MARKET FORECAST

U.S. Network Services Market

1994-1999

U.S. Market Analysis Program

1 9 9 5

U.S. NETWORK
SERVICES MARKET

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OTHER SERVICES

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Abstract

This report examines the issues, trends and factors (including use of multimedia capabilities and new network technology) that will have an impact on users and vendors of network services. The report also presents a forecast for the purchase of these services from 1994 to 1999.

The report analyzes and forecasts services for the network services product/service categories of electronic information services or on-line databases and network applications, which include electronic mail or E-mail, electronic data interchange (EDI) and other applications on value- added networks. Electronic information services include on-line data and textual information such as news services.

Issues, trends and other factors affecting network services are discussed from the perspective of both users and vendors in order to compare vendor plans and user needs and uncover possible opportunities for needs to be met. The factors discussed in this study include the impact of multimedia network services, which many users are interested in exploring or obtaining and some vendors are starting to supply. The analysis of these factors and other trends and issues, together with other research, is used to project the growth in market usage of network services across fifteen industry sectors over the next five years.

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**U.S. Information Services Market
Analysis Program**

U.S. Network Services Market, 1994-1999

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Introduction

A

Purpose and Organization

1. Purpose

This report has been developed to analyze the network services sector of the information services industry and develop a five-year forecast for this market. The report assesses market drivers and inhibitors, examines competitive trends and activities and identifies leading vendors.

The report contains insights and information on the use of network services that can help vendors to:

• Review the forces influencing market activities.

• Learn about user interests in new multimedia and communication capabilities.

• Identify new service opportunities.

• Assess competitive trends and vendor activities.

• Determine market directions.

• Evaluate investments in new capabilities.

2. Organization

In addition to this introductory chapter, the report includes the following sections:

• Chapter II, Information Services Environment, analyzes user issues and needs in regard to the services supplied in the network services sector.

- Chapter III, Market Forecast, provides the forecast for the network services sector by industry and for certain generic markets.

- Chapter IV, Competitive Analysis, analyzes the issues and plans influencing vendors of network services and discusses the competitive environment.

- Chapter V, Conclusions and Recommendations, summarizes INPUT's findings and insights on this market.

- Appendix A, Forecast and Reconciliation, provides the forecast database and reconciliation for network services.

B
Scope and Methodology

1. Scope

This report addresses the expenditures for network services that are supplied by vendors. Expenditures for this type of service that are supplied by in-house IS organizations are not included, and expenditures that are captive, and not available for competitive bids, also are not included.

2. Description of Network Services

Network services is divided into two submodes, electronic information services and network applications, as shown in Exhibit I-1.

Exhibit I-1

Network Services Market Structure

```
                          ┌──────────────────────┐
                          │   Network Services   │
                          └──────────────────────┘
                    ┌───────────────────┴───────────────────┐
          ┌──────────────────┐                    ┌──────────────────┐
          │     Network      │                    │    Electronic    │
          │   Applications   │                    │   Information    │
          │     Services     │                    │     Services     │
          └──────────────────┘                    └──────────────────┘
            ├─ Value-Added                           ├─ On-Line Databases
            │  Networks (VANs)
            │  - Packet Switching
            │  - Store and Forward                   ├─ On-Line News (text)
            │                                        │  Services
            ├─ Electronic Data
            │  Interchange (EDI)
            │                                        └─ Other
            ├─ Electronic Information
            │  Interchange
            │  - Electronic Mail
            │  - Bulletin Boards
            │
            └─ Other
               - Network Management
               - Services
```
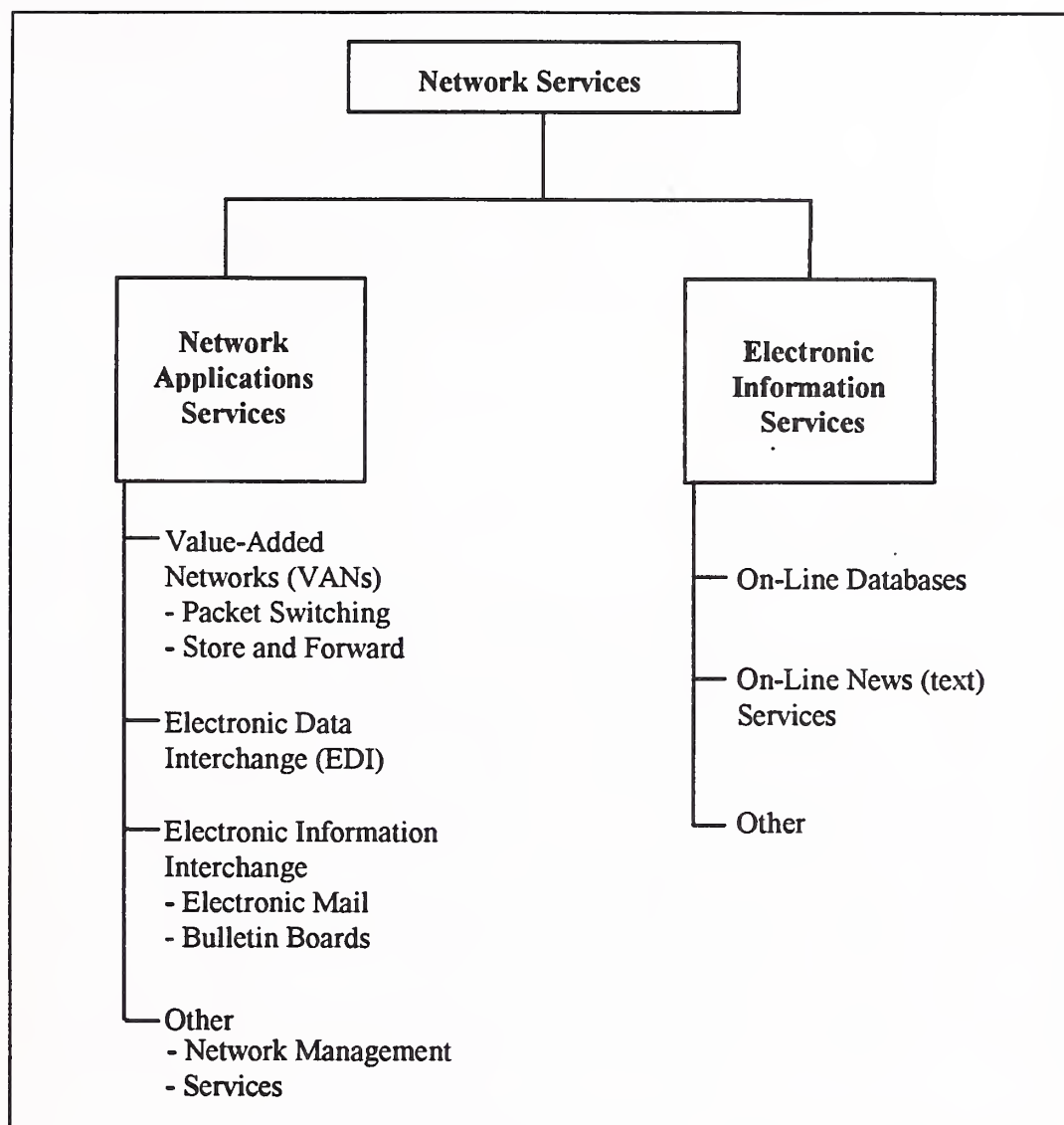
Source: INPUT

• Electronic information services, or EIS, consist of on-line databases and news or text services. They can be oriented to use in a specific industry market, such as the chemical industry, or be generic and used across industries, as are equity prices.

