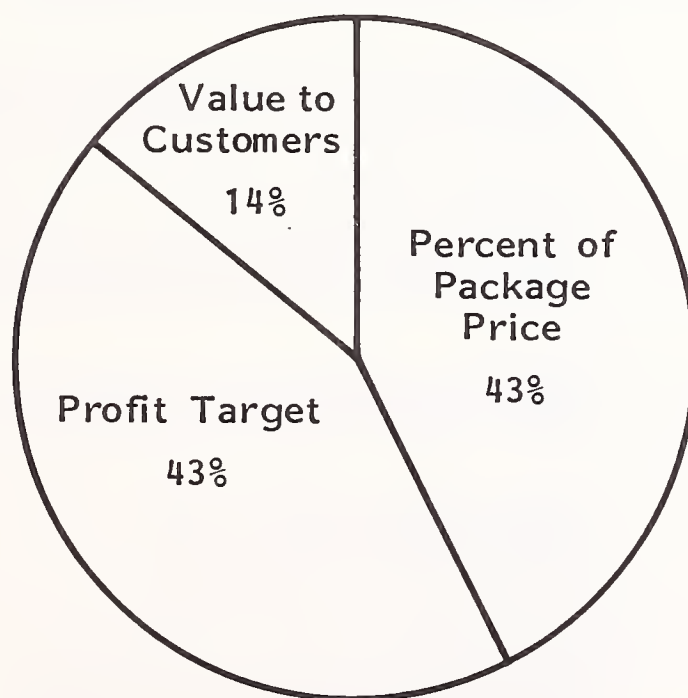


HARDWARE COMPANIES

INPUT
FPS3 FOP7

EXHIBIT III-8

## SOFTWARE SUPPORT COSTS AS A PROPORTION OF LICENSE COSTS AS REPORTED BY CUSTOMERS (BY COMPANY SIZE AND INDUSTRY)



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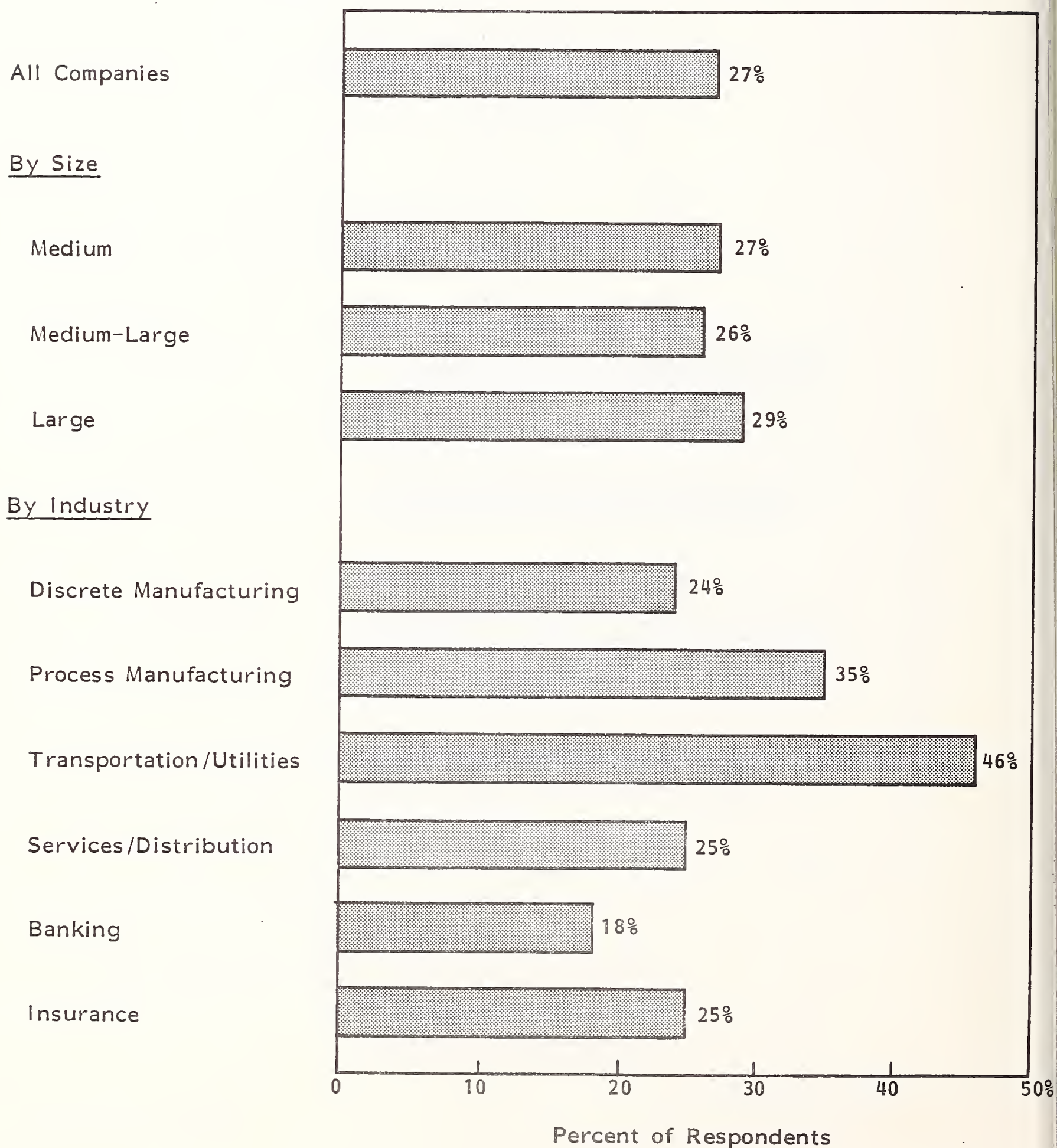
- An industry's support outlay and the amount of ongoing software license expense can be affected by:

    . 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 for the end user's 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 III-9). With the exception of process manufacturing and services/distribution, this figure does not vary appreciably among industries.

● Generally, customers expect the current rate of increase in software support costs to continue (Exhibit III-10).

● 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: though these overall rates are stable, there is significant variation within each company from year to year.

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

**INPUT**

EXHIBIT III-9

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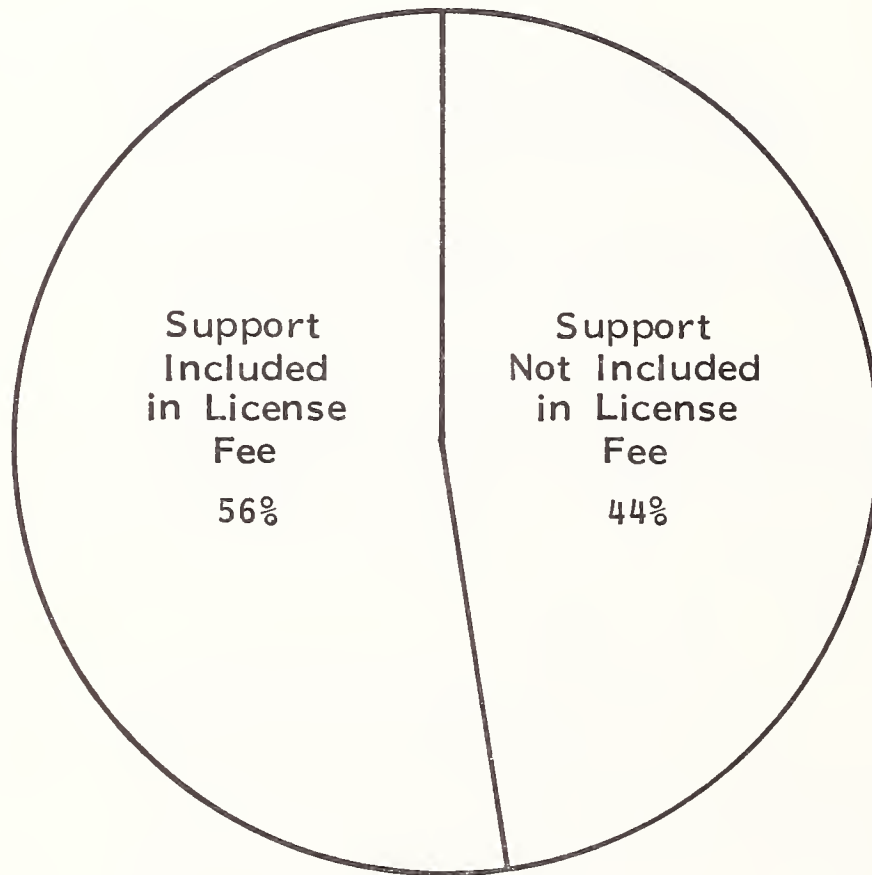


- Support is usually quoted separately, but sometimes is "bundled" in the license fee for Administrative convenience.

INP
FSS7F

EXHIBIT III-10

## CUSTOMER EXPECTATIONS OF SOFTWARE
## SUPPORT COST INCREASES

Expect Current
Rate of Cost
Increase to
Continue

58%

INPUT
FSS7 FOP7
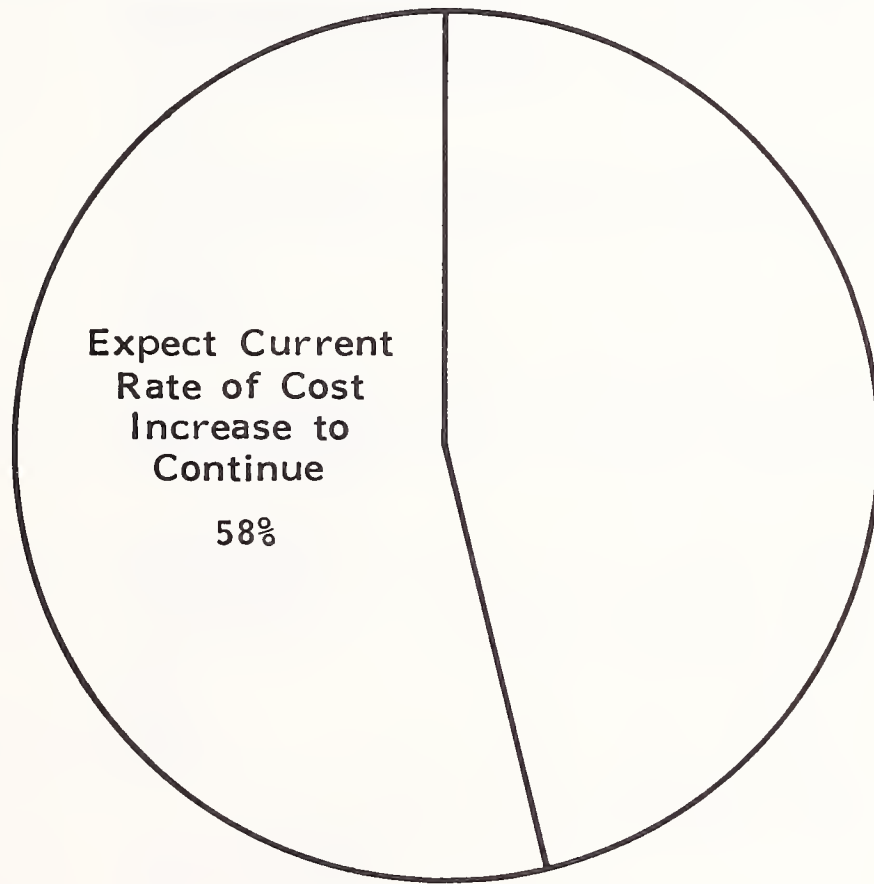
- The primary reason for increases--in the eyes of customers--is the acquisition of new software (Exhibit III-11).

- Price increases (including those not related to inflation) are a much less important factor.

- Hardware growth is another secondary factor.

- The acquisition of additional software is of more importance to smaller organizations than to larger ones (Exhibit III-12).


## D. DISTRIBUTION OF SOFTWARE SUPPORT

- One of the unfortunate facts of life for most micro software vendors is that they must deal with various means of distribution (Exhibit III-13).

    - This is seen as maximizing sales, especially in these days of the great micro software shakeout.

    - However, the result can be an extremely complex set of sales and, especially, of support relationships.

    - Exhibit III-14 shows the sales and support relationships for an actual micro software vendor.  This exhibit is somewhat simplified for purposes of presentation as well as of anonymity.

        . The company has found it extremely difficult to set up a workable support organization at a feasible cost; indeed, no single person in the company completely understands the support effort.

- 32 -

INPI

# EXHIBIT III-11

## CUSTOMER PERCEPTIONS OF REASONS FOR
## SOFTWARE SUPPORT FEES INCREASING
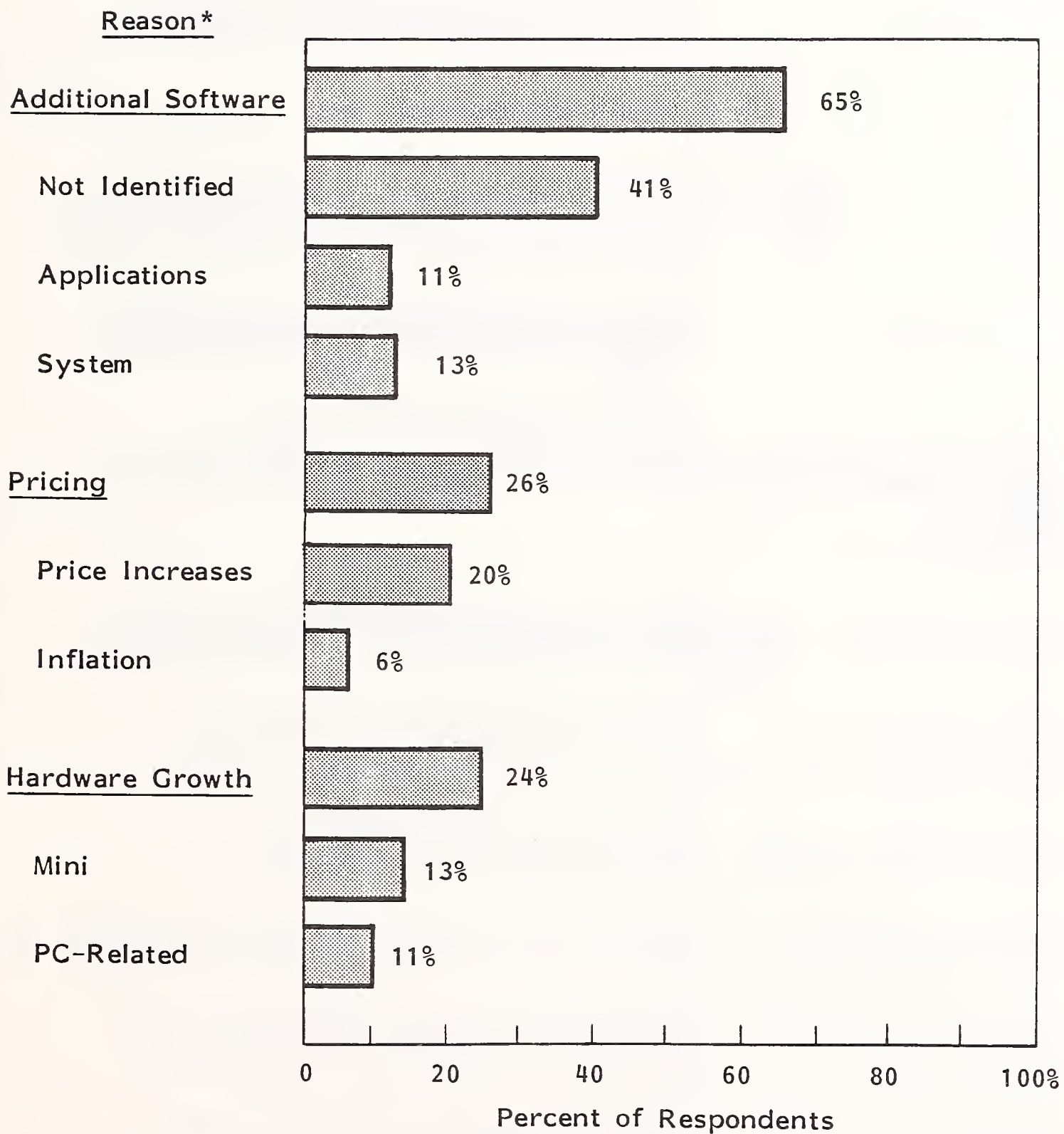


**Reason***

| | |
|---|---|
| Additional Software | 65% |
| Not Identified | 41% |
| Applications | 11% |
| System | 13% |
| Pricing | 26% |
| Price Increases | 20% |
| Inflation | 6% |
| Hardware Growth | 24% |
| Mini | 13% |
| PC-Related | 11% |

Percent of Respondents

Note: Headings total more than 100% due to multiple responses.

* Open-ended; question coded.

- 33 -

INPUT
FSS7FOP7

EXHIBIT III-12

## ADDITIONAL SOFTWARE AS A REASON FOR SOFTWARE SUPPORT COSTS INCREASING, BY COMPANY SIZE AND INDUSTRY

All Companies — 65%

By Size

Medium — 76%

Medium-Large — 69%

Large — 54%

By Industry

Discrete Manufacturing — 69%

Process Manufacturing — 61%

Transportation/Utilities — 53%

Services/Distribution — 76%

Banking — 66%

Insurance — 65%

0    20    40    60    80    100%

Percent of Customer Respondents

- 34 -

INPUT
FSS7 FOP7
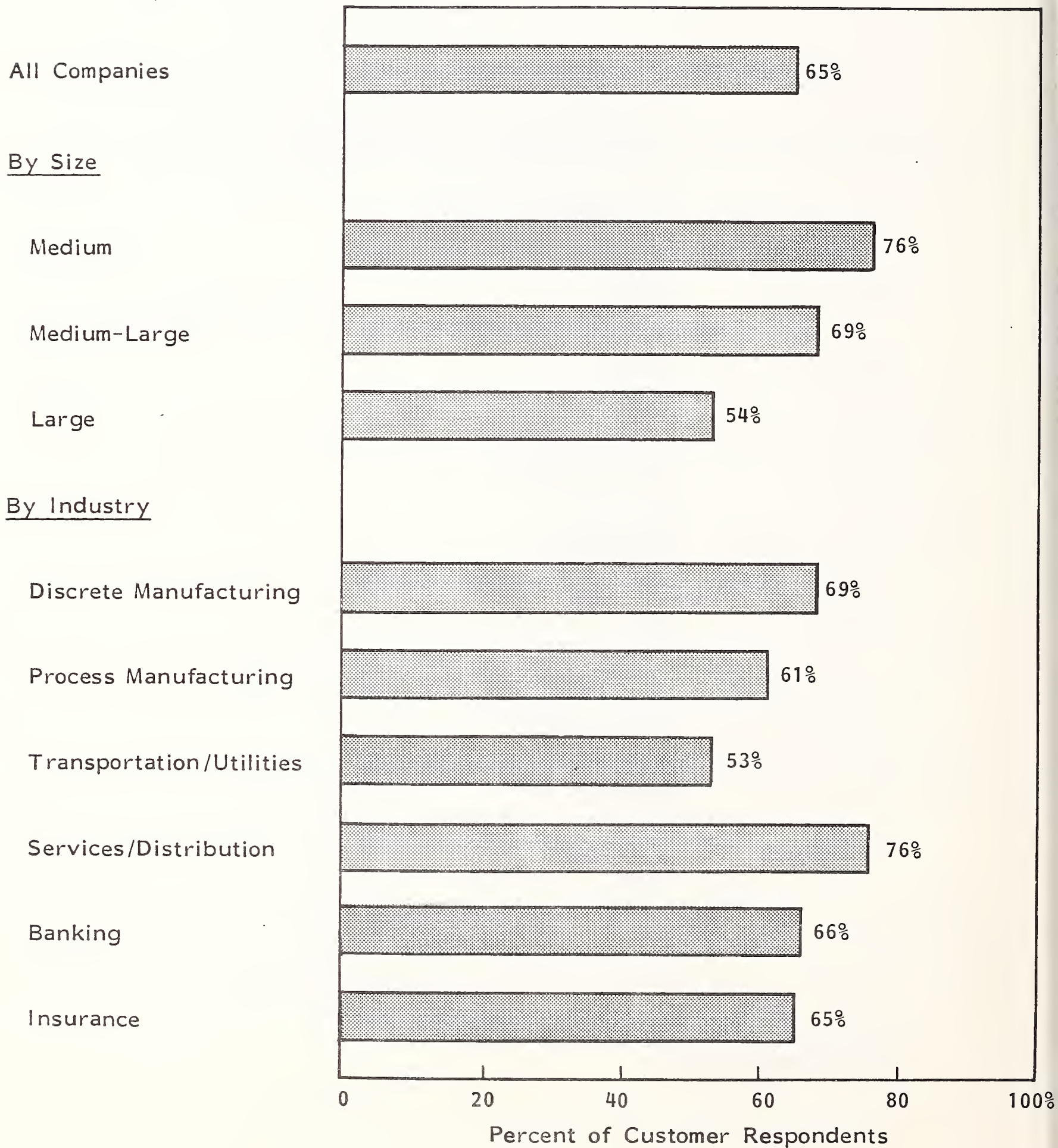
EXHIBIT III-13

## MICRO SOFTWARE DISTRIBUTION CHANNELS

| CHANNEL | PERCENT OF MICRO SOFTWARE VENDORS |
|---|---|
| Direct | 67% |
| OEM | 50% |
| Distributor | 89% |
| Dealer | 61% |

0    20    40    60    80    100%

- 35 -

INPUT
FOP7

EXHIBIT III-14
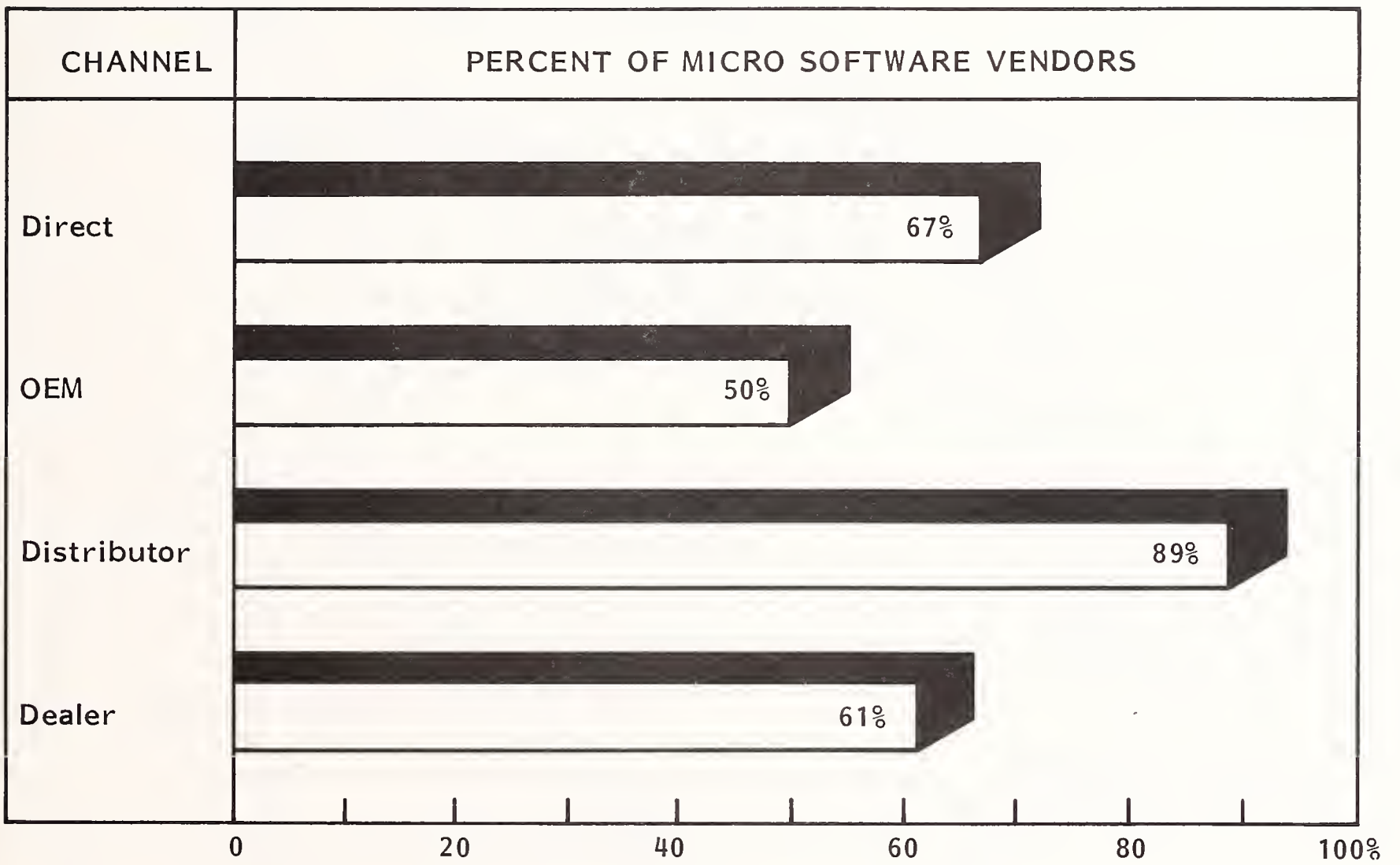
MICRO SOFTWARE VENDORS' SALES AND SUPPORT CHANNELS



Sales Channels

Planned Support Channels

Other Support Channels

INPU
FOP7
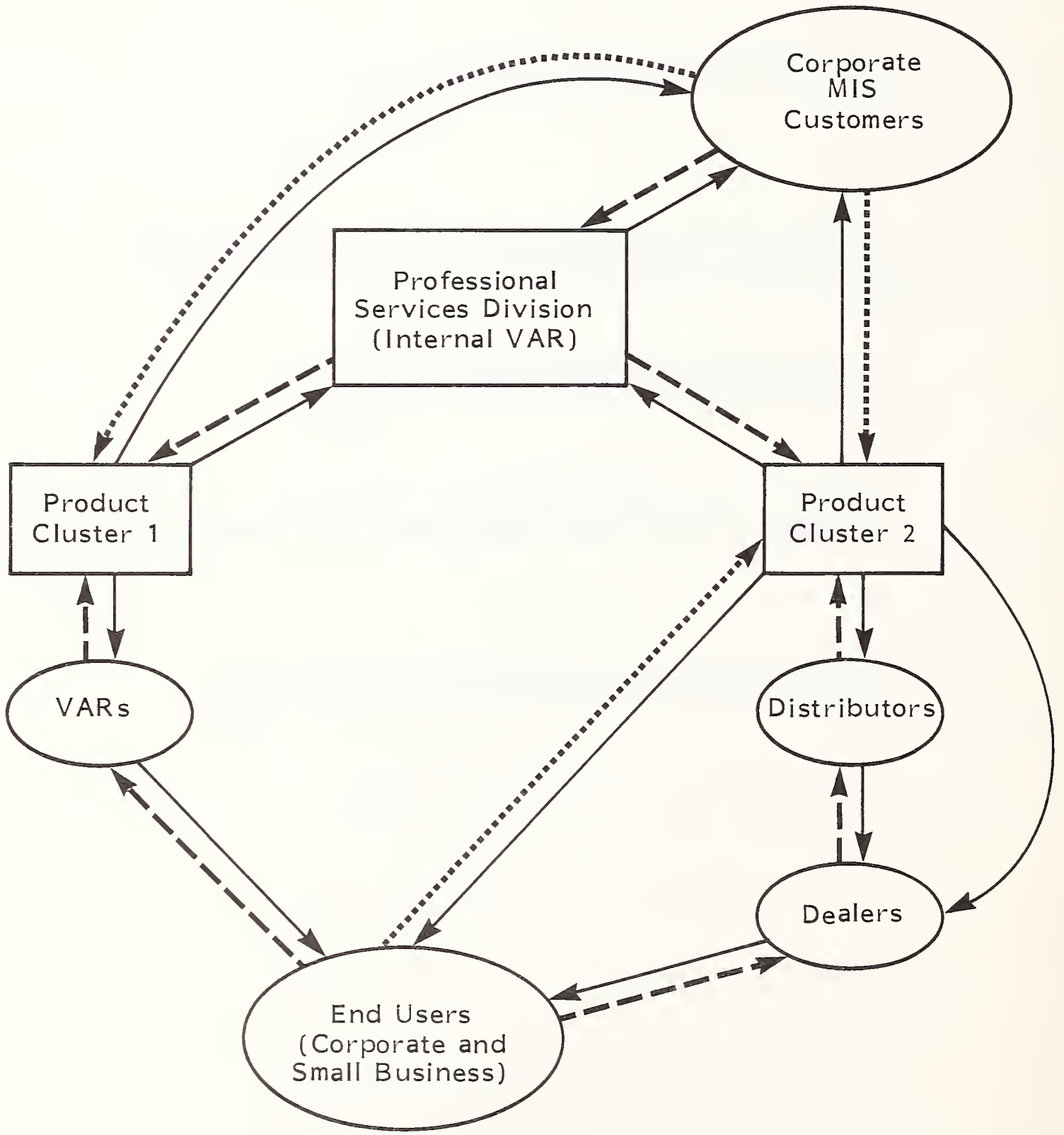
- Not surprisingly, the company has--according to its own complete records--very bad support performance. Its customers are extremely unhappy with its support performance and have made reference selling quite difficult.

- The plethora of distribution channels has led to confusion in, and negative impact on, sales.

● One of the arguments in favor of multiple distribution channels is that support (and support pricing/costs) can be tailored to particular markets.

  - This has not usually been possible in practice (Exhibit III-15), in large part because most micro software companies do not have the sophisticated management and control systems needed to make such distinctions.

  - Indeed, over one-third of micro software companies cannot identify their end users (Exhibit III-16).

    - Only a third both have serial numbers and can identify their end users.

    - Over three-quarters of the companies interviewed are satisfied with this situation.

● Whereas it is widely asserted that most micro software companies do not offer support, five out of six interviewed say they do (Exhibit III-17).

  - Hotlines and training are the predominant services offered.

  - Virtually all vendors rate both their own performance and user satisfaction as at least "very good."

- 37 -

**INPUT**

EXHIBIT III-15

EXTENT OF VARIATION IN SUPPORT BY DISTRIBUTION CHANNEL
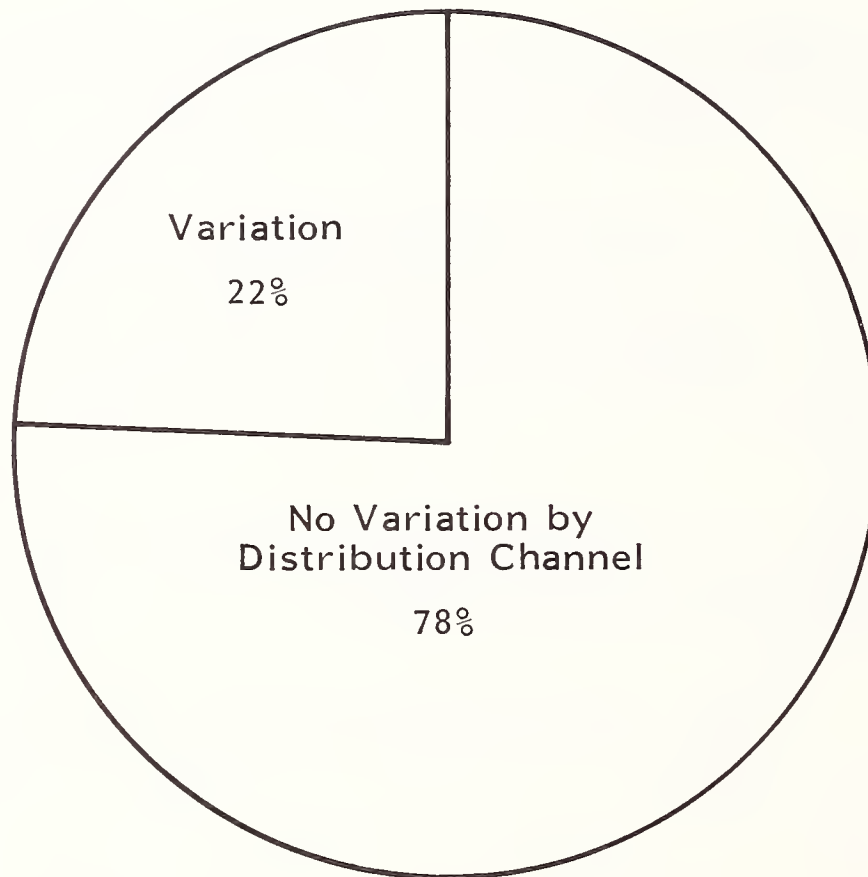


- Variations are generally tailored to distributors or special classes of users (e.g., CPA s versus other classes of application user).

EXHIBIT III-16

# VENDOR ABILITY TO IDENTIFY END USERS



Cannot Identify End Users 37%

20%

30%

17%

33%

Can Identify End Users 63%
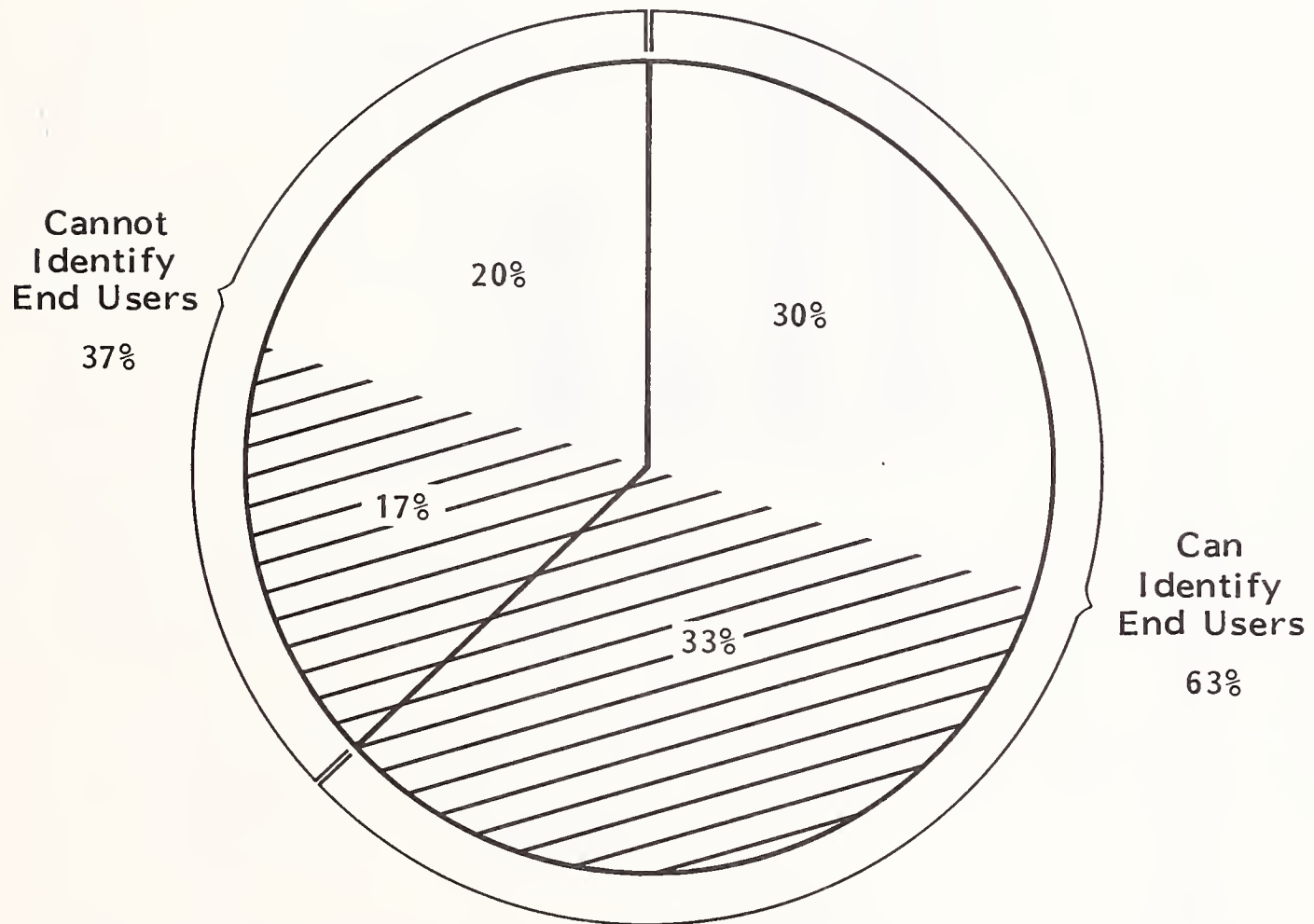
☐ No End-User Serial Numbers

▨ End-User Serial Number

● 77% Satisfied with End-User Tracking

INPUT
FOP7

EXHIBIT III-17

MICRO SOFTWARE VENDOR SUPPORT



- 40 -
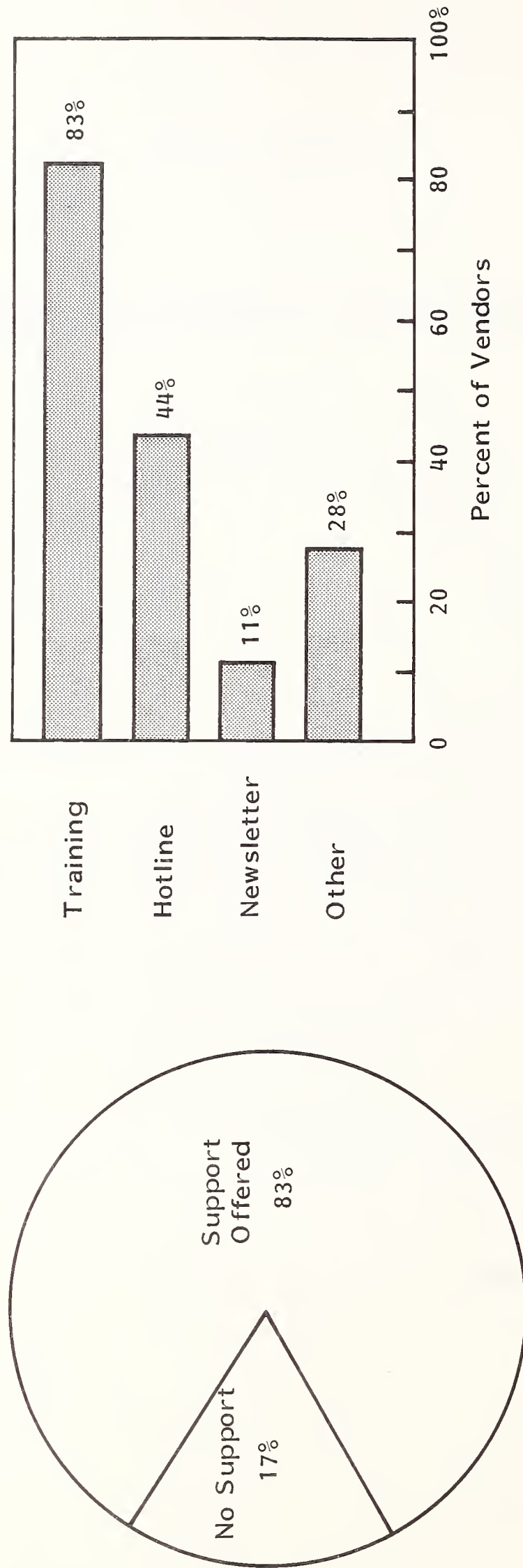
• Few vendors base such assessments on anything more substantial than feelings.