• Network applications are bought for specific industry use and are classified as industry specific.

Network services can be purchased together with processing services. Expenditures would be separated by INPUT, in this case, so that the network services could be identified separately.

3. Methodology

The data used in this report have been gathered from the ongoing interviews that INPUT conducts with users and vendors in the information services industries (about 5,000 in the U.S. annually), as well as from 30 targeted interviews with users of information services and 15 contacts and interviews with vendors interested in this delivery sector.

The analysis of expenditure information obtained from interviews is used to develop forecasts. These forecasts are reconciled to those of the previous year and differences are analyzed.

C

Economic Assumptions

As noted in the Economic Assumptions section of the Department of Commerce's 1994 *U.S. Industrial Outlook*, U.S. economic growth in 1993 showed an increase over 1992 and growth is expected to continue through 1994. Inflation remained at a low level in 1993, and is expected to be in the 2.5% to 3% range for the balance of this decade.

II
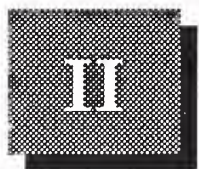
Information Services Environment

A

Use of Network Services

1.   Trends in the Use of Network Services

Interviews with thirty corporations revealed a high rate of network services use, as shown in Exhibit II-1. Only two respondents did not use electronic information services (EIS), and one of those companies had developed its own on-line database for internal information retrieval and client use. Use of network applications was also high, but not as universal as the use of EIS, as shown in Exhibit II-1. One of the eight corporate respondents not using network applications at present plans to be using them within a short time, however, and four others are considering use of one or more network applications in the near future.

Exhibit II-1

Frequency of Use of Network Services

Use

Use of EIS	93
Use of Network Applications	73

0   10   20   30   40   50   60   70   80   90   100

Percentage of Respondents
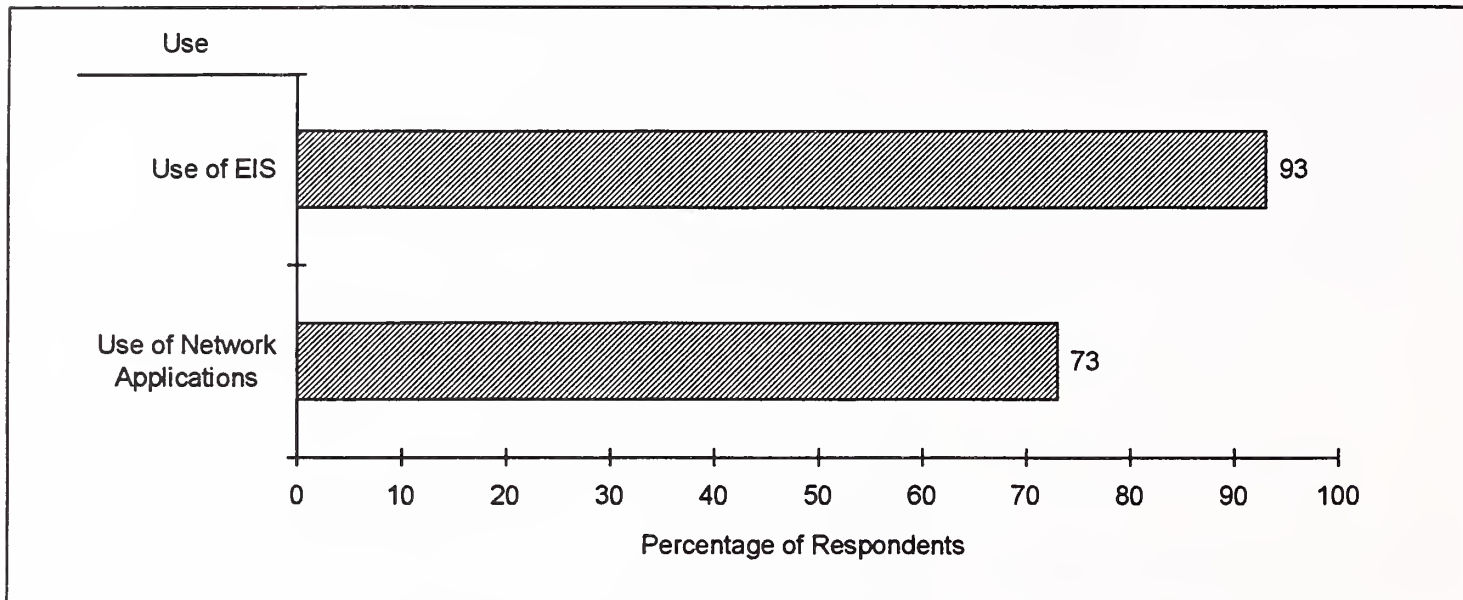
- All respondents reported that the use of network services was determined chiefly by the departments that were users of these services. Reasons that are given for using these services are savings of cost and time, although many users point out that it would not be possible to carry on present operations without having certain types of information available on-line, as indicated in Exhibit II-2. Some respondents gave multiple reasons for the use of network services, noting the importance of time and/or cost savings as well as functional needs.

Exhibit II-2

Reasons for Using Network Services

Reason

Savings of Cost or Time	73
Necessary to Work Procedures or Must Have	46
Competitive Pressure or Need	43
Better Service	27