• Generally, vendors appeared singularly ill-informed concerning reception of their support operations.

● This situation is aggravated in that six out of ten vendors did not know what portion of sales was represented by support (Exhibit III-18).

- Those that could give responses provided a very broad range, with a cluster around 35%.

- However, INPUT would not invest these numbers with certainty without considerable additional investigation.

● It is interesting that fewer than half of vendors offer copy-protected software, and that most are satisfied with the level of protection (Exhibit III-19).

- Only a few vendors believe that pirate copies make up much of their installed base; hence, supporting pirate copies is not an issue to most of the vendors interviewed.

- In fact, many vendors believed that pirate copies helped: their reasoning was that pirate copies in fact as informal "review" copies. Satisfied testers would then buy copies to obtain documentation and support.

- If truly held, these beliefs represent a significant departure from press reports concerning the threat of piracy to the micro software industry. INPUT submits that there is still too little valid information available to draw any conclusions in the matter.

- 41 -

**INPUT**

EXHIBIT III-18

VENDOR KNOWLEDGE OF PERCENTAGE OF SALES REPRESENTED BY SUPPORT



- 42 -

EXHIBIT III-19

MICRO SOFTWARE COPY PROTECTION AND EXTENT OF SATISFACTION WITH PROTECTION

Satisfaction



Percent of Micro Software Vendors

High — 36%
Medium — 10%
Low — 0



No Copy Protection 56%

Copy Protection 44%

- 43 -

INPUT
FOP7
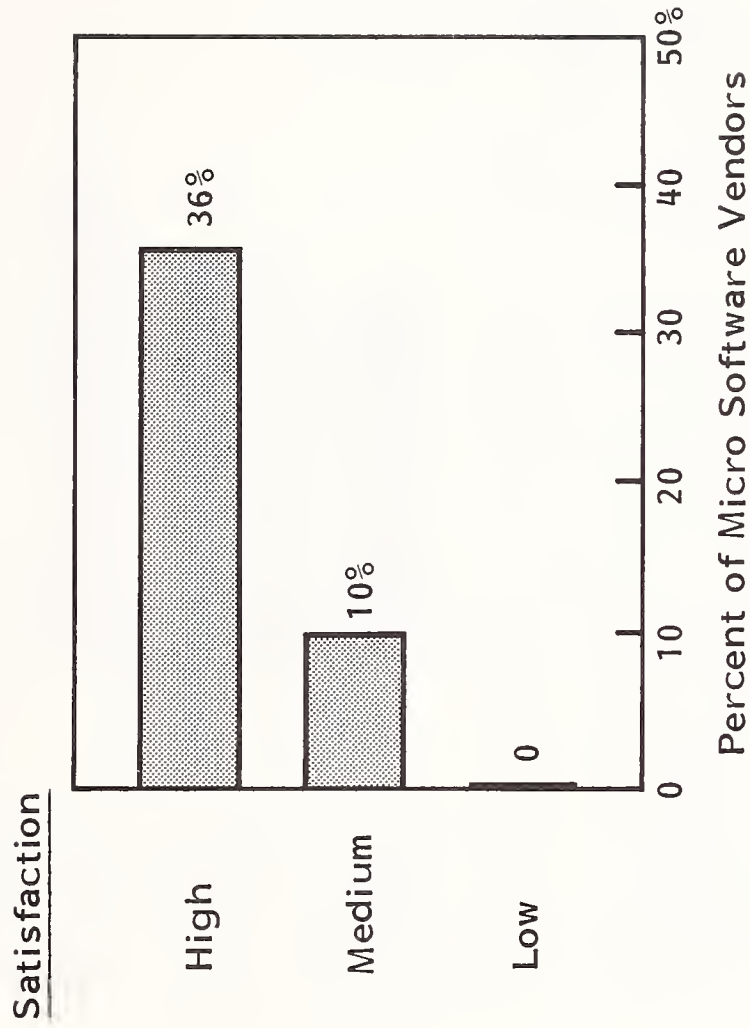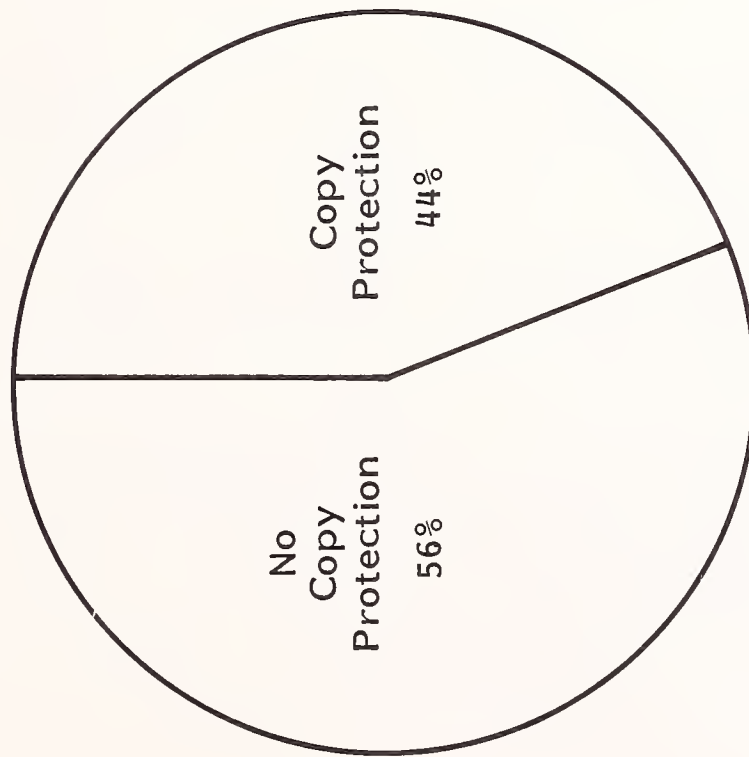
## E.    TYPES OF SUPPORT

### I.    NEW RELEASES

- A surprising number of vendors--over three-quarters surveyed--supply new releases (Exhibit III-20). This too goes against the perceived image of the micro software vendor offering no support.

    - In keeping with the complex nature of the sales and support system described earlier, new releases can be supplied to each level of the distribution chain.

    - A third of vendors supply releases free or at a nominal charge. The practice may reflect the unconventional--and unbusinesslike--origins of many micro software vendors.

### 2.    TRAINING

- Training is offered by all vendors who offer support (Exhibit III-21). Vendors believe customer satisfaction to be relatively high.

    - Vendors always offer training, but a significant amount is also offered by distribution sources, frequently dealers (Exhibit III-22).

    - Virtually all training methods are used, with face-to-face predominating either on the customer's or vendor's site. (Exhibit III-23).

- Training is an area where customer groups are treated differently; almost two out of five provide major accounts with different training than other customers (Exhibit III-24).

- 44 -

INP

EXHIBIT III-20

DISTRIBUTION OF NEW RELEASES
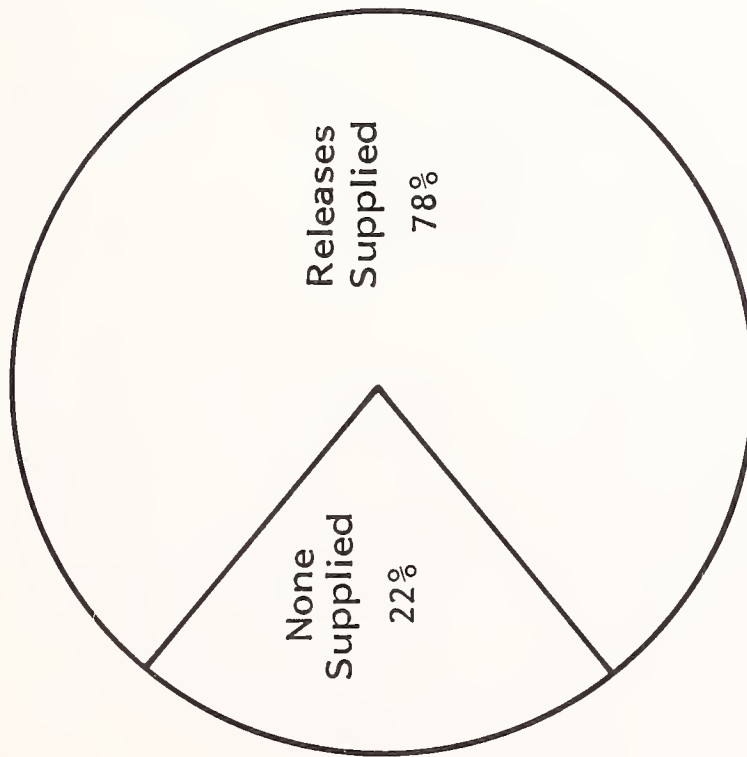
New Release
Supplied to

Customer — 61%

Dealer — 50%

Distributor — 44%

Percent of Micro Software Vendors
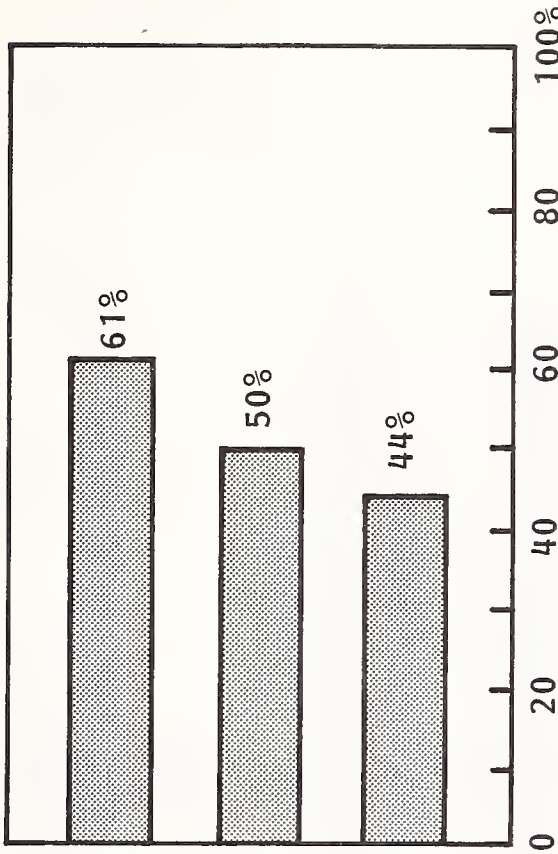
Charges for
New Releases

Free/Nominal Charge — 34%

Fee Charged — 44%

Releases
Supplied
78%

None
Supplied
22%

- 45 -

© 1984 by INPUT. Reproduction Prohibited.

INPUT
FOP7
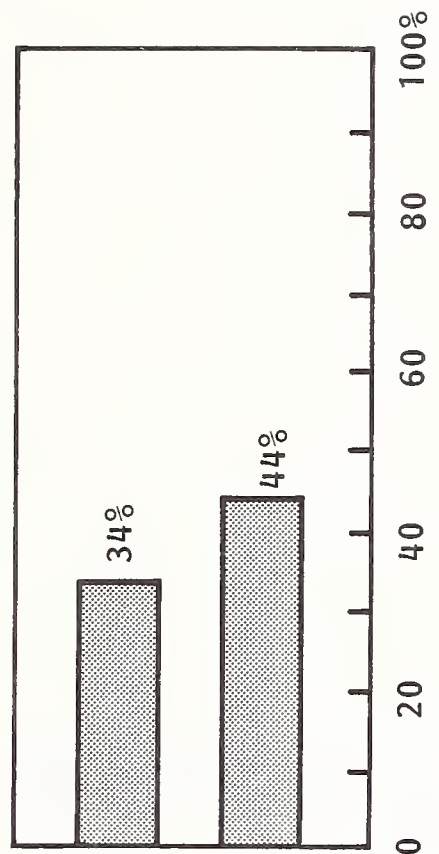
EXHIBIT III-21

TRAINING OFFERED AND VENDOR ASSESSMENT OF USER SATISFACTION



Vendor Assessment of
User Satisfaction with Training

High — 38%
Medium — 38%
Low — 7%

Percent of Vendors

Training Offered 83%

No Training 17%

- 46 -

INP
FOP7
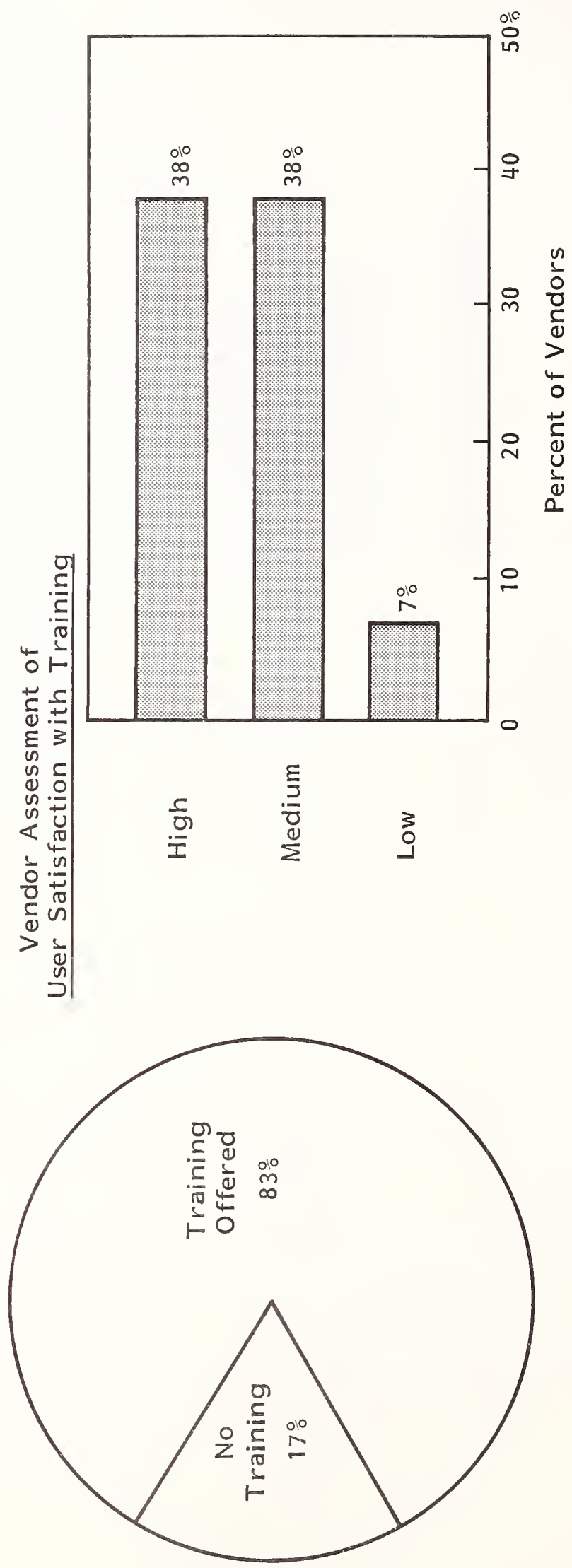
EXHIBIT III-22

FOCUS OF TRAINING RESPONSIBILITY

Responsible for
Training

| | Percent of Micro Software Vendors |
|---|---|
| Software Manufacturer | 83% |
| Dealer | 56% |
| OEM | 17% |
| Distributor | 11% |

0    20    40    60    80    100%

Percent of Micro Software Vendors

INPUT
FOP7
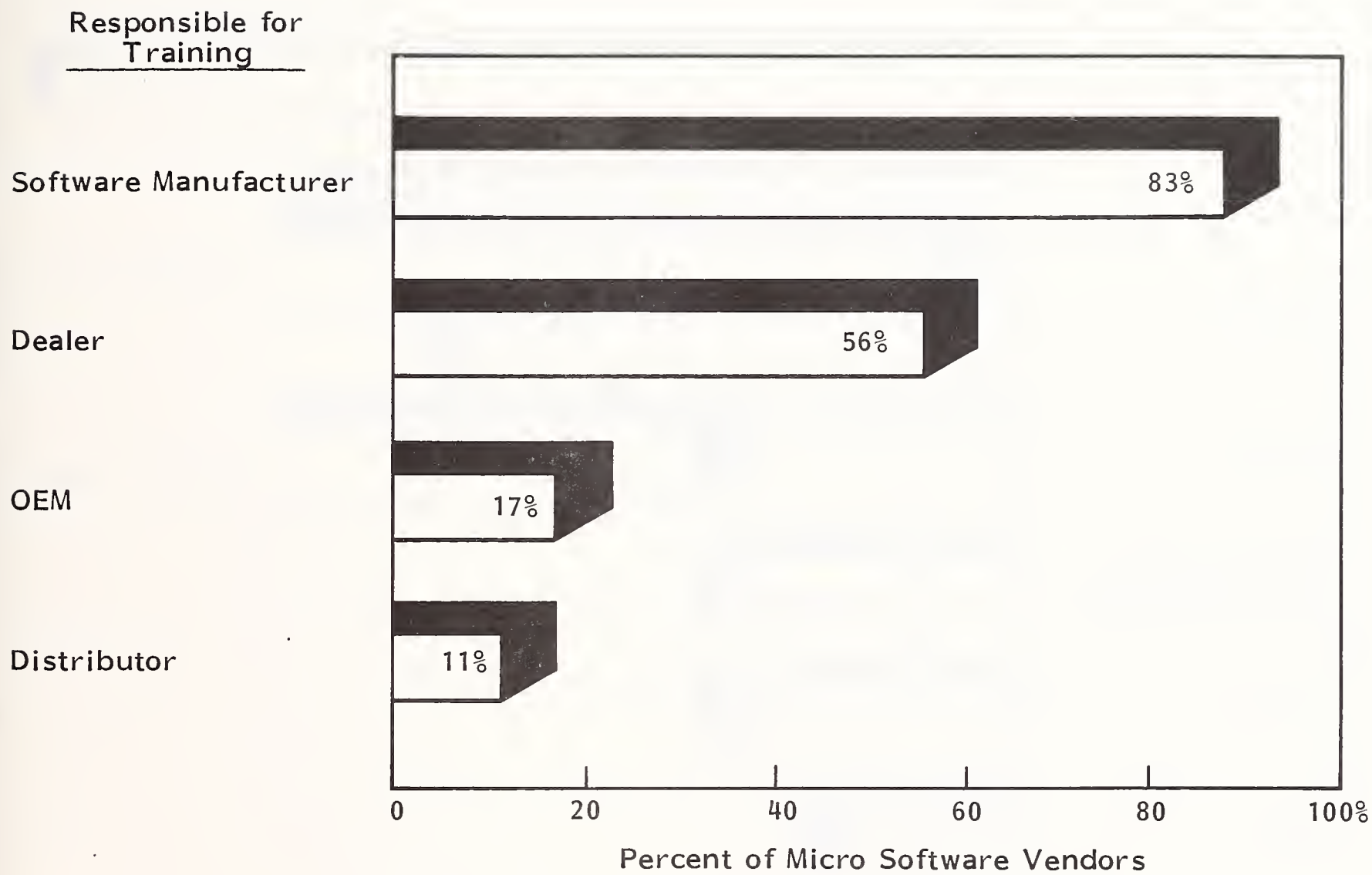
EXHIBIT III-23

## TRAINING METHODS



Percent of Micro Software Vendors
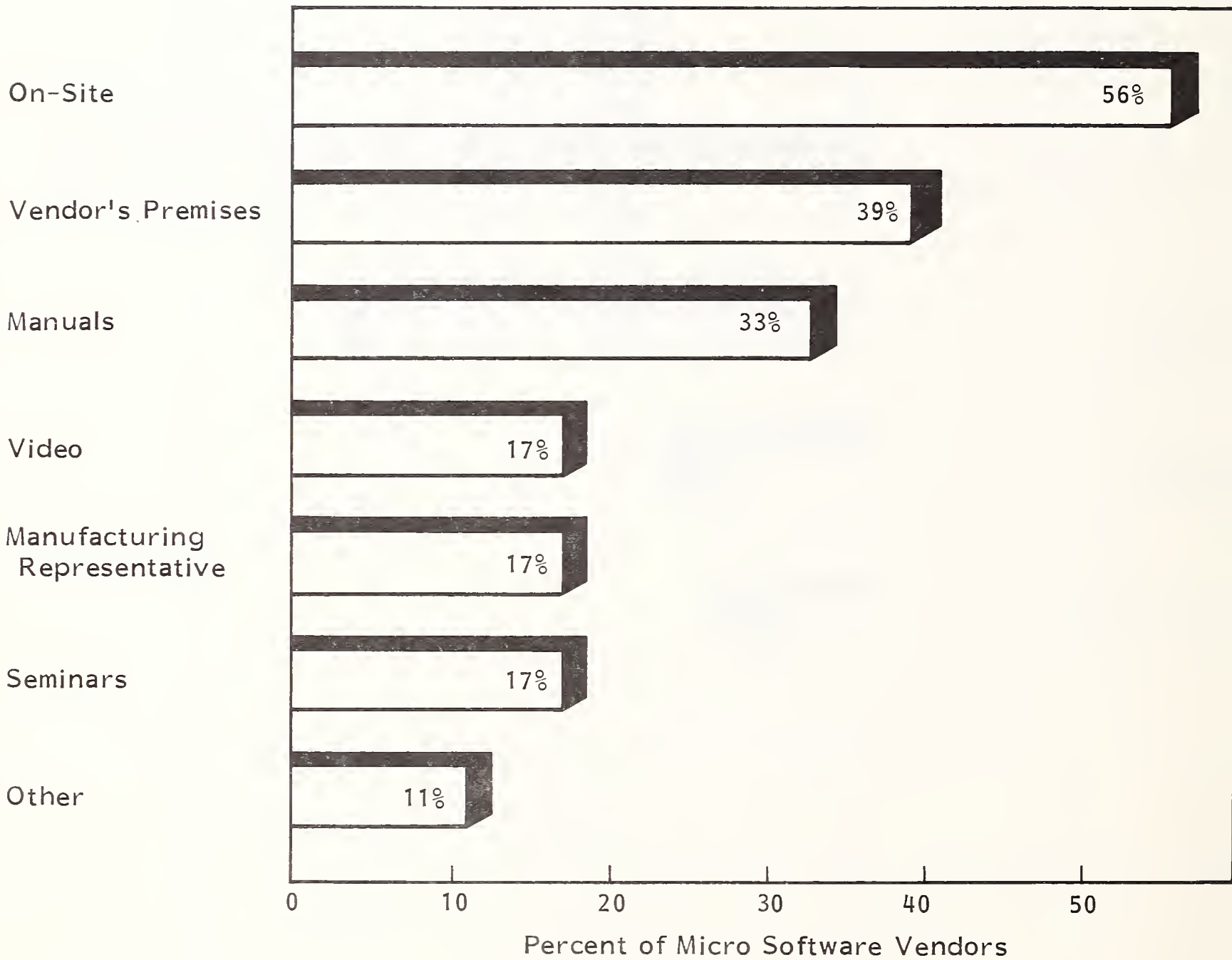
- 90% see trend to training contained in the product.

INPUT
FOP7

EXHIBIT III-24

- 49 -

VARIATIONS IN TRAINING

INPUT
FOP7
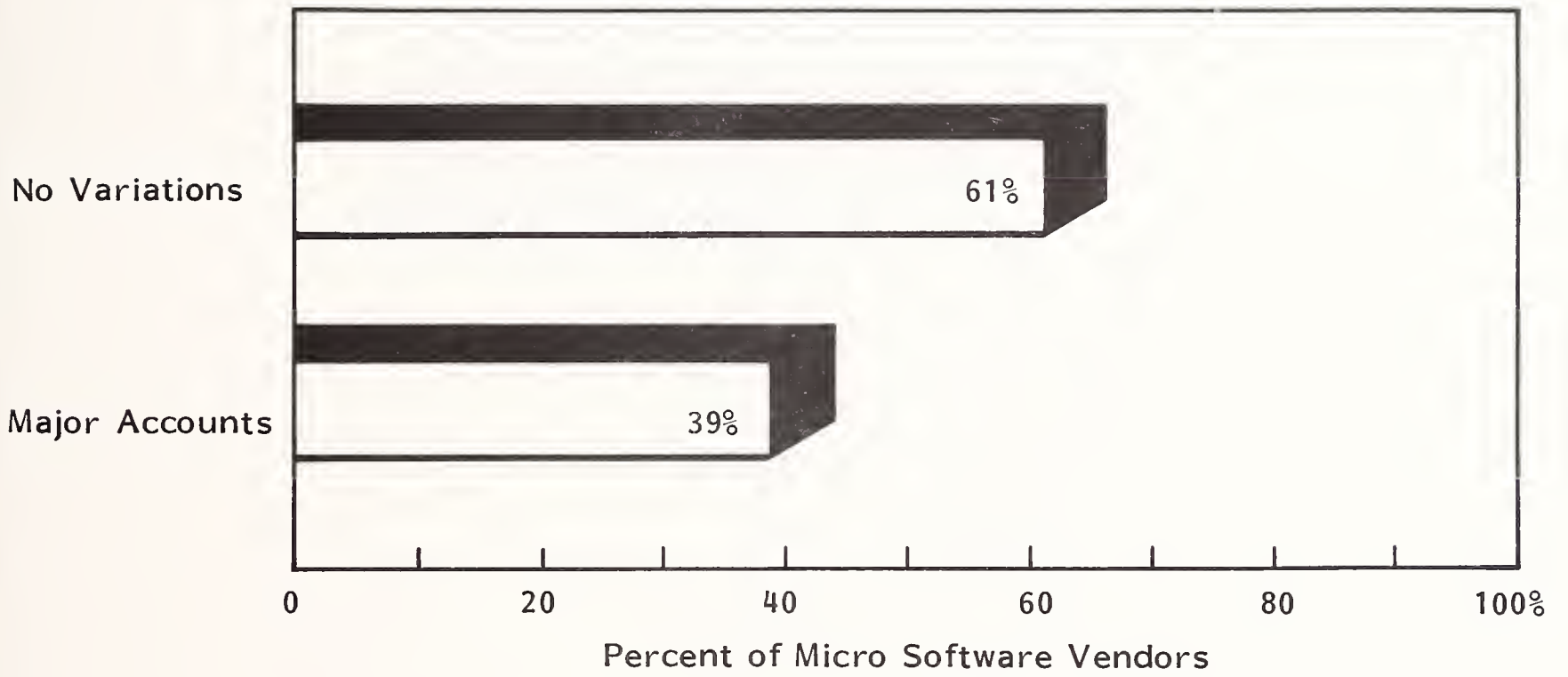
- Most vendors offering training believe that it reduces the need for other types of support (Exhibit III-25).

  - Unfortunately, most cannot quantify the benefit, making it vague, if not illusory.

  - Those who can provide an estimate feel that it reduces other support by about a quarter; given, however, the overall problems with respondents providing quantification, this claim should be treated cautiously.

  - Similar claims are made for sales (Exhibiit III-26), with similar caution required.

- 50 -

EXHIBIT III-25

## EFFECT OF OFFERING TRAINING
## ON ONGOING SUPPORT REQUIREMENTS

Micro Software Vendors
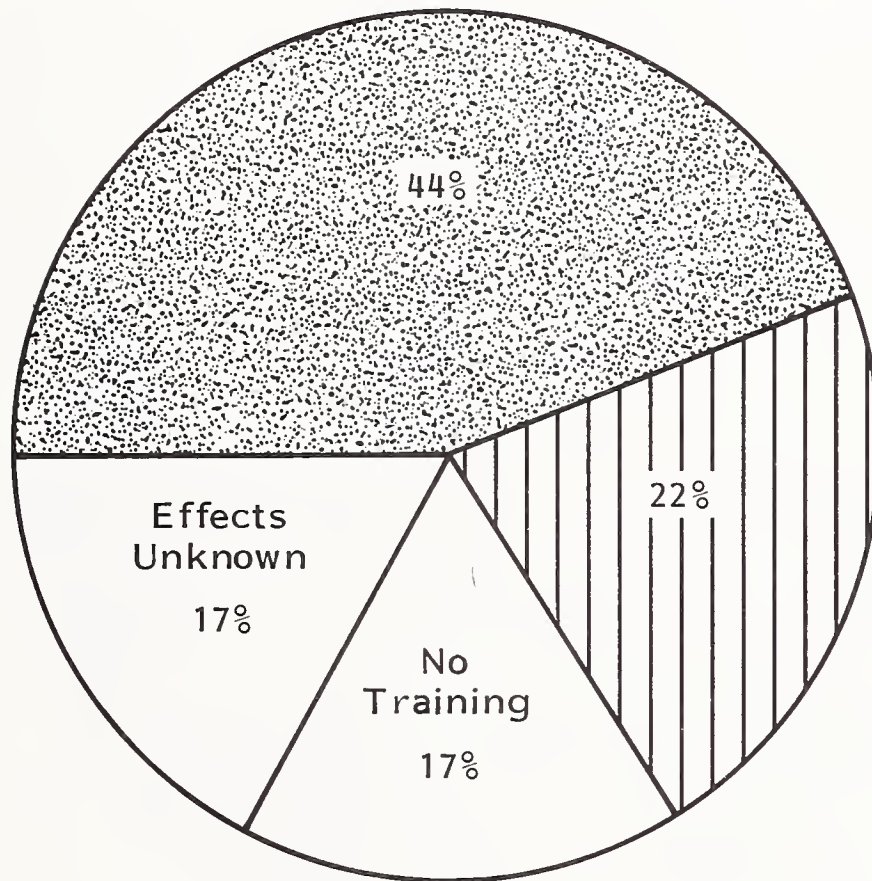


▨ Training Offered: Positive but unknown effects on ongoing support

▥ Training Offered: Positive effect on ongoing support estimated

● Average estimated reduction in support calls: 28%

**INPUT**
FOP7

EXHIBIT III-26

## EFFECTS OF OFFERING TRAINING ON SALES

Micro Software Vendors
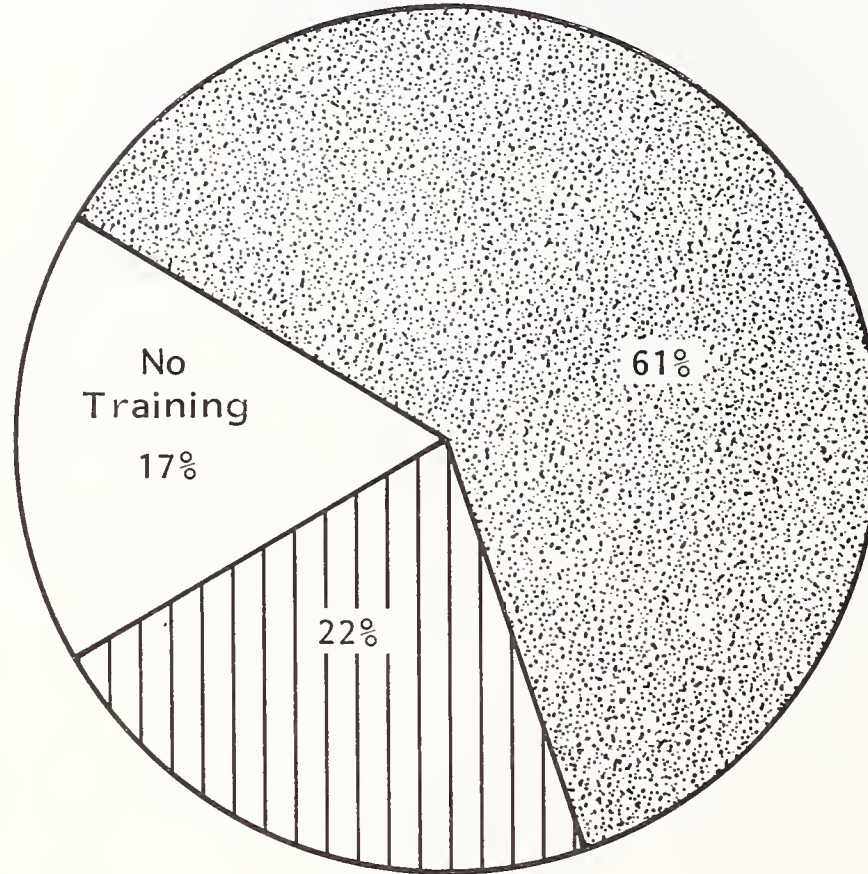


▨ Training Offered: Positive but unknown effect on sales.

▥ Training Offered: Positive effect on sales estimated.

● Average estimated sales increase: 20%

# IV CUSTOMER REQUIREMENTS

# IV    CUSTOMER REQUIREMENTS

- As was pointed out in Chapter III, it is not at all certain that micro software vendors have a clear picture of what the needs of their customers are and, perhaps more importantly, of what will be in the future.  This chapter discusses the needs of corporate customers as affected by the current software support environment and how these user needs will change.

- INPUT has presented examples of how the mainframe and minicomputer software user has reacted to issues that will confront the micro software user as software support becomes a more critical issue to corporate IS.  This process will no doubt escalate as more micro-to-host and networked applications link micros to these larger systems.

## A.    CORPORATE MICRO SOFTWARE SUPPORT ENVIRONMENT

- The range of support activities required within most corporate organizations is very wide (Exhibit IV-I).

    - The resources required to provide many of these activities are many; the number of users involved varies appreciably.

    - No corporation is prepared to provide this kind of support internally. Most in fact provide little or none, even though they are increasingly aware of the problems that result by not doing so.

- 53 -

**INPUT**

## EXHIBIT IV-1

## ELEMENTS OF SUPPORT FOR
## SPECIFIC MICRO SOFTWARE SUPPORT FUNCTIONS

| MICRO SOFTWARE | ELEMENTS OF SUPPORT | | |
|---|---|---|---|
| | OVERHEAD | PERCENT OF USERS AFFECTED | SUPPORT DIFFICULTY |
| Standards | | | |
| Standard Setting | High | 100% | High |
| Standards Enforcement | Medium | 50 | High |
| Software Selection | | | |
| Alternative Solution Evaluation | Medium | 25 | High |
| Package Evaluation | High | 100 | Medium |
| Software Development | | | |
| Utilities/Interfaces | Medium | 10 | High |
| Applications | Low | 10 | Medium-High |
| Training | | | |
| Software Introduction | High | 100 | Low |
| Software Tool Alternatives | High | 25 | Medium-High |
| Software Packages | High | 100 | Medium |
| Systems Software | High | 25 | Medium |
| Development Methodologies | High | 10 | High |
| Programming Languages | High | 10 | Low |
| Mainframe Data Access | High | 100 | High |
| Documentation | | | |
| Review | Low | 25 | Medium |
| Preparation | Low | 10 | Medium |
| Repository | High | 100 | Low |
| Problem Resolution | | | |
| Application Packages | Low-Medium | 100 | Medium |
| System/Utility Packages | Low-Medium | 75 | High |
| Custom Applications | Low | 50 | High |
| Custom System Software | Medium | 10 | Very High |

- It is useful for corporations and vendors alike to view micro software support as falling into different service groupings, or levels (Exhibit IV-2).

    - Every task offers at least one vendor opportunity, often several.

    - INPUT has observed a number of independent consultants doing very well providing a subset of these services, but has not yet seen an established vendor offering a significant combination.  Certainly a major vendor would be at least as welcome as a one-person operation.

- INPUT is convinced that at least part of the reason vendors have been so hesitant to enter the support field aggressively or strategically is that they have misinterpreted earlier PC software experience:

    - Early vendors (e.g., VisiCalc) did not offer support.

    - This did not matter much, since early users were pioneers and buffs who rather liked figuring out problems (point A in Exhibit IV-3).

    - Applications and users have now changed (point B in Exhibit IV-3), as hardware and software applications have advanced to the point where support is crucial to users.

- Yet support needs are much more complex than merely servicing user calls. Other factors which can influence the kinds and extent of micro software support include:

    - Training.

    - Software source.

    - Selection process.

- 55 -

**INPUT**

EXHIBIT IV-2

LEVELS OF MICRO SOFTWARE SUPPORT (MIS View)

Micro-Mainframe System Development (1-7)

Complex Micro Software Development (1, 4, 6)

On-line Mainframe Data Access (5, 7)

Extensive User Training (2)

Custom Application Development (6)

Micro Development Methodology (1, 2)

Policy on Custom Development (1, 6)

Data Downloading (5, 7)

Standards Enforcement (1)

Documentation Review and Storage (1, 5)

Packaged Applications Support (3)

Ongoing Package Evaluation (1)

Basic Data Supply (5)

Consulting Alternate on Solutions (6)

Basic Training Package (2)

Criteria for Evaluating Alternate (non-micro) Solutions (1)

Basic Package Selection (1)

Standard Setting (1)

Vendor Opportunity (Key)

| (1) | Consulting | (4) | Additional Software Sales | (7) | Micro-Mainframe |
| (2) | Training | (5) | Information Data Base Sales | | |
| (3) | Package Maintenance | (6) | Custom Software Development | | |

INPUT
UPC3 FOP7

# EXHIBIT IV-3

## THE PC USER SELF-SUPPORT CURVE



Figure: A curve plotting PC User Self-Support (from Low to High) against Time. The curve rises from "Pioneers" through "Easy Packages/Applications" (point A), peaks, then descends through "Additional, Less-Committed Users," "More Complex Applications Attempted," to "Transfers Among User Staff" (point B).

- High
- PC User Self-Support
- Low
- Time
- Easy Packages/Applications
- Pioneers
- A
- Additional, Less-Committed Users
- More Complex Applications Attempted
- Transfers Among User Staff
- B

- 57 -

- Multivendors.

- Data source.

- Output recipient.

- Exhibit IV-4 demonstrates how support intensity can vary with circumstances. This argues for flexibility in the types of support being offered and for the need to tailor terms to individual customers.

- Micro software support is different from conventional software support in critical respects (Exhibit IV-5). However, by end of the 1980s, INPUT expects to see micro software support begin to converge in most ways with mainframe software support. Not the least important cause will be an integration of the two types of software (and vendors) as micro-mainframe systems become dominant. See Appendix C for a list of INPUT reports on related topics.