Percentage of Respondents: 0 10 20 30 40 50 60 70 80

(Multiple answers provided by same respondents)
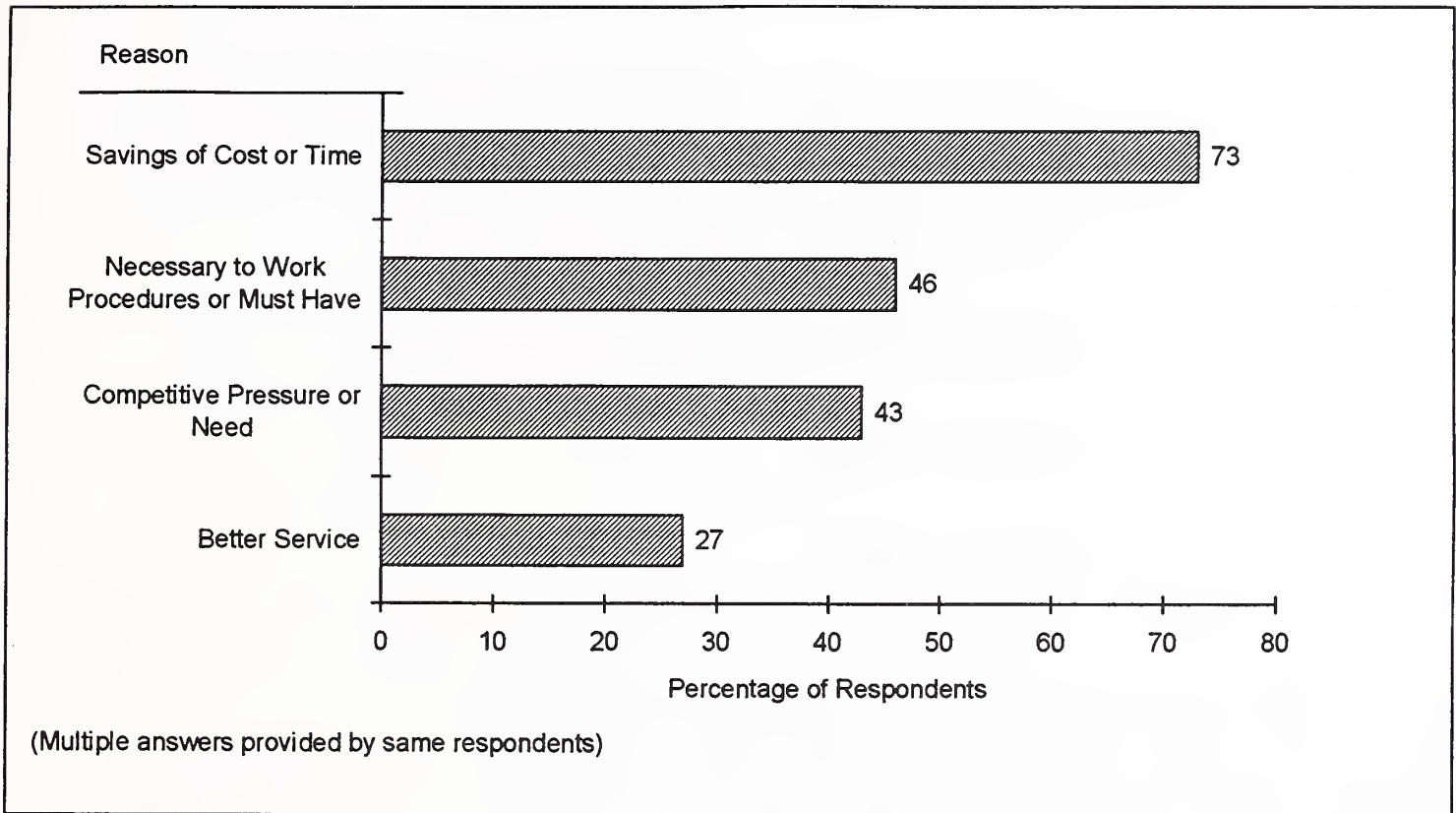
- The use of EIS (or on-line databases, as many users and vendors refer to them) is heavily focused on the use of financial databases such as equity prices, economic statistics or credit information, as noted in Exhibit II-3. Many of the other databases in use (such as those that have product or technical information) can be absolutely vital to business activities as well, according to respondents who use them.

Exhibit II-3

Types of EIS in Use

Type in Use

Category	Value
Financial Database	90
Technical or Industry Database	63
Product Info Database	43
Schedule or Timetable	23
Text	20

Axis: 0 10 20 30 40 50 60 70 80 90

Percentage of Respondents

(Multiple answers supplied by some respondents)
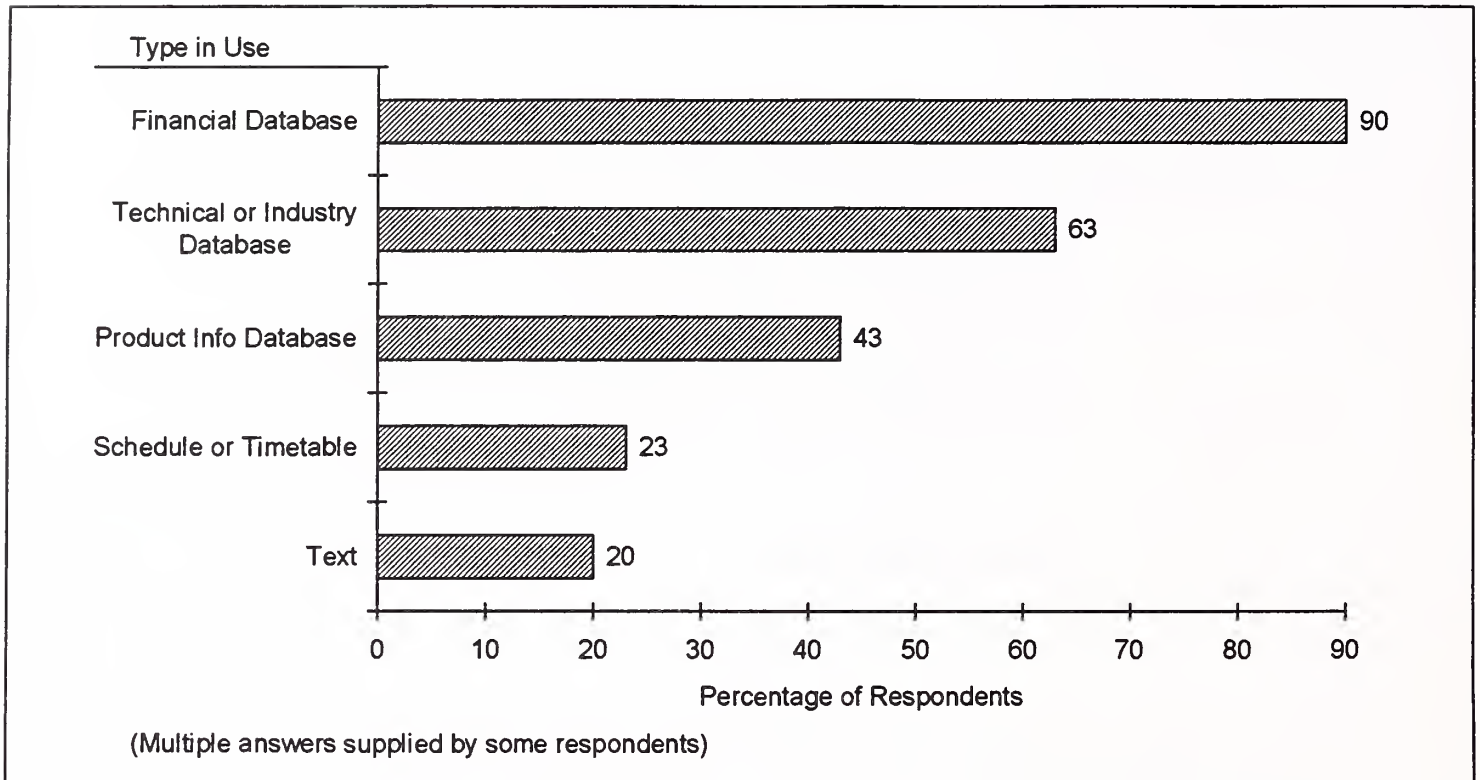
Source: INPUT

- The totals shown in Exhibit II-3 indicate the relative range of use of EIS by content, but are unlikely to describe the exact usage pattern, since data on the use of EIS in large corporations is not always audited. According to respondents, in some companies a user may be willing to quickly justify or try new sources of information that can aid in performing work or save time or money, without informing IS or other coordinators.