## B.    FUTURE CUSTOMER-VENDOR RELATIONSHIPS

- Based on the work done for this report as well as on consultation with vendor and corporate groups, INPUT believes there is little question that there will be significant changes in micro software support needs.

    - Section A of this chapter described unfulfilled support needs and how micro and mainframe support needs and practices will be converging.

    - Chapter III described how vendors are only addressing a portion of these needs—and are not always doing this adequately.

- 58 -

**INPU**

EXHIBIT IV-4

# SOME DETERMINANTS OF MICRO SOFTWARE SUPPORT INTENSITY

| | | | | | |
|---|---|---|---|---|---|
| **User Training** | None | | | | Adequate |
| **Software Source** | Modified Package | Custom-Consultant | Custom-User | IS Developed | Standard Package |
| **Software Selection Process** | None | | | | Thorough |
| **Multivendor Sourcing** | Much | | | | None |
| **Source of Data** | Corporate Data (On-line) | | Corporate Data (Off-line) | ● On-line-external ● Self-generated | |
| **Ultimate Recipient of Output** | External (Customers, Government) | Internal-Top Management | | Internal-Other Departments | Internal-Originator |

← Higher                Lower →

Intensity of Required Support

EXHIBIT IV-5

COMPARISON OF MICRO SOFTWARE SUPPORT WITH
CONVENTIONAL SYSTEM SOFTWARE SUPPORT

| | CONVENTIONAL SYSTEM SOFTWARE SUPPORT | MICRO SOFTWARE SUPPORT |
|---|---|---|
| Need to Interface Technically with End Users | Low | High |
| Need for End User Training | Low | High |
| Diversity of Software | Low | High |
| IS Understanding of Software | | |
|    -Technical | High | Medium to Low |
|    -Substance | Medium | Low |
| Development | | |
|    -Methodologies | Developed | Undeveloped |
|    -Tools | Many | Few |
|    -Language Understanding | High | Medium to Low |
| Vendor Support | Medium to High | Low |

- Corporate customers are even less able than are vendors to make sense out of current conditions, yet they realize the situation is unsatisfactory. They also see the need for strong centralized control of support functions. One of the main reasons for this is that over 95% of corporations of Fortune 300 size and larger have an average of three micro-mainframe projects now under way. They cannot afford to have two different systems (one of them being a nonsystem) of software support.

- Consequently, INPUT expects to see a convergence of micro and mainframe support practices and customer expectations. The remainder of this section summarizes the major areas, i.e.:

  - Pricing.

  - Upgrades versus new products.

  - Remote servicing.

  - Self-support.

  - Contractual terms.

## I. PRICING EXPECTATIONS

- The principal fact about software support pricing increases is that customers do expect them to continue. The key motivator in customers' minds is additional hardware and software acquisition.

  - The main concern of vendors should be that their costs do not increase as fast or faster by, for example, offering software license or related

- 61 -

**INPUT**

support discounts at a rate disproportionate to software support demands.

. Exhibit IV-6 illustrates this danger.

. This danger can be guarded against by requiring central customer help desks as a condition of volume discounts.

2. NEW PRODUCTS VERSUS UPGRADES

- As the micro software market matures, it will be faced with the choice of offering an upgraded product (which may or may not be charged for) or a new product which may or may not have a discount given to customers of the old product.

- The experience may at first glance appear mixed, with only half of customers with recent experience believing the vendor justified (Exhibit IV-7).

    - However, cost was generally not the problem; rather, it was the mechanics of the conversion and subsequent support process (Exhibit IV-8).

- Similarly, only half received a discount (Exhibit IV-9) and only a small percentage received the new product free.

- Two-thirds of customers expect new products, rather than upgrades, to be more common in the future (Exhibit IV-10).

    - Only a fifth of customers saw vendors' desires to increase revenues as a reason for such increases.

    - Vendors should be careful to stress non-pricing issues when introducing such "new" products.

- 62 -

EXHIBIT IV-6

# THE SUPPORT DANGER IN SOFTWARE PRICING DISCOUNTS

Relative Support Costs to Vendor
(Successive Users Consume Same Amount of Support)

Price to Customers
(Successive Users Pay Less)
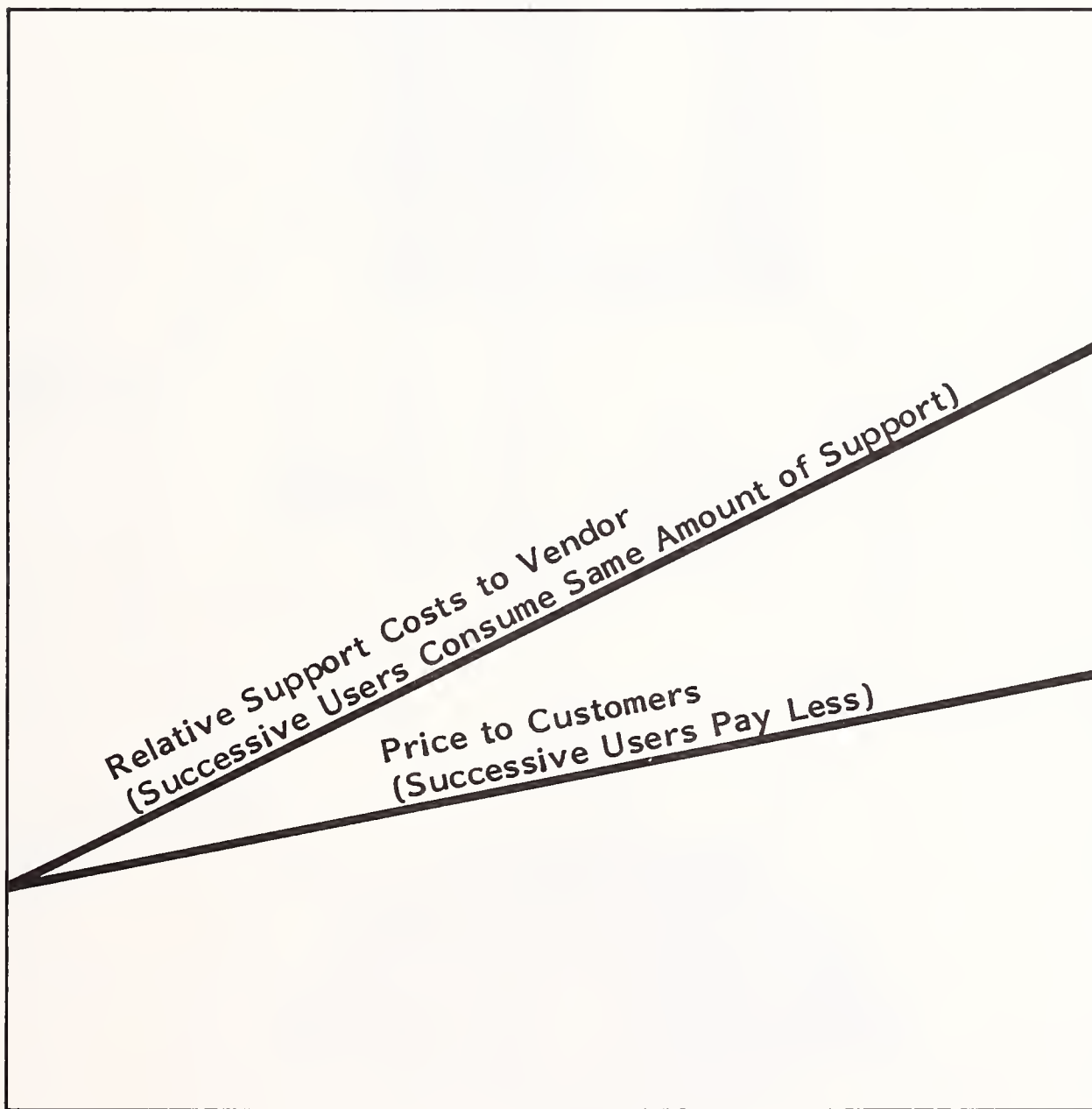
Software Units Sold to a Customer

INPUT
FOP7

EXHIBIT IV-7

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



- 64 -
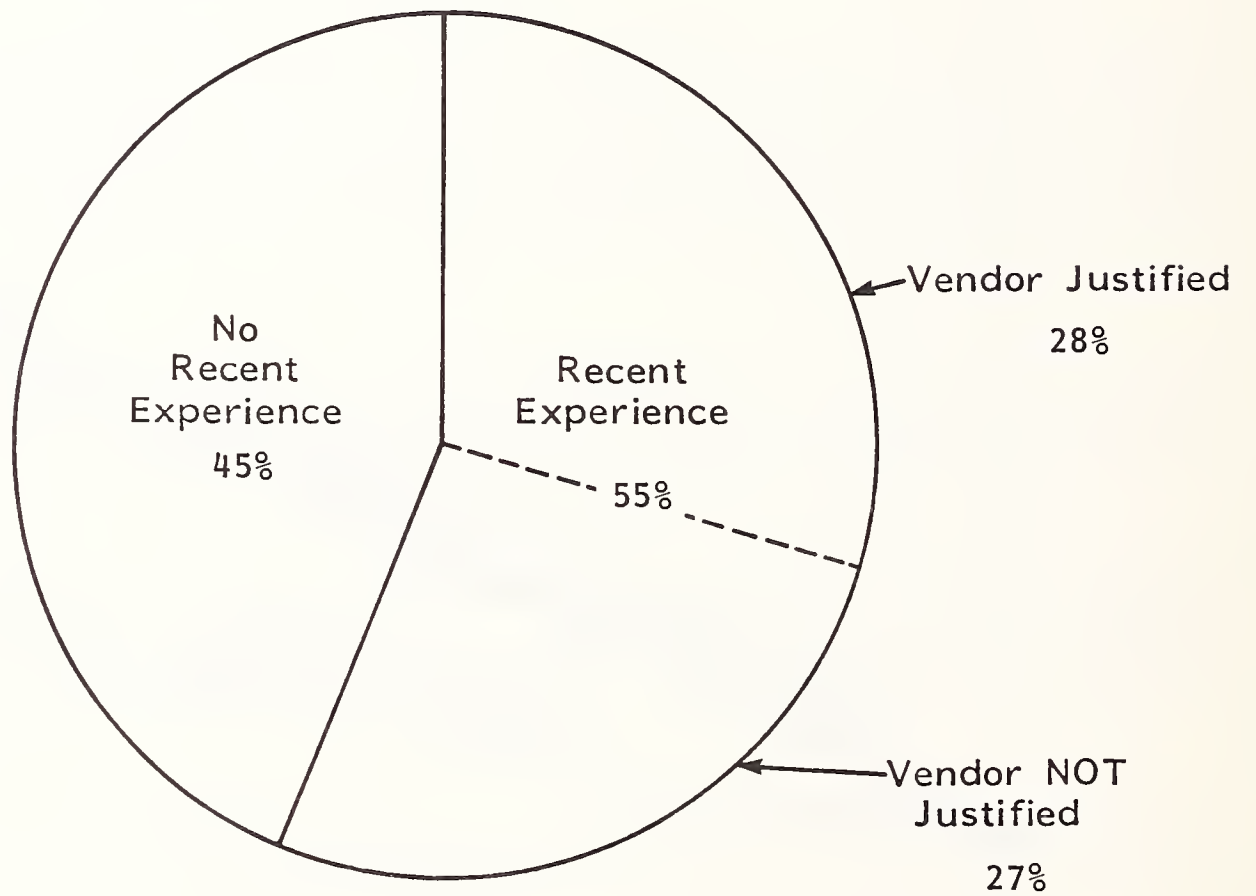
EXHIBIT IV-8

ASSESSMENT BY CUSTOMERS OF VENDOR REPLACING

EXISTING PRODUCT WITH A NEW PRODUCT



Problems*

Badly Handled Generally — 12%
Poor Support — 11%
Cost — 2%
Other — 12%

Percent of Respondents

Handled Well 63%

Problems 37%

* Open-ended; responses coded.

INPUT
FSS7 FOP7
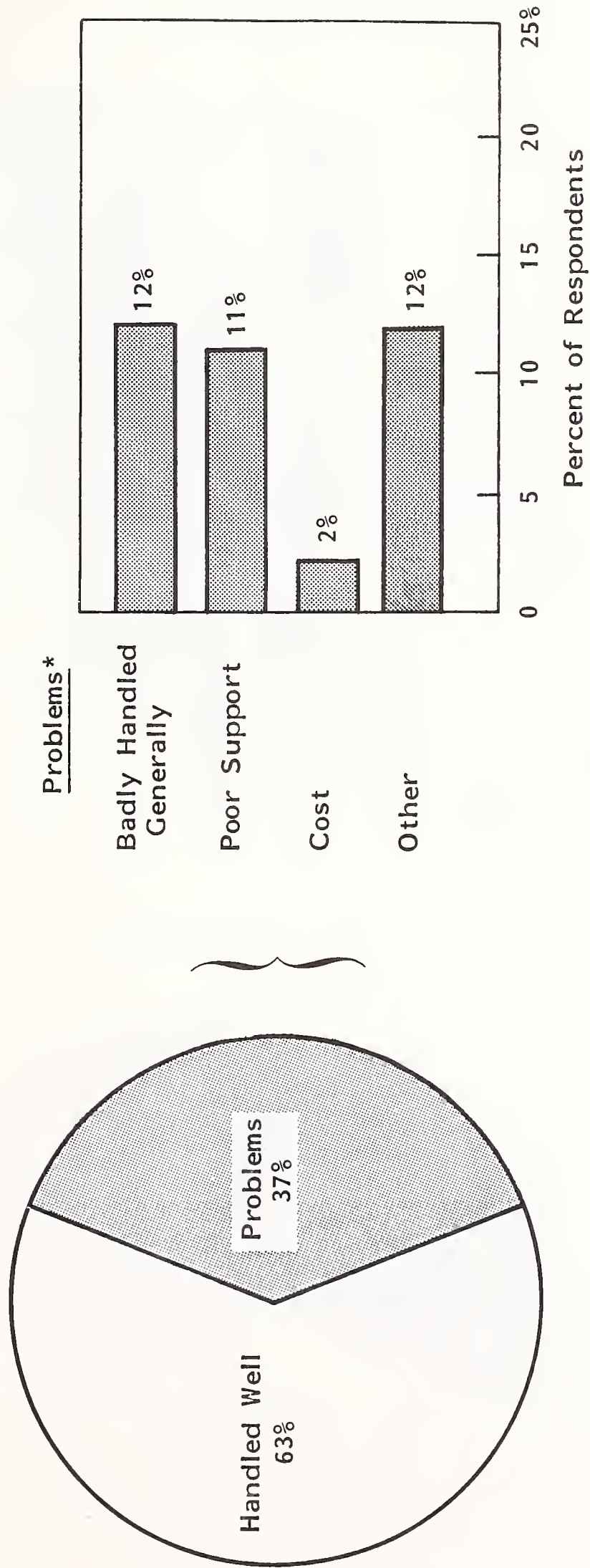
EXHIBIT IV-9

PRICING EXPERIENCE WHERE A NEW PRODUCT REPLACED AN EXISTING PRODUCT

(As Reported by Customers)

INPUT
FSS7F
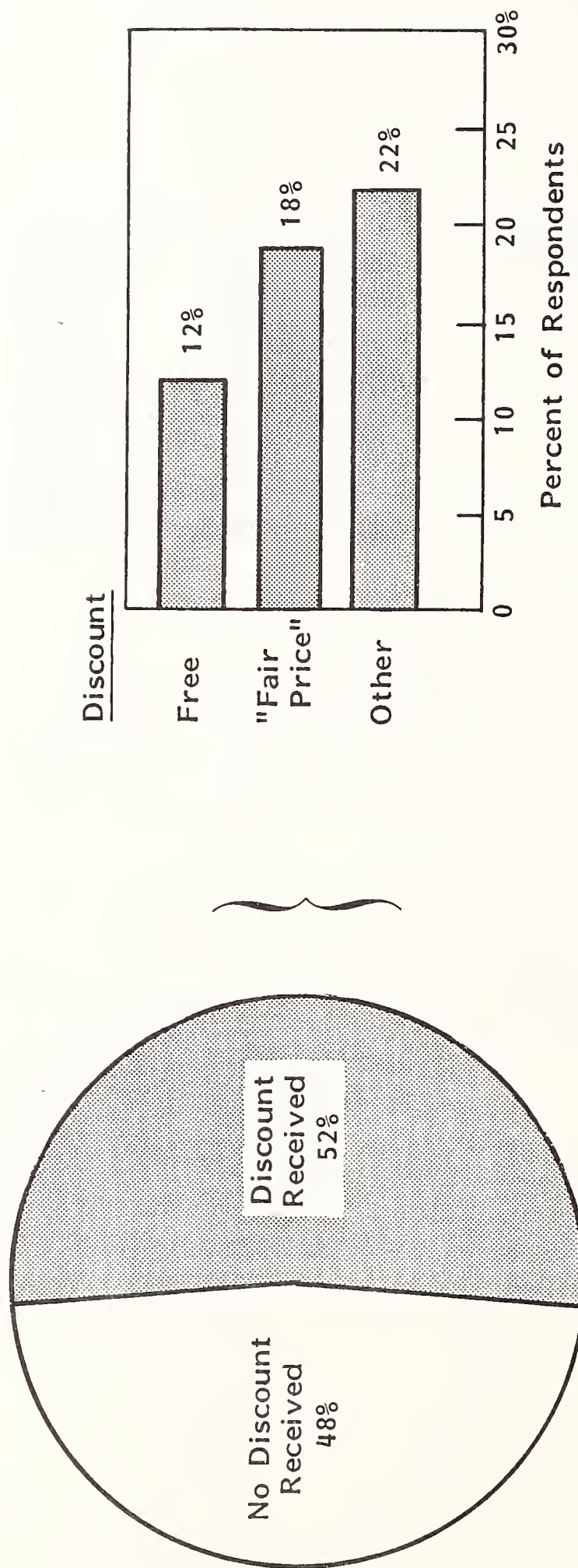
EXHIBIT IV-10

CUSTOMER EXPECTATIONS OF VENDORS REPLACING
RATHER THAN UPGRADING SOFTWARE PRODUCTS

Reasons*

Technical Changes — 25%

General Trend — 21%

Some Vendors/Products — 15%

Increase Vendor Revenues — 22%

Competitive Forces — 7%

Other — 13%

Percent of Respondents

0   5   10   15   20   25%

More Common in Future 64%

Same or Less 36%

Note: Reasons total more than 64% due to multiple responses.

* Open-ended; responses coded.