  - Exhibit II-4 illustrates that there is an expectation for a steady increase in the use of EIS. Almost three-quarters of respondents expect such an increase.

  - Only one user felt that use might decrease in his company.

Exhibit II-4

Change Anticipated in Use of EIS

MMNE

Change

Definite Increase	73
May Increase	17
Will Not Increase	3
No Answer (uncertain)	7

0   10   20   30   40   50   60   70   80

Percentage of Respondents
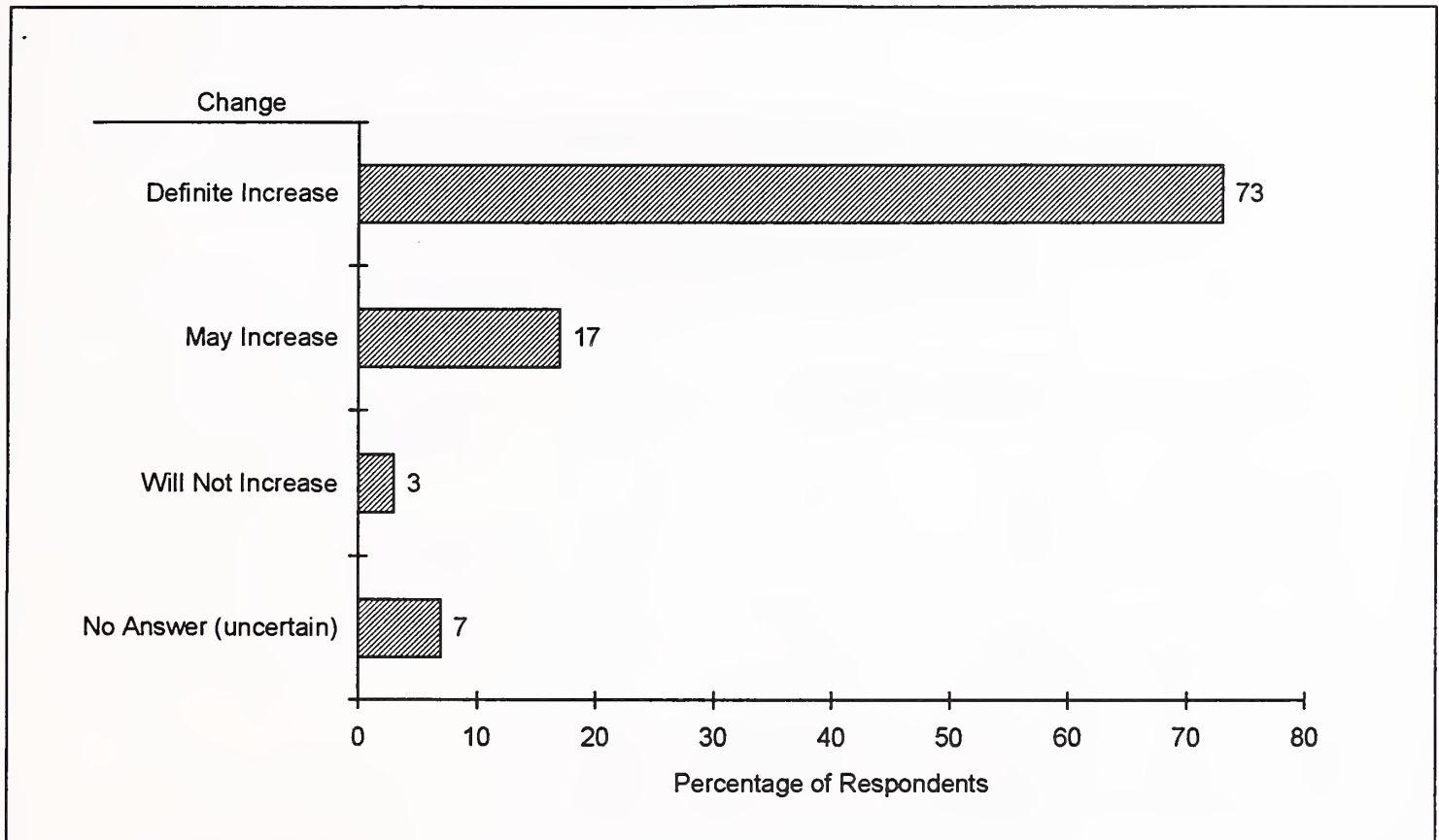
Source: INPUT

- The use of network applications is divided among three products, as shown in Exhibit II-5. Many respondents utilize two or three of these products, and 37% use all three. The most frequently used application is electronic mail.

  - Seventy-one percent utilize or plan to utilize electronic mail.

  - Fifty-one percent use or plan to use EDI.

  - Forty percent use or plan to use VANs.

Exhibit II-5

Use of Network Applications

Network Applications

Application	Percentage
Use E-mail, EDI and VANs	37
Use only E-mail	23
Use E-mail and EDI	11
Use EDI and VANs	3
Will Definitely Use Network Applications	3
Use None and Have No Plans to Use Them	23