INPUT
FSS7 FOP7
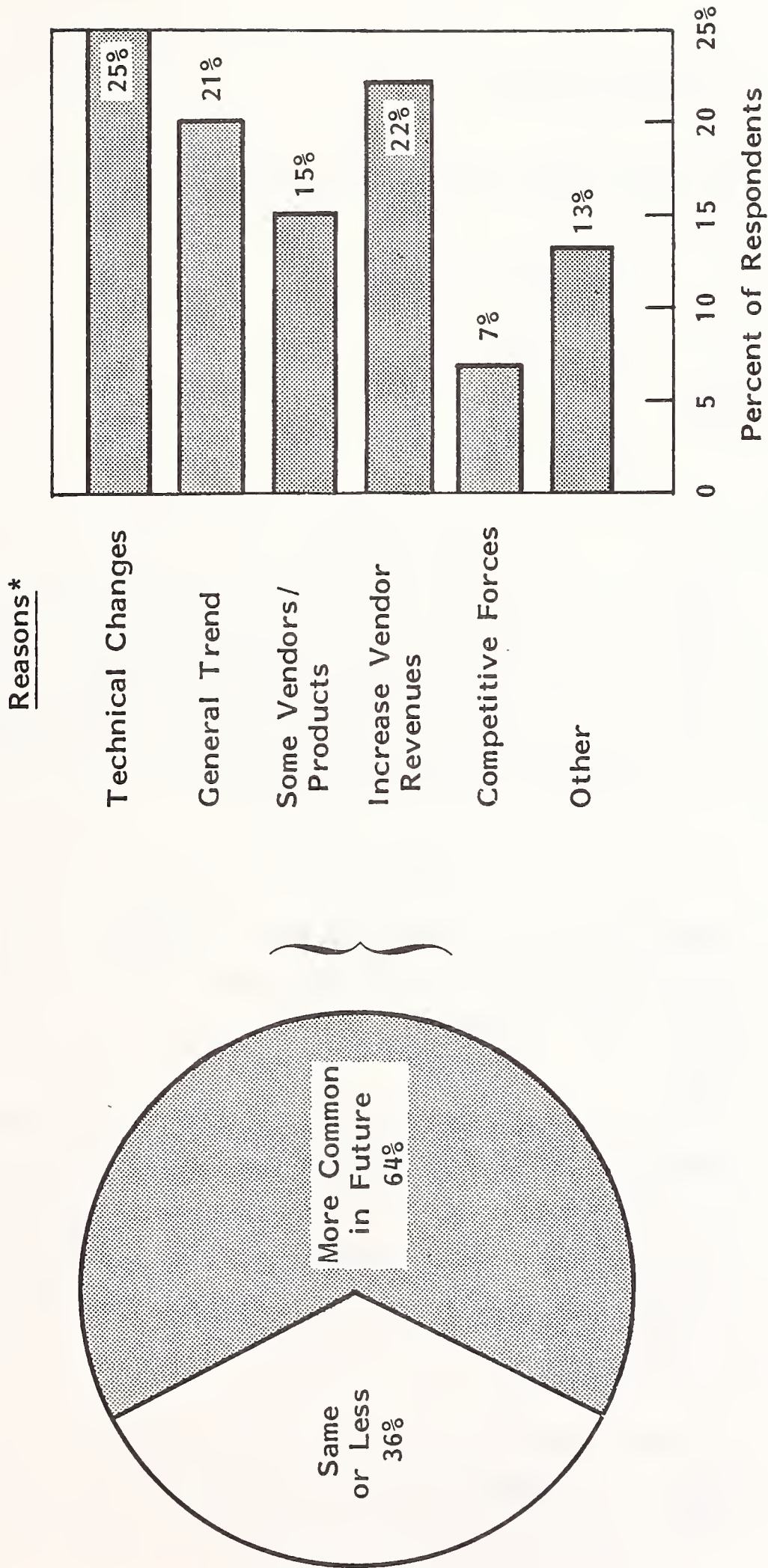
3.   REMOTE SUPPORT

- Many vendors are fascinated with remote support, i.e.:

    - Automatic downloading.

    - Remote diagnostics.

    - Remote fixes.

- However, this is still talked about more than acted upon. Even in the mini-computer and mainframe computer software market--where software support is more critical for users and a more established market for vendors--remote support is being utilized by a minority, ranging from 47% of all mini and mainframe users using remote diagnostics, to less than 30% using remote fixes and downloading on their software (shown in Exhibit IV-11).

- Customers find it difficult to list specific benefits to themselves, from remote servicing, as demonstrated in Exhibits IV-12 to IV-14. Users expect small improvement in software support quality or faster problem resolution through remote software support.

- The micro software support market can obviously benefit by recognizing the reluctance of users to utilize remote support. Although current micro software support does not warrant remote servicing of software users, given the low cost of purchasing revised and upgraded software, remote support of software may grow in importance as the growth of host-micro and networked software increases the value of operations run on microcomputers.

- Software vendors will have to overcome the same user resistance to remote support that hardware vendors face. As with hardware vendors, software vendors will need to rely on education of users in the benefits of remote

**INPU**

EXHIBIT IV-11

EXTENT OF USE OF REMOTE SOFTWARE SUPPORT FOR
MINI AND MAINFRAME PRODUCTS AS REPORTED BY CUSTOMERS

Automatic
Downloading

Used
26%

Not
Used
74%

Remote
Fixes

Used
26%

Not
Used
74%

Remote
Diagnostics

Used
47%

Not
Used
53%

- 69 -

INPUT
FSS7FOP7
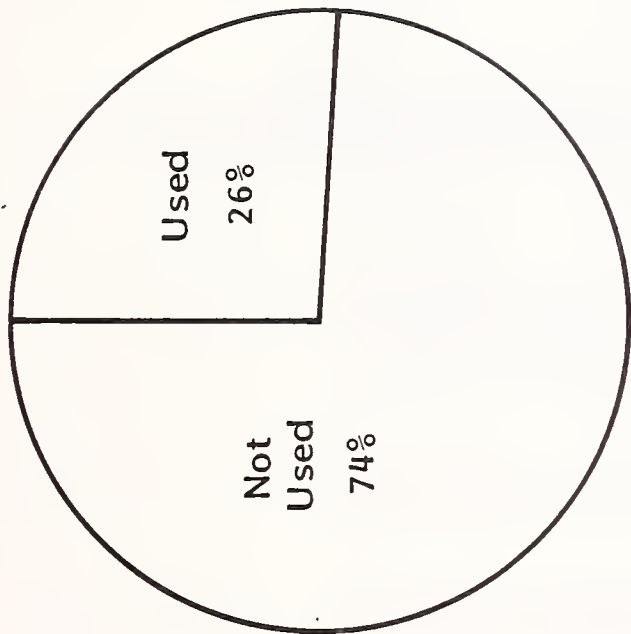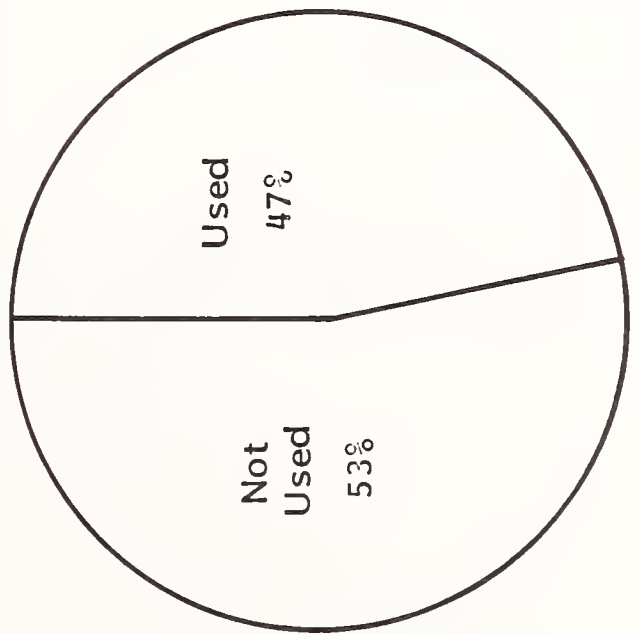
EXHIBIT IV-12

## BENEFITS EXPECTED BY CUSTOMERS FROM AUTOMATIC DOWNLOADING

© 1984 by INPUT. Reproduction Prohibited.

Effects*

Little Effect

- None or Small
  Improvement

- Not Sure

General Improvement

- Large Improvement

- Some Improvement

Quality Improved

Faster Problem
 Resolution

Other

45%

35%

9%

20%

7%

20%

10%

11%

13%

| | 0 | 10 | 20 | 30 | 40 | 50% |

Percent of Respondents

* Open-ended; question coded.

INP
MCSSI
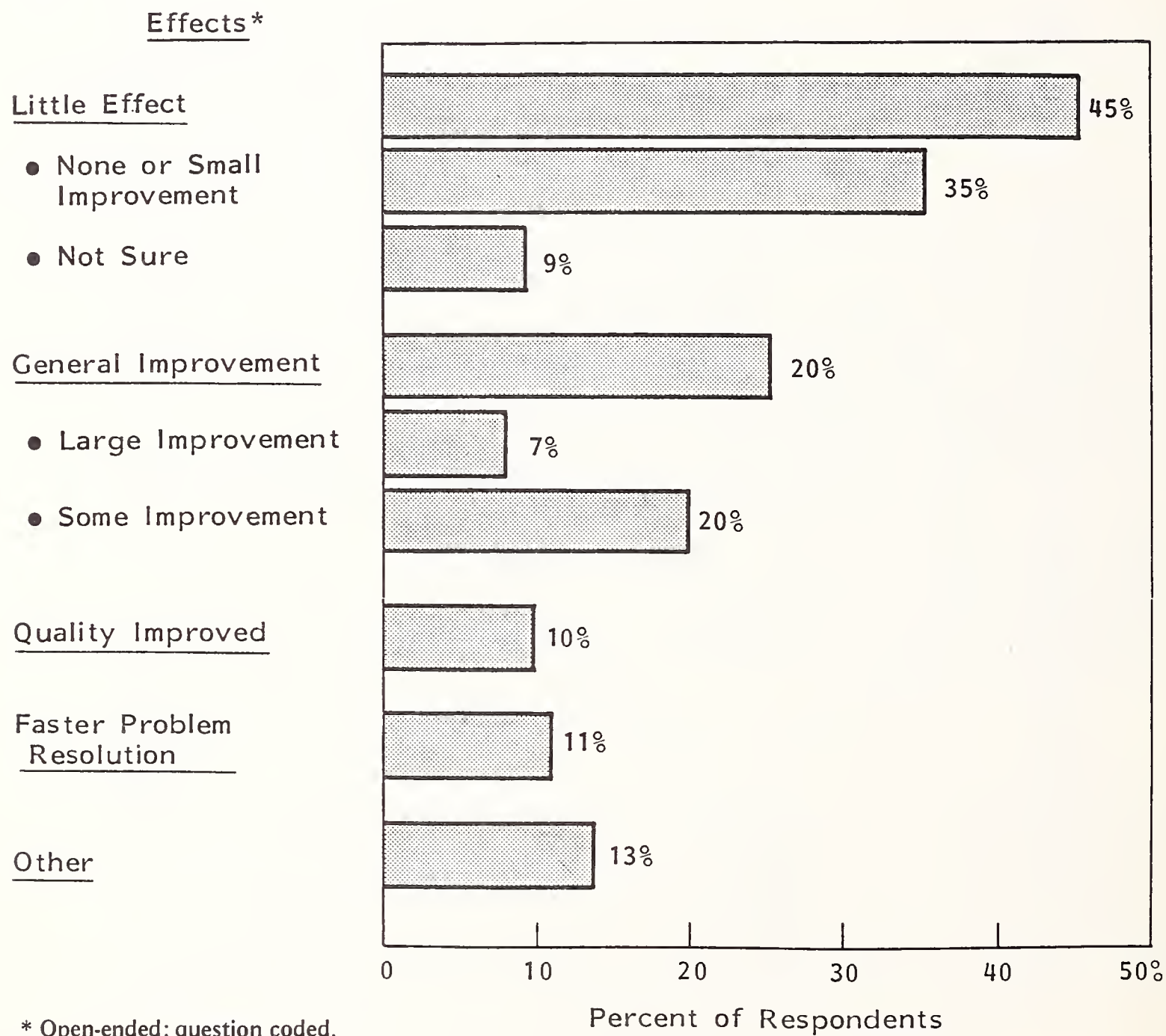
EXHIBIT IV-13

# BENEFITS EXPECTED BY CUSTOMERS FROM REMOTE DIAGNOSTICS
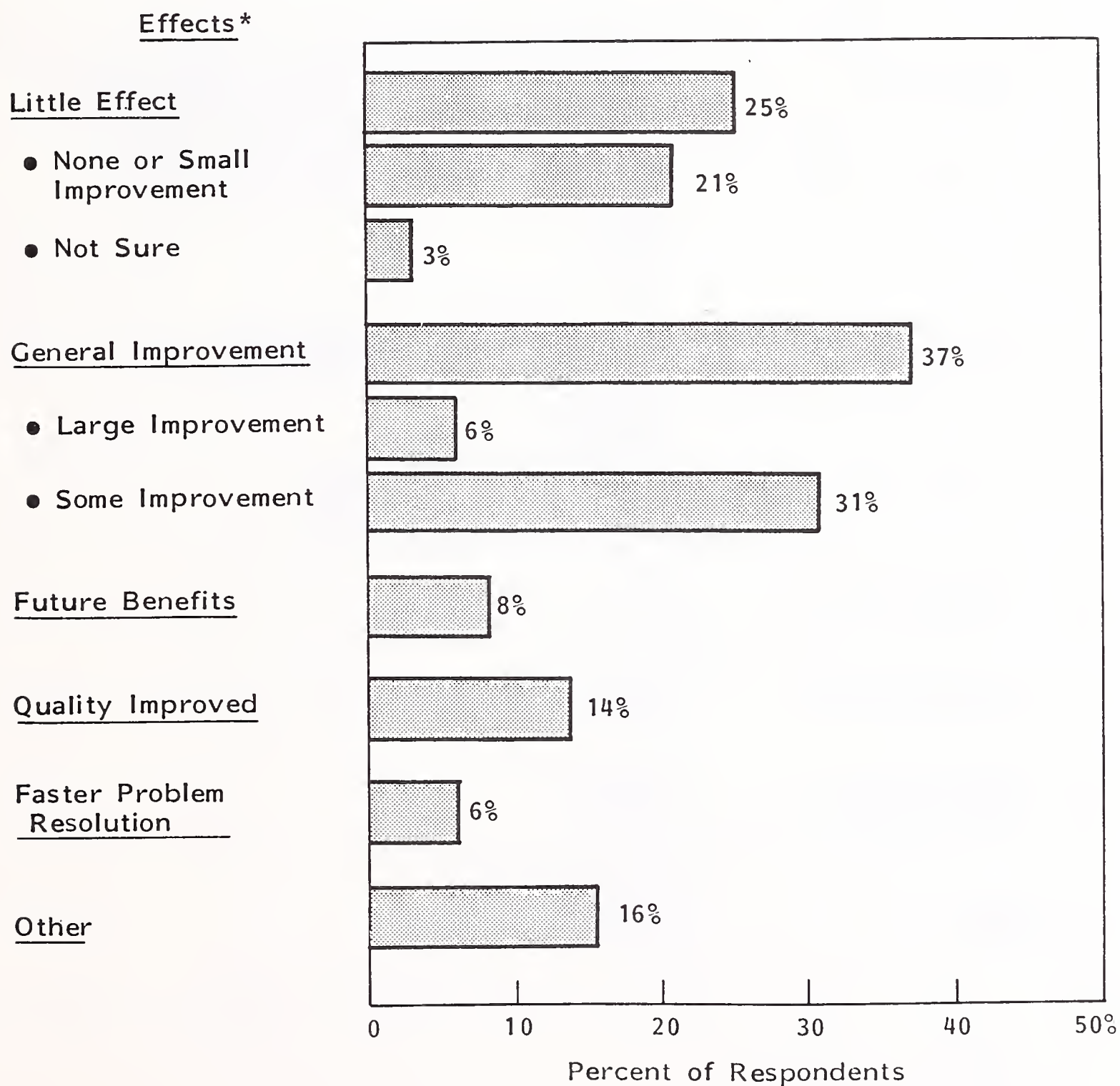
**Effects***

**Little Effect**

- None or Small Improvement — 25%
- Not Sure — 21%
- Not Sure — 3%

**General Improvement** — 37%

- Large Improvement — 6%
- Some Improvement — 31%

**Future Benefits** — 8%

**Quality Improved** — 14%

**Faster Problem Resolution** — 6%

**Other** — 16%

Percent of Respondents

Note: Headings total more than 100% due to multiple responses.

* Open-ended; question coded.

- 71 -

INPUT
MCSS FOP7

# EXHIBIT IV-14

## BENEFITS EXPECTED BY CUSTOMERS FROM REMOTE FIXES



Effects*

Little Effect
- None or Small Improvement — 35%
- Not Sure — 4%

Little Effect — 39%

General Improvement — 31%
- Large Improvement — 7%
- Some Improvement — 25%

Future Benefits — 2%

Quality Improved — 6%

Faster Problem Resolution — 7%

Other — 15%

Percent of Respondents

0    10    20    30    40    50%

* Open-ended; question coded.

IN
MCS
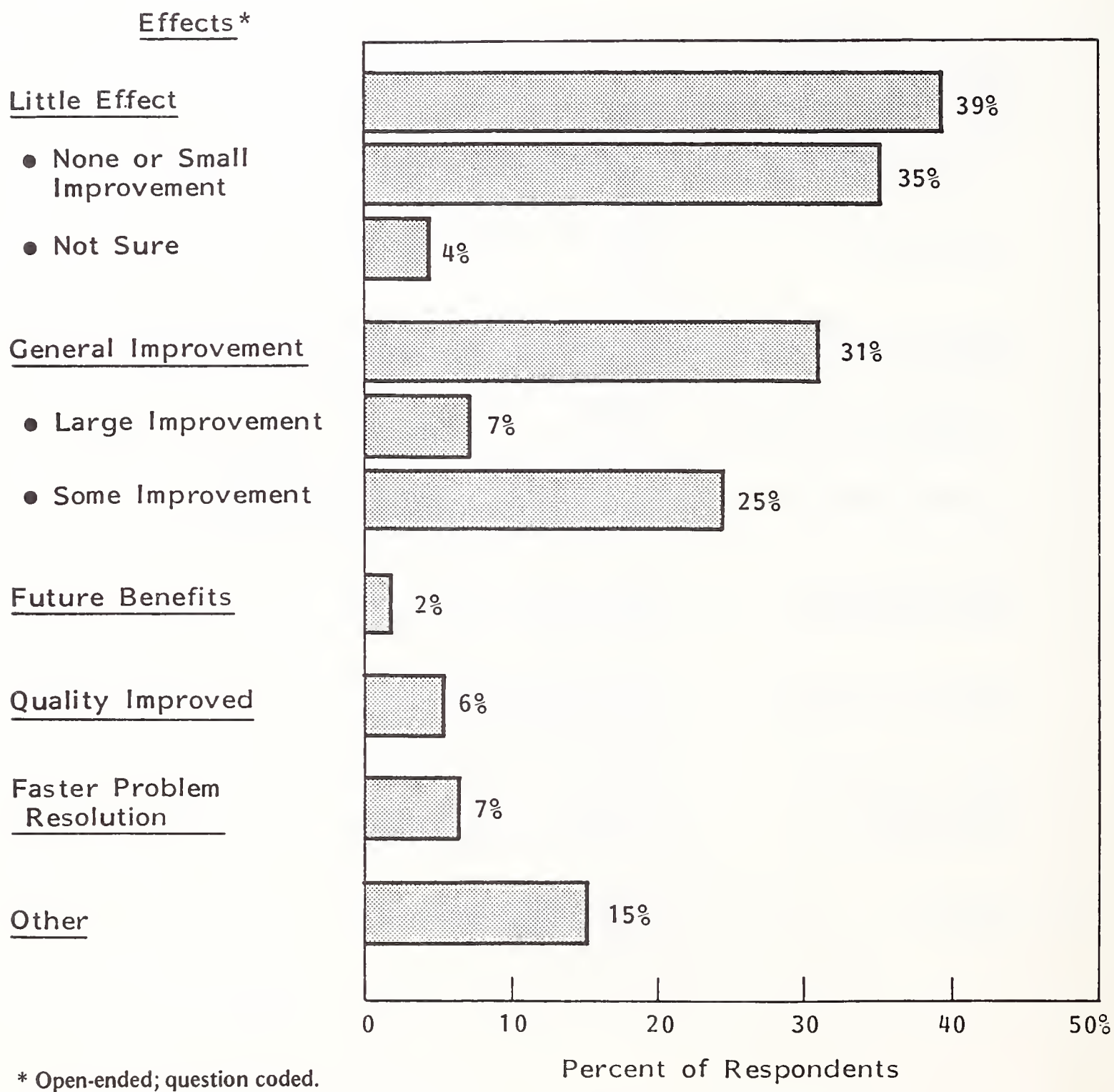
support, both in terms of quality and of the improved response and repair
times that remote support offers.

### 4. CUSTOMER SELF-SUPPORT

- Given the history of micro software, it is reasonable to expect continued
  participation of customers in the support process. What may not be reliable is
  the extent to which mini and mainframe software is already the subject of
  self-support (Exhibit IV-15). Customers generally see an increase in self-
  support: note that cost savings is not cited (Exhibit IV-16).

### 5. CONTRACTUAL TERMS

- Vendor contractual terms and conditions may sometimes be viewed as
  immutable; however, mainframe and mini customers often seek to modify
  them (Exhibit IV-17).

    - This is no doubt due in part to the prevalence of customer logs for
      software problems and issues (Exhibit IV-18), giving customers a quant-
      ified insight into problems and issues. It will be easier for users to
      keep comprehensive logs as more micro software products are under
      the jurisdiction of a single entity (which will generally be the IS
      department).

    - Terms modified cover a wide range of concerns (Exhibit IV-19). Note
      that pricing is a concern to only one out of five customers.

    - Note also how successful most customers are in modifying contractual
      tems (Exhibit IV-20).

- 73 -

**INPUT**

# EXHIBIT IV-15

## EXHIBIT OF CUSTOMER MINI AND MAINFRAME SOFTWARE SELF-SUPPORT



Type of Self-Support

Install Initial Release
- Current — 79% / 13% / 8%
- Future — 83% / 8% / 9%

Install Subsequent Releases
- Current — 95% / 3% / 2%
- Future — 93% / 5% / 2%

Modify Packages
- Current — 16% / 53% / 31%
- Future — 15% / 53% / 32%

Fix Errors
- Current — 25% / 51% / 24%
- Future — 27% / 44% / 29%

Customer In-House "Help Desk"
- Current — 42% / 42% / 16%
- Future — 65% / 20% / 15%

Percent of Customers

Legend:
- Usually
- Sometimes
- Never

- 74 -

INPU
FSS7F
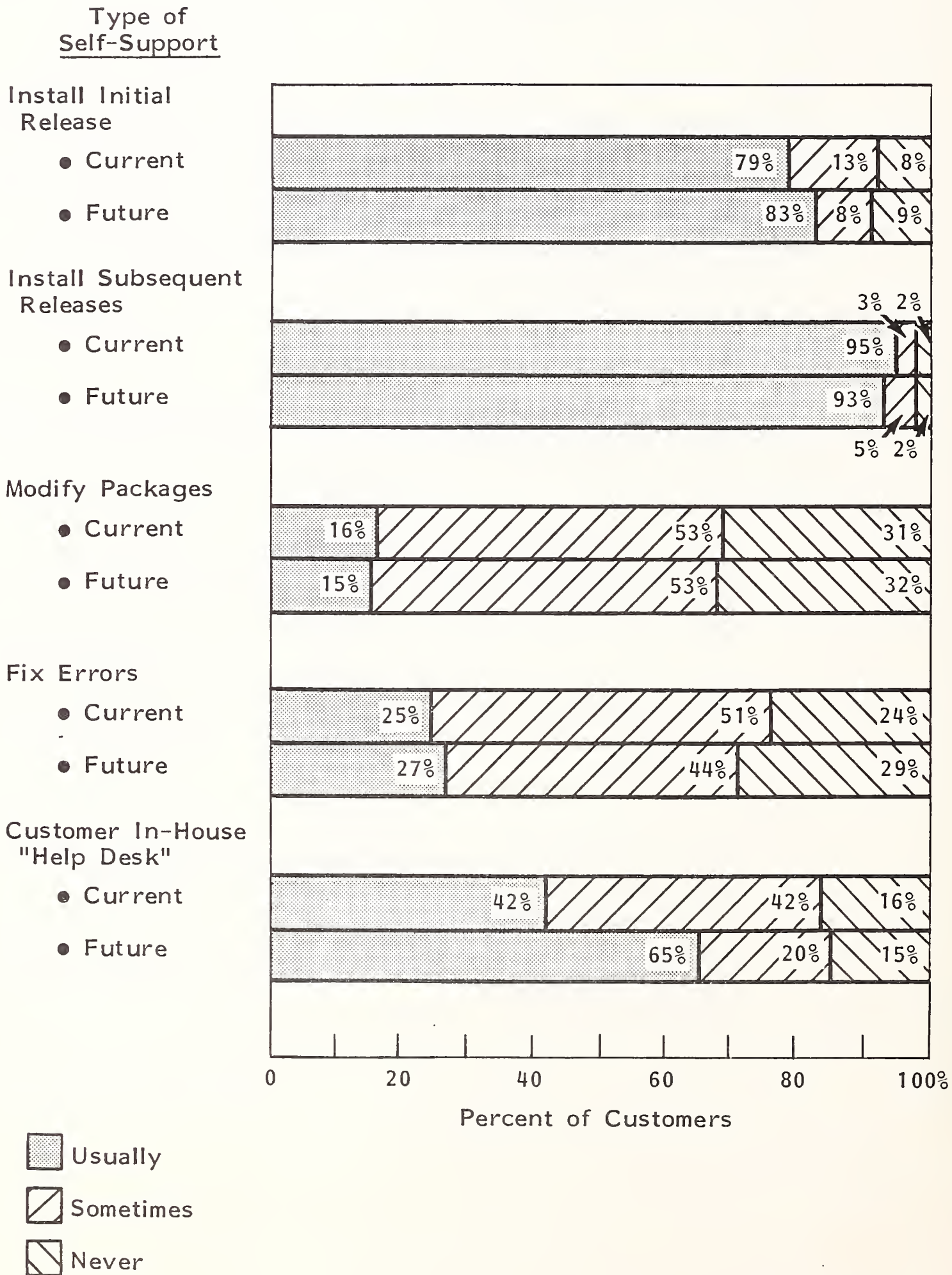
EXHIBIT IV-16

TRENDS IN MINI AND MAINFRAME SOFTWARE CUSTOMER SELF-SUPPORT

AS SEEN BY CUSTOMERS



* Open-ended; responses coded.

- 75 -

INPUT
FSS7 FOP7
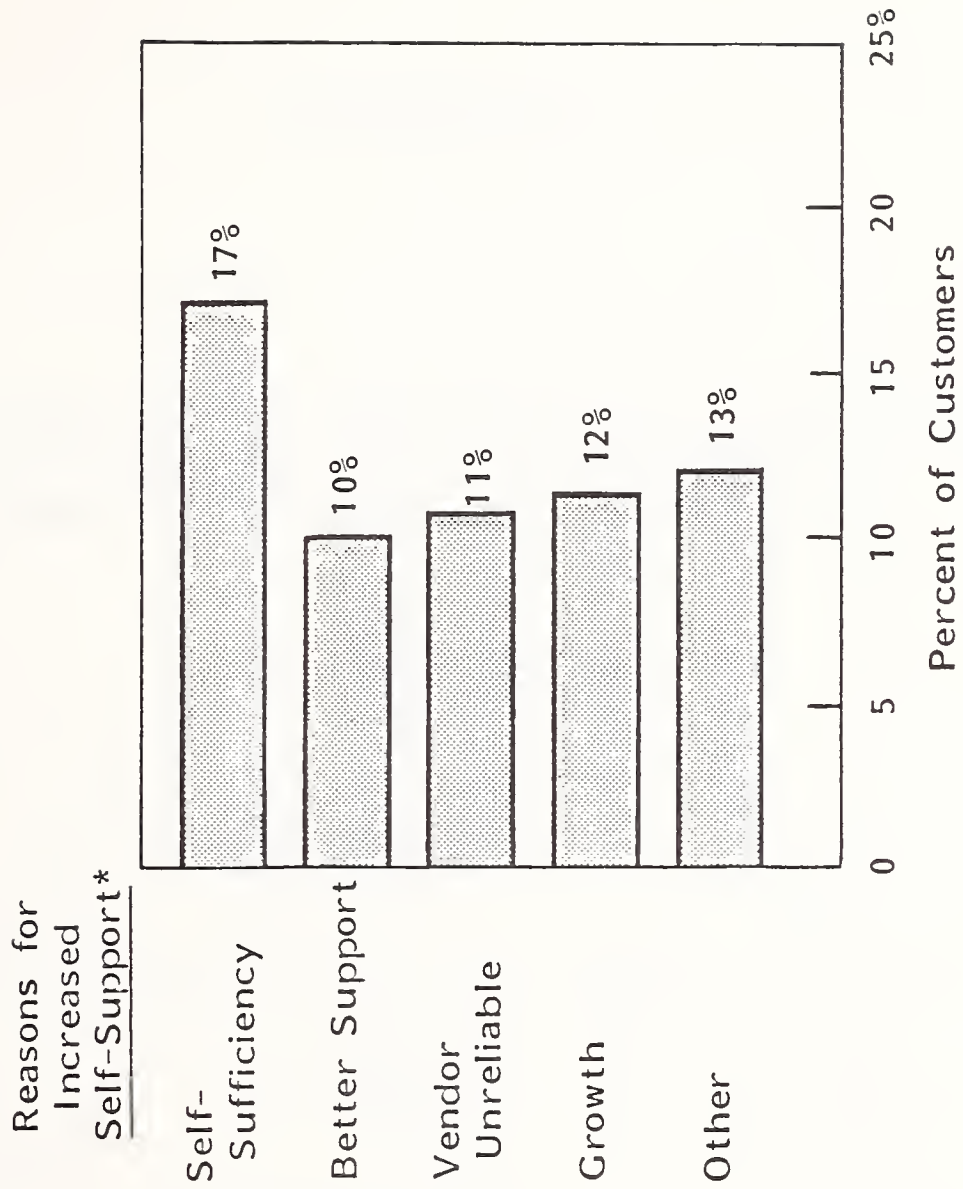
EXHIBIT IV-17

EXTENT TO WHICH MINI AND MAINFRAME CUSTOMERS SEEK TO
MODIFY SOFTWARE CONTRACTUAL TERMS

INPU
FSS7 FC
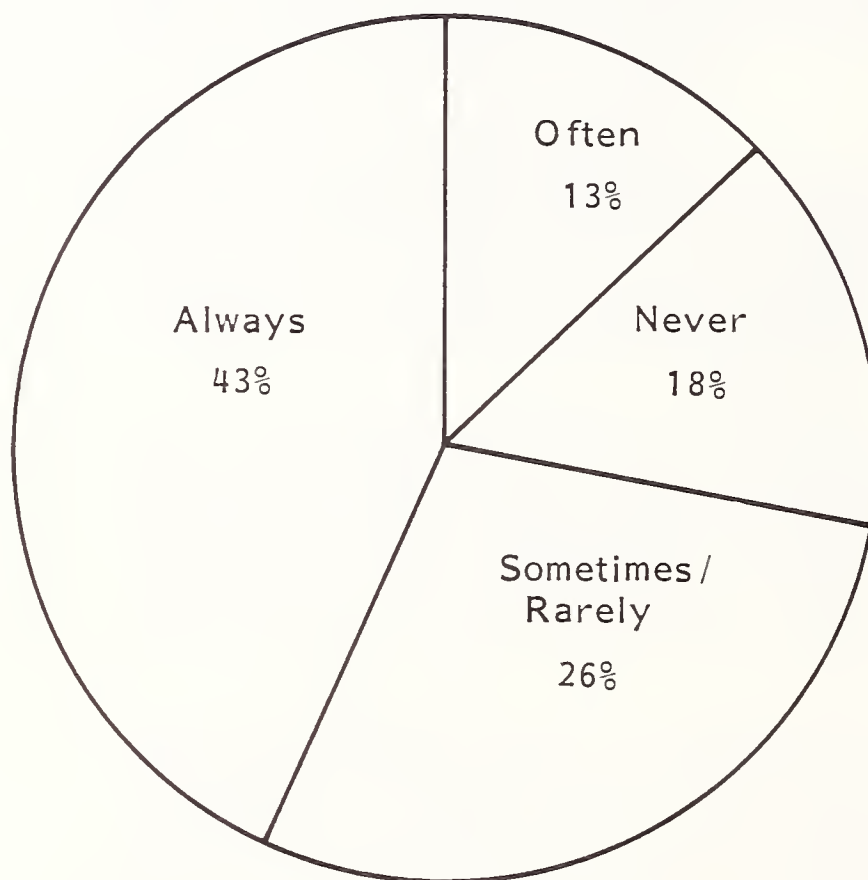
EXHIBIT IV-18

CUSTOMER LOGS OF MINI AND MAINFRAME SOFTWARE PROBLEMS
(AS REPORTED BY CUSTOMERS)

INPUT
FSS7 FOP7

Logs Not
Maintained

23%

Logs
Maintained

77%
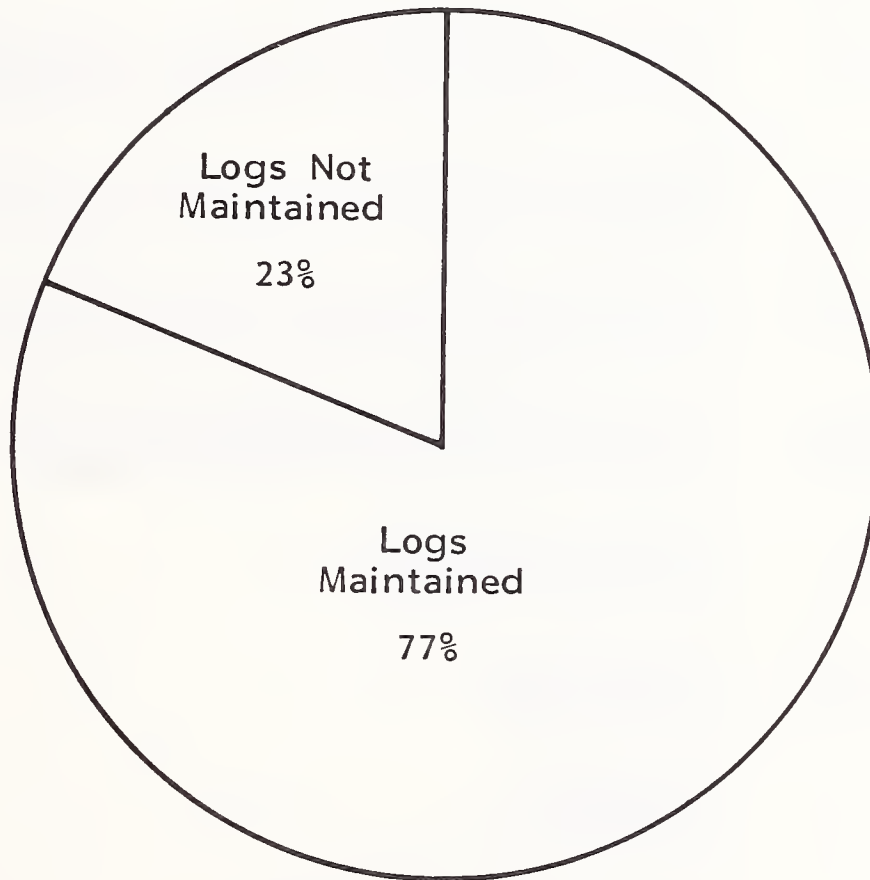
● Customers Increasingly View Logs as a Valuable Vendor Management Tool.

INPUT
FSS7 FOP7

EXHIBIT IV-19

MINI AND MAINFRAME SOFTWARE SUPPORT
CONTRACTUAL TERMS THAT CUSTOMERS TRY TO MODIFY



Contractual
Terms

- Support Levels — 27%
- Cost-Related — 22%
- Warranty/Liability — 22%
- Legal/Ownership — 19%
- Source Code — 9%
- Multiple Locations — 6%
- Upgrades — 5%
- Other — 14%

Percent of Respondents

INP
FSS7 F

EXHIBIT IV-20

CUSTOMER SUCCESS IN MODIFYING
MINI AND MAINFRAME SOFTWARE SUPPORT CONTRACTUAL TERMS

Percent of Customers

## C.    STRATEGIES AND RECOMMENDATIONS

### I.    ASSESSING SOFTWARE MAINTENANCE OPPORTUNITIES

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

    - Few customers will want to go "bare" on operating system mainte-nance, 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 IV-21.