Percentage of Respondents

0   5   10   15   20   25   30   35   40
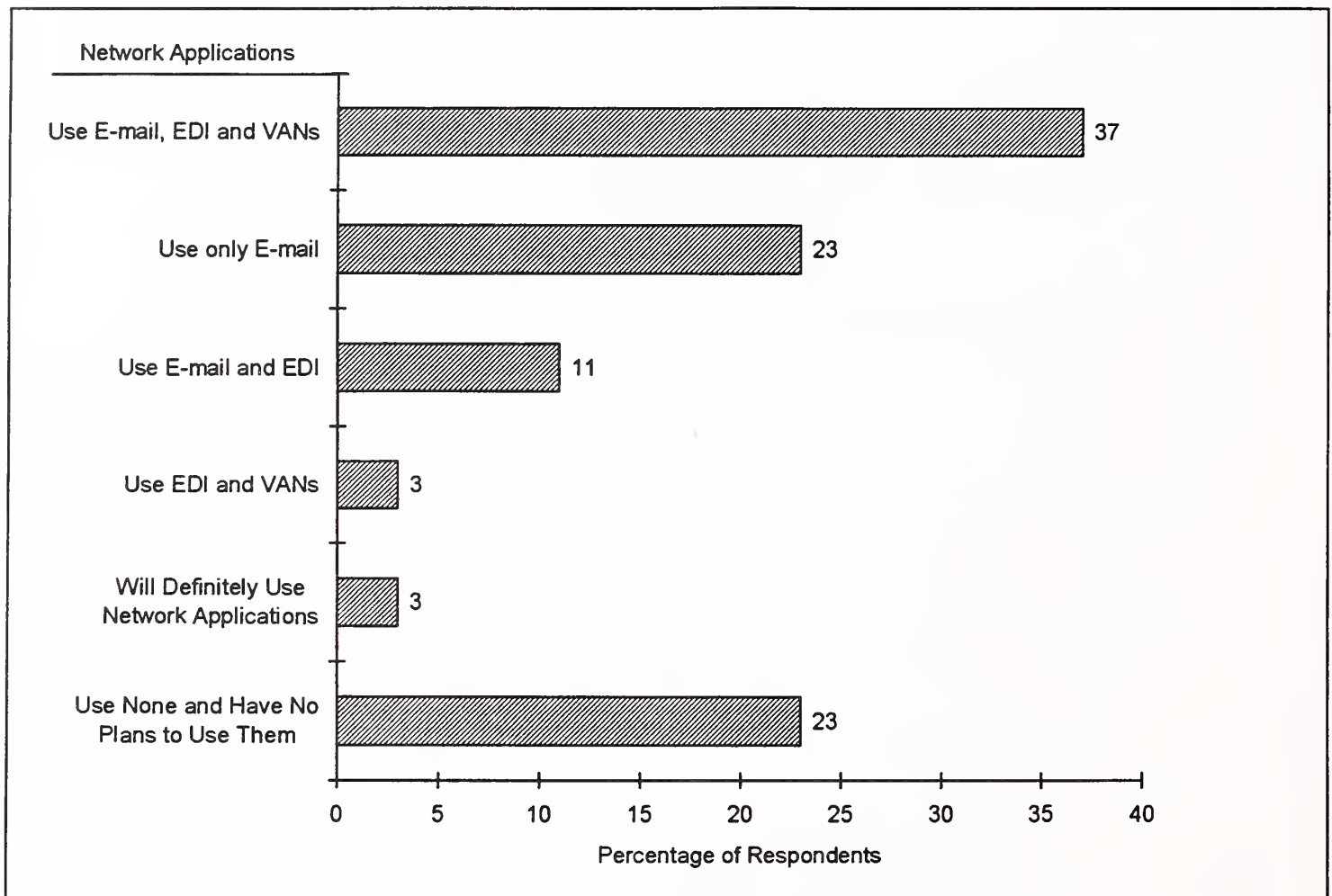
Source: INPUT

2. Factors Driving or Inhibiting Use of Network Services

Factors that drive the use of services are somewhat different for the use of EIS or network applications, as is shown in Exhibit II-6. Information needs as well as costs are cited for EIS, whereas cost savings and the need to meet standards of trading partners are the chief considerations in regard to network applications. Standards in transaction formats and network usage for network applications—particularly EDI and electronic commerce—must be dealt with in marketing these services as well as consideration of cost savings. Cost savings are also a consideration in regard to EIS, although information content is most important. Because cost savings could be a factor if the amount was large enough, there is an opportunity for competitors to penetrate accounts that utilize EIS if the primary vendor raises prices too rapidly.

Exhibit II-6

Factors That Drive the Use of Network Services

Factors That Drive the Use of EIS

Factor	Value
Quality or Completeness of Data vs. Cost	67
Specific Business Needs	13
Only Less Cost	10
Increased Accuracy	10

Percentage of Respondents

Factors that Drive the Use of Network Applications

Factor	Value
Cost Reduction	30
To Improve Information Exchange*	20
Specific Business Need or Application	17
Not Sure	10
Not Applicable	23

Number of Responses

*With internal or external contacts or trading partners

Source: INPUT

Factors that can inhibit or discourage the use of these services have more similarity, as shown in Exhibit II-7. A number of users of both services feel that there are no deterrents to use, as shown in this exhibit. The second highest response in regard to deterrents is the possible cost or price for using the service. Some of the respondents who mentioned cost had not done complete examinations of competitive cost and benefits recently, however. New competitors will have to press these users to review their selection of services.

Factors That Can Inhibit Use of Network Services

Factors That Can Limit Use
of Network Applications

Factor	Value
High Costs	48
Hard to Use or Support	24
Business Conditions	16
Meeting Standards	6
Don't Know	6

Percentage of Respondents

Factors That Can Limit
Use of EIS

Factor	Value
None	37
High Costs	27
Business Conditions	20
Inflexible or Hard to Use	10
Don't Know	6

Percentage of Respondents
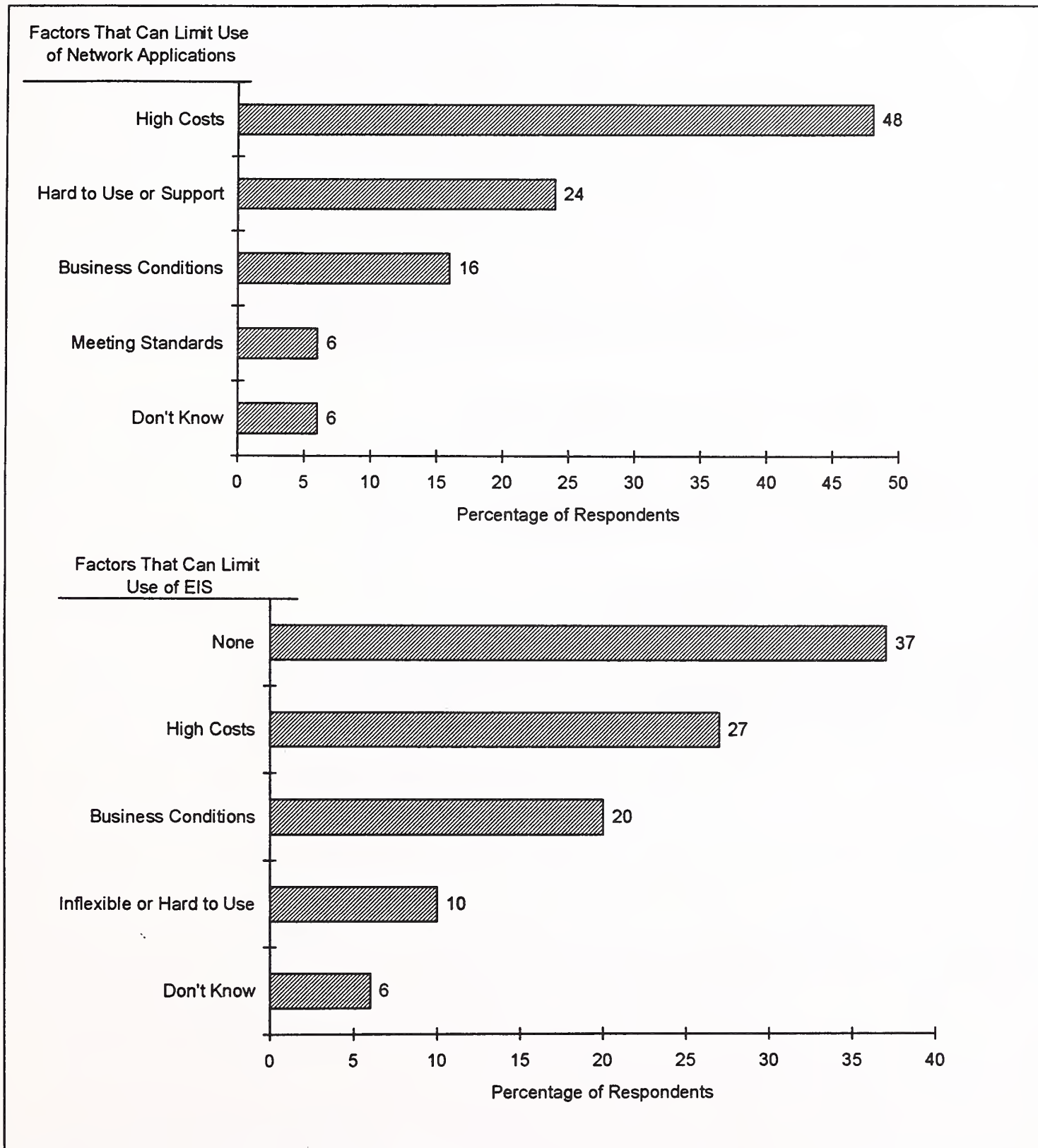
Source: INPUT

More specific deterrents or alternatives to network services included the use of CD ROM and fax. Fifty-seven percent of the users of EIS reported that they were using CD ROM and 10% were considering it to replace some of their use of EIS. Almost half of those using CD ROM reported that they were doing so because it was less expensive, as shown in Exhibit II-8.

Exhibit II-8

Reasons for Using CD ROM vs. EIS

Reason

	Percentage of Respondents
Less Expensive	47
Sufficient Information on CD ROM	20
Don't Need Fast Update for Some Data	17
Easy to Use for Less Professional Users	10
Can Use Together with EIS	6

Percentage of Respondents: 0 5 10 15 20 25 30 35 40 45 50
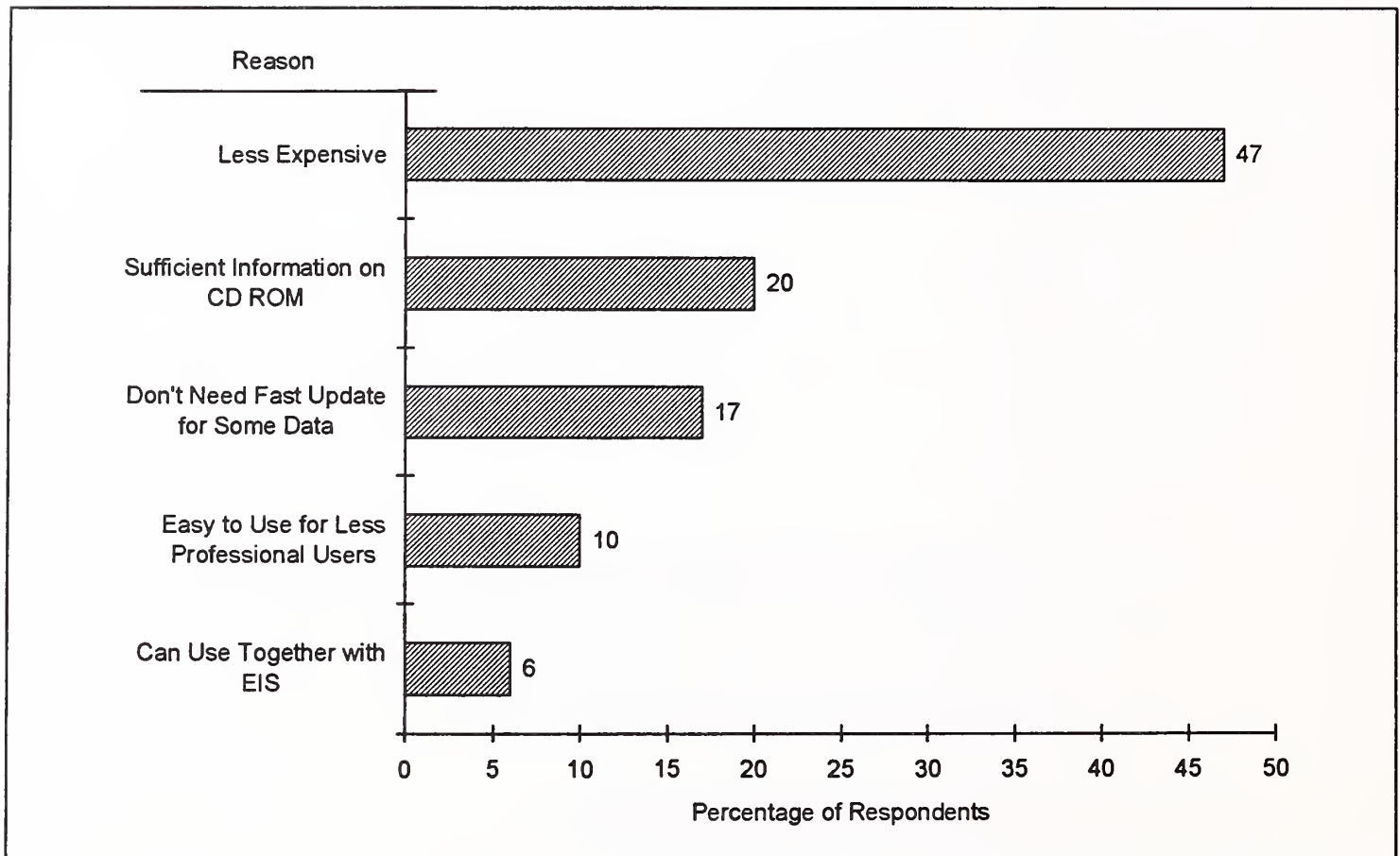
- Most respondents using CD ROM who were questioned further stated that they would not have started to use this medium if EIS were less expensive. Some feel that it can also meet some fundamental information needs sufficiently (particularly where a fast update is not needed) and is easy to use.

- Vendors of EIS tended to see the use of CD ROM as a supplementary service that they could offer, rather than as a service that could reduce their revenues.