- 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 can be taken:

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

- 80 -

INPU

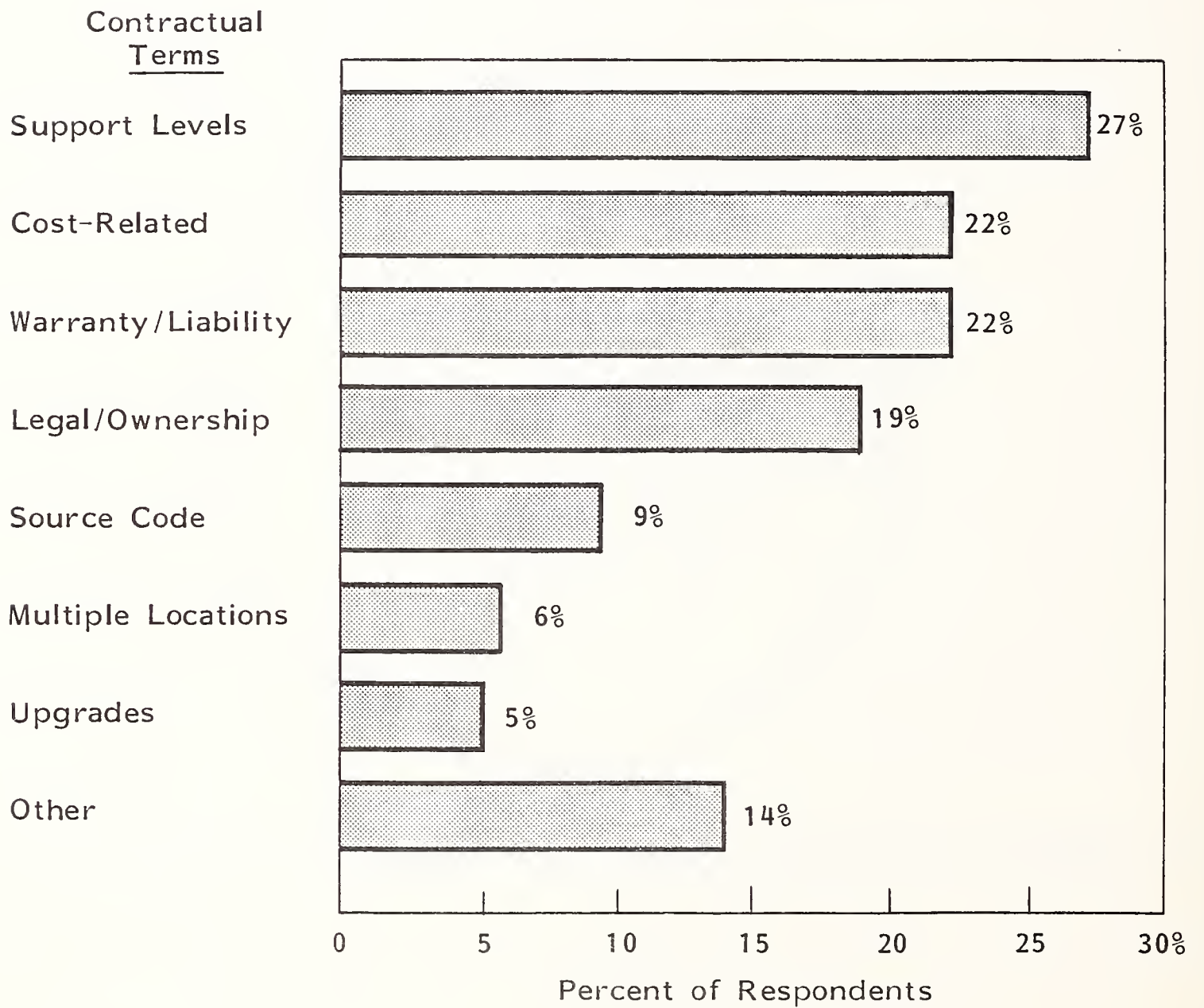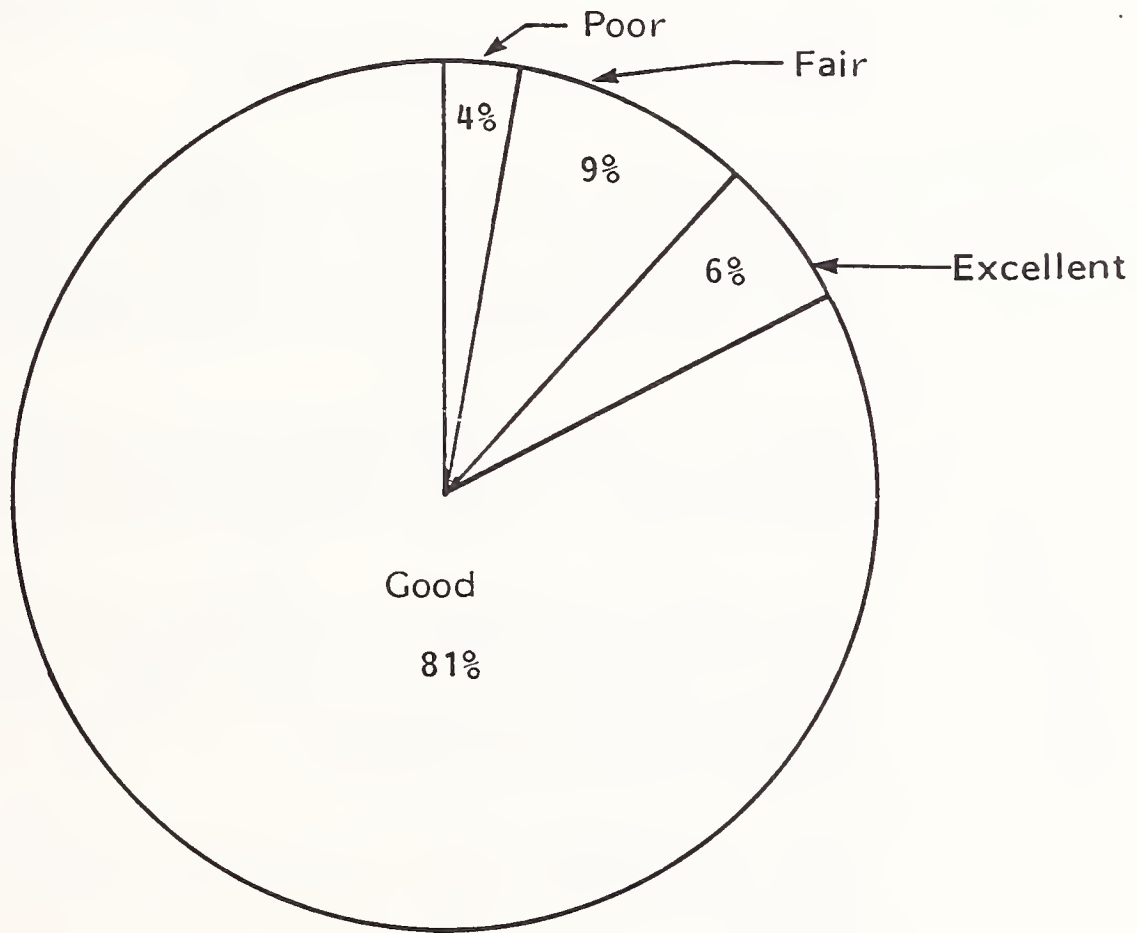
    - A buyer of small, stable packages that have been in existence for some time will rarely feel the need for extensive maintenance.

    - 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 IV-21.

- 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 can be taken:

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

- 80 -

EXHIBIT IV-21

## SOFTWARE MAINTENANCE NEEDS

INPUT
FPS3 FOP7
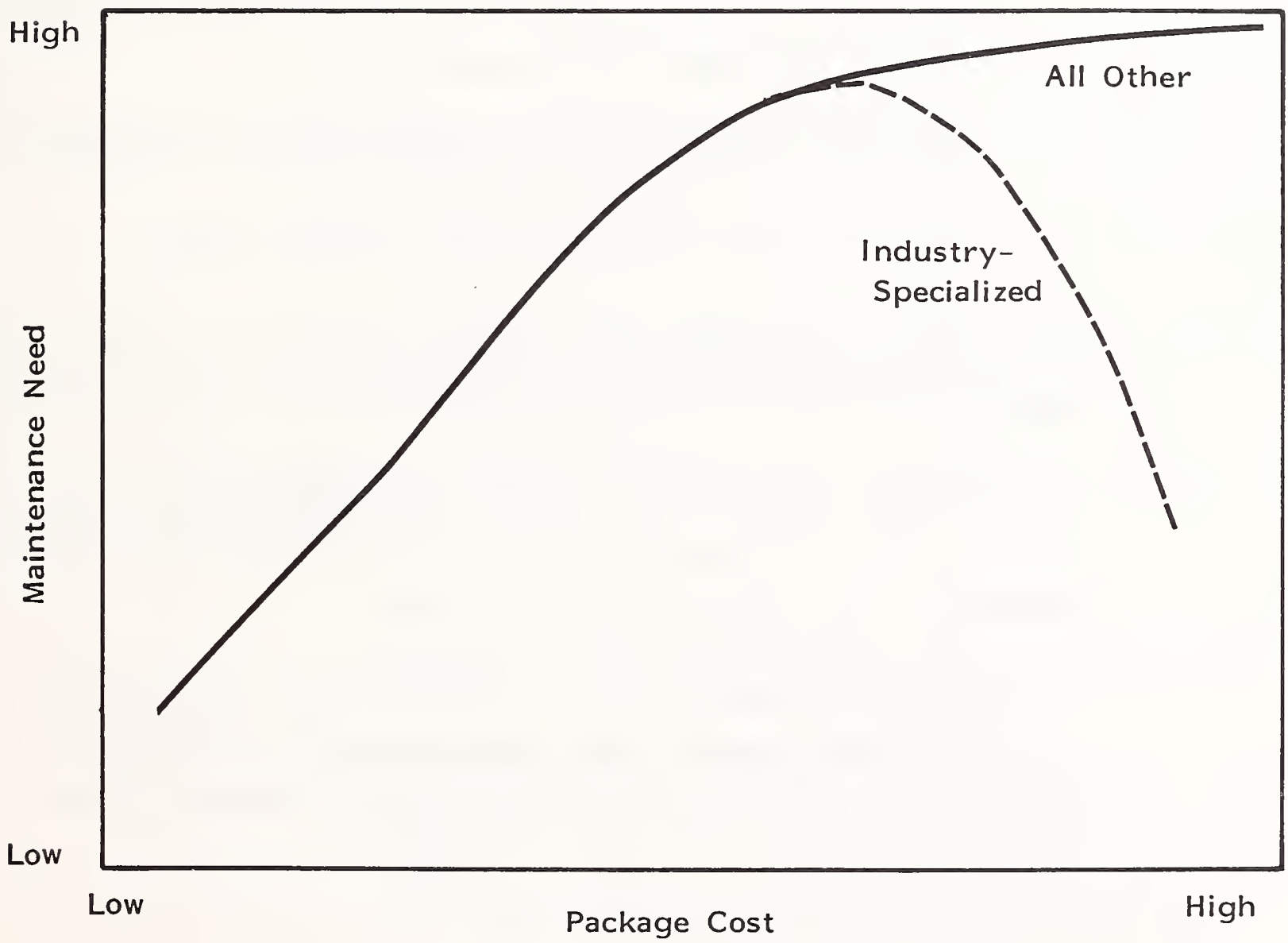
- Insurance Policy: The other approach, useful for small, stable packages, is to have a nominal maintenance price, covering error fixes only. At the right price, customers will buy the insurance for at least several years.

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 sometimes be useful to vendors and customers alike is to break software support down into its constituents. Although the constituents may vary from product to product, the following categories will serve most analyses:

    - Error correction/prevention.

    - Improvements to features.

INPl

- 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. This is the largest demand area of the software support field; 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.

- Live seminars and presentations would be more economical but unwieldy and still expensive.

  - Video conferencing would be more responsive, 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 much more 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:

- 83 -

**INPUT**

- The first stage would review 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 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 to 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.

    - 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, standard product would be supplied at what would ultimately be a lower price; initially, costs would be about the same.

INPU

### 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, consequently, more pressure being exerted 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 using computers to break new ground. It is doubtful, under these circumstances, that support systems can provide much benefit in most situations.

- Exhibit V-22 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 a significant investment. Exhibit IV-23 shows the factors involved and the need to have most of these determinants close to the high end of the scale.

- 85 -

**INPUT**

EXHIBIT IV-22

ELECTRONIC SUPPORT OF THE FUTURE
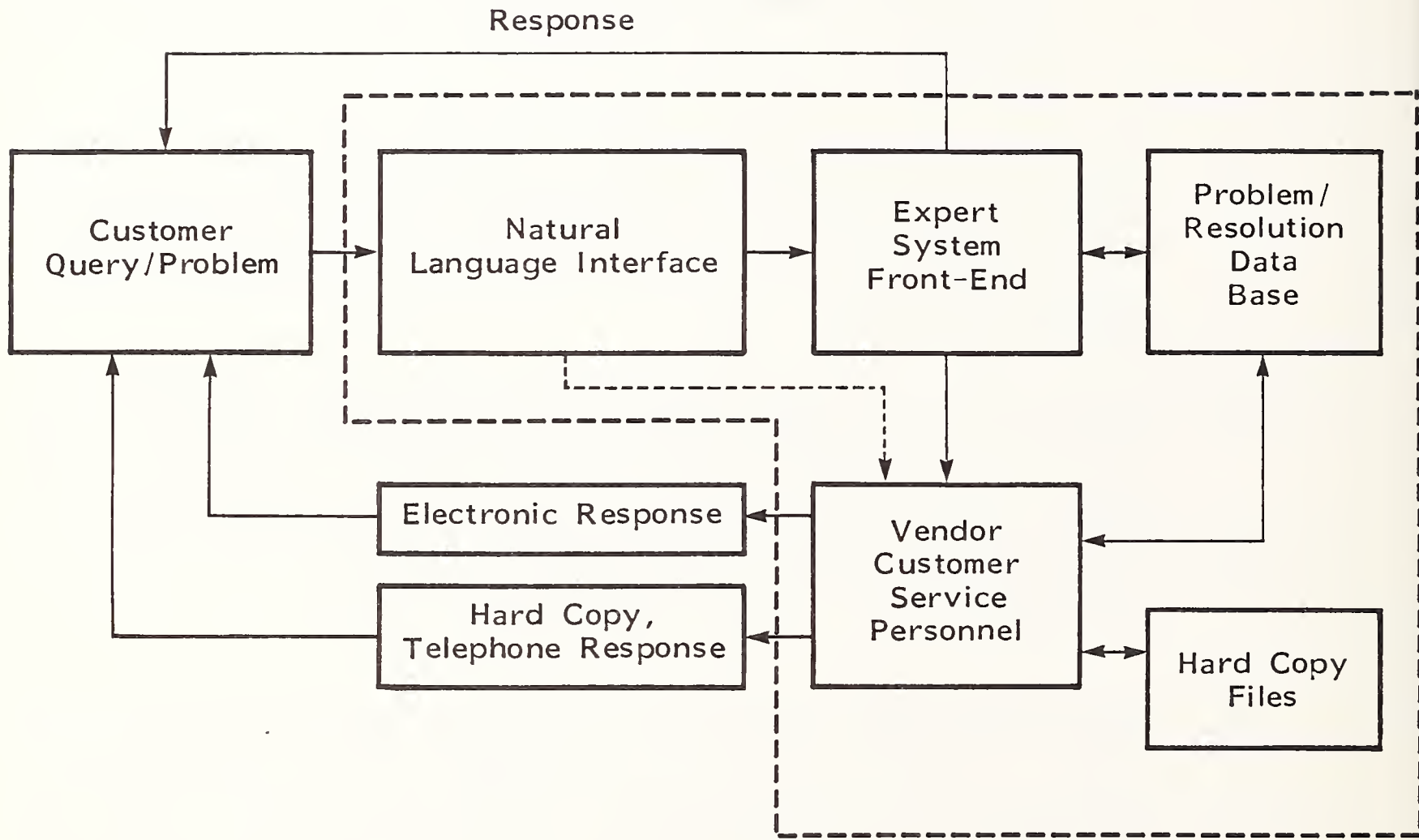
**INPU**
FSS7 FC

EXHIBIT IV-23

REMOTE SUPPORT SYSTEM:  INVESTMENT DETERMINANTS



Low

Unit
Price*

Low

Low

Product
Life

Units*

High

Product
Fragility

Criticality to
Customer

Low

Low

Product
Complexity

Low
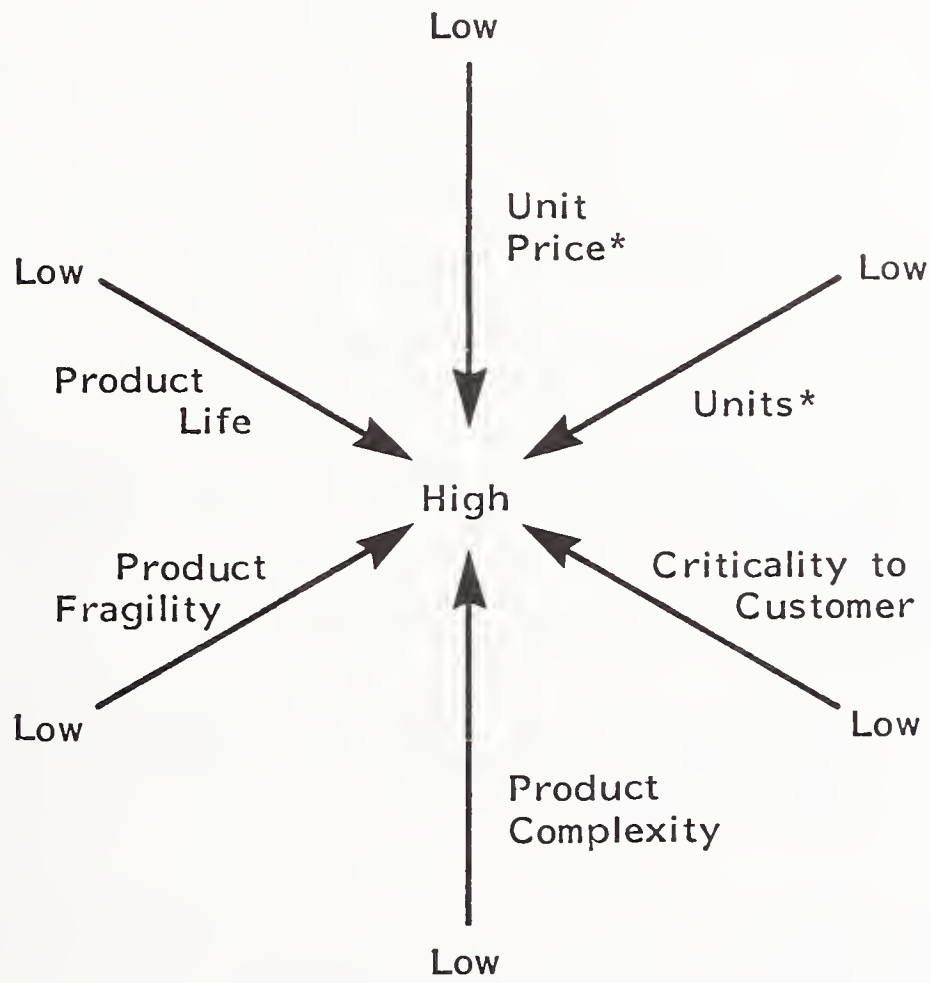
* Critical

INPUT
FSS7 FOP7

- While 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.

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

    . 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 was used).

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

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

- 88 -

**INPL**

# APPENDIX A: SOFTWARE SUPPORT CORPORATE QUESTIONNAIRE

APPENDIX A

## 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 corpor-
ations 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).

- 89 -

INPUT

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<br>- IBM Sys 38,<br>- Series 1,<br>- 8100 | | | |
| DEC Minicomputer | | | |
| Prime Minicomputer | | | |
| Data General Minicomputer | | | |
| Other Mini<br>_____ | | | |
| Office/PC<br>- IBM PC Family<br>- Other | | | |

INF

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? _____

        _____

**INPUT**

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) | | |

INF

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?

_____

_____

INPUT

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? _____

       _____

**INF**

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.)

**INPUT**

7.  a)  Problem Reporting or Resolution

|  | Package Type | | |
|---|---|---|---|
| Problems | Operating System(s) | Other Systems Software | Application Software |
| Major<br><br>Number Reported | | | |
| Number Resolved | | | |
| Average Time to Resolve | | | |
| Minor<br><br>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? _____

_____

**INP**

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 Downloading 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

INPUT

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? _____

_____

INP

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? _____

       _____

INPUT

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?

_____

_____

_____

INP

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?

_____

_____

_____

**INPUT**

APPENDIX B: REPRESENTATIVE RESPONDENT TITLES

# APPENDIX B:        REPRESENTATIVE RESPONDENT TITLES

- Manager, Information Technology.

- Manager, Technical Center.

- Systems Manager.

- Director, Software Services.

- Director, Systems Planning.

- Director, Administration.

- Technical Support Manager.

- Assistant Vice President.

- Director, Corporate IS.

- DP Manager.

- Director, MIS.

- Planning Analyst.

**INPUT**

- Technical Specialist.

- Senior Support Systems Analyst.

- Corporate Vice President.

- Manager, Systems and Programming.

- Director, Information Center.

**INPU**

APPENDIX C: RELATED INPUT REPORTS

# APPENDIX C:    RELATED INPUT REPORTS

- All are 1984 reports:

  - <u>End-User Micro-Mainframe Needs.</u>

  - <u>Micro-Mainframe: Personal Computer Market Opportunities.</u>

  - <u>Micro-Mainframe: Telecommunications.</u>

  - <u>Micro-Mainframe Processing Services and Turnkey Systems Market Opportunities.</u>

**INPUT**