- Insufficient data limits an analysis of the extent to which vendors lose EIS revenues to a competitor who has a CD ROM product or the extent to which they may cannibalize EIS revenues with such a product.

Network applications can also be replaced with a competitive product. Fax is being used in place of E-mail or EDI in some situations. The use of fax as an alternative appears to have more impact on E-mail than on EDI, however, and its use for EDI limits the effectiveness of this service.

- About 20% of respondents using E-mail report that they have diverted some traffic from E-mail to fax. Although most respondents described the fax as limited, several spoke of portable fax reception as a need for some business situations.

- About 7% of respondents using EDI have diverted EDI or electronic commerce traffic to fax.

3.   Desired Additions to Network Services

As illustrated in Exhibit II-9, users of EIS and network applications differ in regard to the changes that they would like to have made in the systems they are using.

Exhibit II-9

Desired Additions to Network Services

Additions Desired	Percentage of EIS Respondents	Percentage of Network Application Respondents
More data or granularity of data	67	0
Means of lowering costs	24	57
Ease of use	14	20
Use of multimedia	63	53
Faster process or access time	18	14

(More than one answer per respondent)

Source: INPUT

- Users of EIS are most interested in increases in information content and the use of multimedia.

- Users of network applications are most interested in reducing costs and using multimedia.

The strongest interest of both sets of users is in the future use of multimedia.

B

Anticipated Impact of Multimedia Services

Based on the interest of network services users, the availability of multimedia capabilities will be a strong driver for the use of network services, and vendors will find that it can differentiate and promote their services. As illustrated in Exhibit II-10, a significant percentage of respondents are interested in the use of multimedia.

Exhibit II-10

Interest in Use of Multimedia

Interest Level	Percentage of Respondents using EIS	Percentage of Network Application Respondents
Definite Interest	64	57
Probable Interest	20	3
Not Sure	6	10
No Interest	3	7
Not Applicable	7	23

Source: INPUT

Interest is higher in the use of multimedia with EIS than with network applications. Several users and vendors anticipate that interest will grow in the use of multimedia with network applications, particularly through the use of newer products such as Notes.

Only one current user of EIS reports that his company would not be interested in the use of multimedia with this service. Eighty-seven percent of respondents using EIS, are interested. This is such a significant level of interest that vendors should react to it and investigate what multimedia can offer such clients.

- Most respondents feel that multimedia can add knowledge to the information that is being accessed from an EIS, as indicated in Exhibit II-11. One user felt that "voice-over" messages could point out where there were better sources of information or where there were interesting aspects of the data being sought.

- A number of respondents pointed out that graphics or film strips (which could be accessed for an extra charge, perhaps) could add value to printed information.

Exhibit II-11

Possible Uses of Multimedia with Network Services

Suggested Uses with EIS	Suggested Uses with Network Applications
Graphs or geographical views of printed information	Voice messages, graphics and film strips with E-mail
Voice-over messages that provide additional information	Pictures of documents with network applications
Pictures or film strips to illustrate changes	More information with EDI

Source: INPUT

Fifty-seven percent of the users of network applications would be interested in multimedia additions to their services, but most suggest additions to E mail as illustrated in Exhibit II-11. The popularity of Notes and similar programs or capabilities has encouraged users of E-mail to think of transmitting and receiving voice messages, graphics and film strips together with standard E-mail.

- A small percentage are interested in adding multimedia information to EDI, but are uncertain how it might be implemented. One respondent thought that it might provide an opportunity to add vocal messages about shipping.

- Some respondents thought that pictures of documents, including signatures, might be sent by E-mail, EDI or VANs.

Two respondents said that they were already testing new multimedia capabilities supplied by their EIS vendors. They both felt that the use of multimedia would depend on specific applications and what was useful or made sense with those applications.

Although some respondents report that they may use the IS staff to review multimedia plans or ideas, all feel that these plans should be formulated and directed by user departments.

C

Impact of Changing Network Technology

1. Meeting User Needs

The ability to utilize multimedia or achieve other improvements in network services (such as speeding up E-mail) will require that certain network capabilities be available.

Faster E-mail could be gained through the use of frame-relay technology, which supports bursts of data transmission, or the use of Asynchronous Transfer Mode (ATM), which can increase the throughput or bandwidth of transmission. The latter, as well as SONET (Synchronous Optical Network) or SMDS (Switched Multimegabit Distribution Service), can support the mix of voice, video and data that could support some multimedia activity. Multimedia that accommodates full motion will require substantial change in telephone circuitry or, in some cases, the use of CD ROM to supplement the information received from the network services vendor.

Although users report that they are willing to let IS or telecommunications offices take the lead role in communications planning, many respondents have opinions about the impact that various network technology alternatives can have on their plans. As shown in Exhibit II-12, respondents report that they are interested in the use of certain network technology to support their plans. The ability to increase packet communication speeds through the use of frame-relay technology, or achieve multimedia objectives through the use of ISDN, were two of the interests mentioned by users that could influence the selection of network services vendors.

Exhibit II-12

Network Technology Favored by Respondents

Technology	Average Interest of Respondents 5 = high and 1 = low
ATM	2.5
Frame Relay	3.0
SMDS	2.1
ISDN	3.1
SONET	2.5

Source: INPUT

- Network services vendors must be prepared to investigate the reasons why users feel that certain network technology alternatives would enhance their use of network services. The reasons for choice could be misguided or short term.

- Network services vendors must also have sufficient knowledge of network technology to analyze the planning currently being done by their users. Steps could then be taken to increase the likelihood of keeping business or gaining new business at some accounts.

2. The National Information Infrastructure (NII) Concept

This concept, which is popularly referred to as the electronic superhighway, will result in regulatory and/or legislative steps that allow carriers and cable TV companies or other participants to merge services so as to meet the needs of organizations and individuals involved in information exchange, education, entertainment, and the supply and purchase of goods and services. Whatever developments take place will have a considerable impact on current suppliers of EIS and network applications. Steps should now be planned or considered in the use of multimedia and new communication capabilities that enable vendors of network services to take advantage of developments and not be placed at a competitive disadvantage.

D

The Internet

By any measure, the Internet—and its implications and potential for business, societal and individual use—is one of today's hot topics. Although relatively small now, Internet usage is expected to grow at rates far exceeding the projected information systems and information services industry growth averages over the remainder of this decade. For instance, INPUT estimates that information systems budgets will grow at a modest 5% or less from 1994 through 1999, while the information services market is expected to increase at a 12% compound annual growth rate (CAGR). In terms of just commercial (e.g., individual company) connections, there are an estimated 20,000 companies worldwide connected to the Internet, and the rate of increase, through the millennium is forecast to be a strong 70% per year.

Individual Internet connections (e.g., clients and IDs) were estimated to be 24 million worldwide at the end of 1994. By 1999, this number is expected to grow to 200 million, of which 50 million would be institutional (including 30 million U.S.) and 150 million individual (75 million U.S.).

In another example of the Internet growth phenomenon, the World Wide
Web now contains some 27,000 sites, and this number is doubling every
60 days.

The growth of the Internet and related capabilities such as the World
Wide Web, has been so rapid that accurate usage and growth data,
statistics and projections simply have had a hard time keeping up.
INPUT recognizes the importance of this new telecommunications-based
information phenomenon and has established a new program to track
Internet service and growth. Research efforts will address who is using
(and will use) the Internet, identify buying patterns, estimate Internet-
related expenditures and note the strategies and tactics of leading
Internet service providers. Five-year market forecasts will be developed
for the worldwide Internet software products, professional services and
network services market sectors. As these figures are developed and the
Internet market analyzed, U.S. Internet market data will be developed,
which will be included in the 1995-2000 network services report.
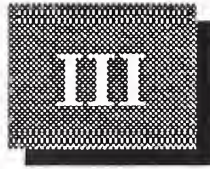
Market Forecast

A

Market Structure

The benefits that users can obtain from network services are being driven by advances in network technology as well as the information needs of users. This situation is similar to the historical relationship of factors that were the genesis of network services, as illustrated in Exhibit III-1.

Exhibit III-1

Role of Technology in Network Services

Period	Network Services Changes
1960	Network services are initiated when network capabilities enable vendors to meet user needs for timely, on-line data and rapid data interchange between users
1970-1980	Faster network technology accelerates use of vendor network services
1990s	Increase in network bandwidth and multimedia capabilities enhances use of vendor information (EIS) and interunit data flow via vendors

Source: INPUT

- Network services came into being as a result of the development of network capabilities that could provide timely interconnection of computing installations. Data processing vendors that were supplying batch data established on-line delivery to supply electronic information to clients and to send EDI and other messages between clients.

- The capabilities being added now, through expanded network capabilities and multimedia technology, will add significant benefits and cause an increase in the volume of network services.

The basic structure of the network services market (as shown in Exhibit III-2) will not change, but the value and quantity of vendor services will change over time and cause increasing differentiation among vendors.

Exhibit III-2

Network Services Market Structure

Service-Based	Network Applications • EDI • Electronic mail • Other VAN capabilities such as shared spreadsheets

Product-Based	Electronic Information Services
	
	• On-line databases
	
	  - Security, fixed income, foreign exchange and other market data
	
	  - Credit data
	
	  - Economic, technical, product schedule and other data
	
	• On-line unstructured data
	
	  - Bibliography, text
	
	  - News
	
	  - Illustrated summaries

Source: INPUT

The services noted in Exhibit III-2 are divided into those that perform a service by exchanging data between organizational units (network applications) and those that are product-based and supply structured or unstructured data to clients (EIS). The latter can include on-line databases or textual collections of data, accompanied by graphs, voice messages and other information. Vendors of EIS or on-line databases are usually not the vendors who offer network applications.

B
Network Services Market

1. Overall Market

Network services will grow from a 1993 level of approximately $12 billion to a total of $31.6 billion in user expenditures in 1999, as illustrated in

Exhibit III-3. The growth rate will increase from 15% in 1993 to a CAGR of 18% between 1994 and 1999. The growth rate of 15% in 1993 was held down by 2% or 3% due to the slow economic recovery during that year.

Exhibit III-3

U.S. Network Services Market, 1993-1999
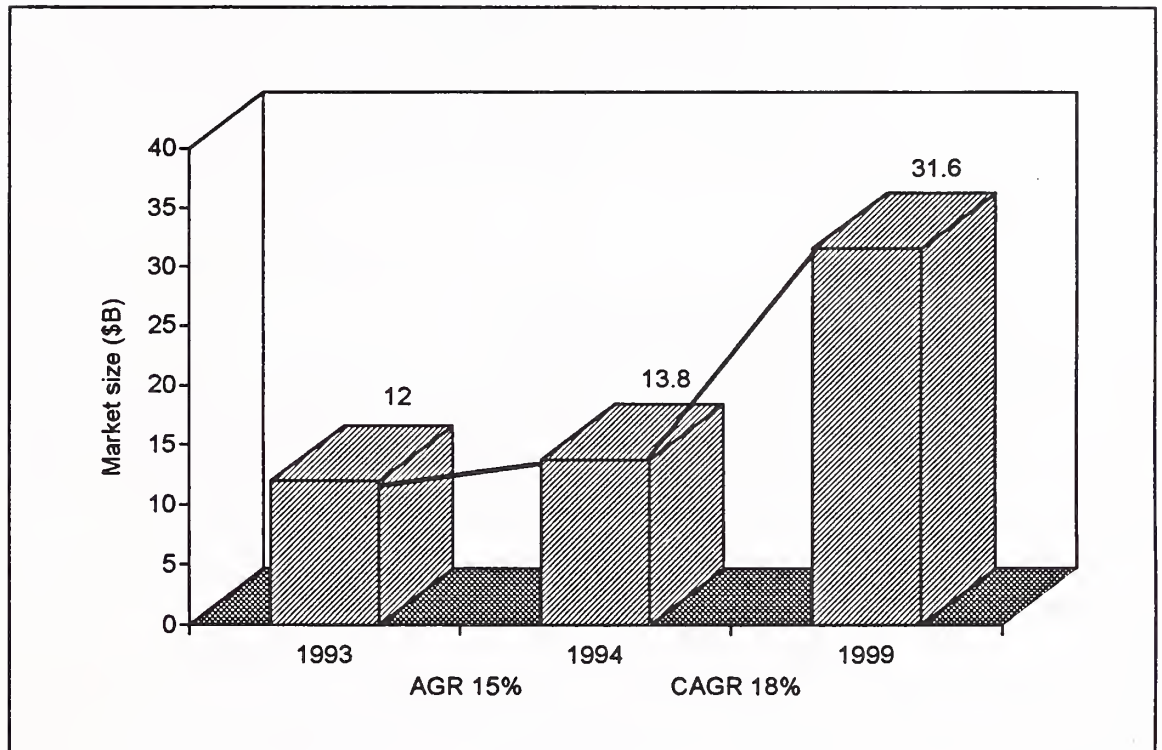
Source: INPUT

The healthy growth of network services is due to the need for current, virtually real-time information to aid decision making, conduct research, or keep business processes functioning—as well as the need for applications on vendor networks that can provide intra- and inter-company messaging services. These services:

• Can help a client to generate revenues or save costs, to perform research to solve problems or to provide better service and save business from going to competitors

• Provide electronic rather than paper means of conducting business

2. User Expenditures by Industry and Generic Sectors

The user expenditures, forecast to be $13.8 billion in 1994, can be divided into services for industry markets and generic markets, as shown in Exhibit III-4.

Exhibit III-4

Network Services Market
Industry and Generic Markets, 1994-1999
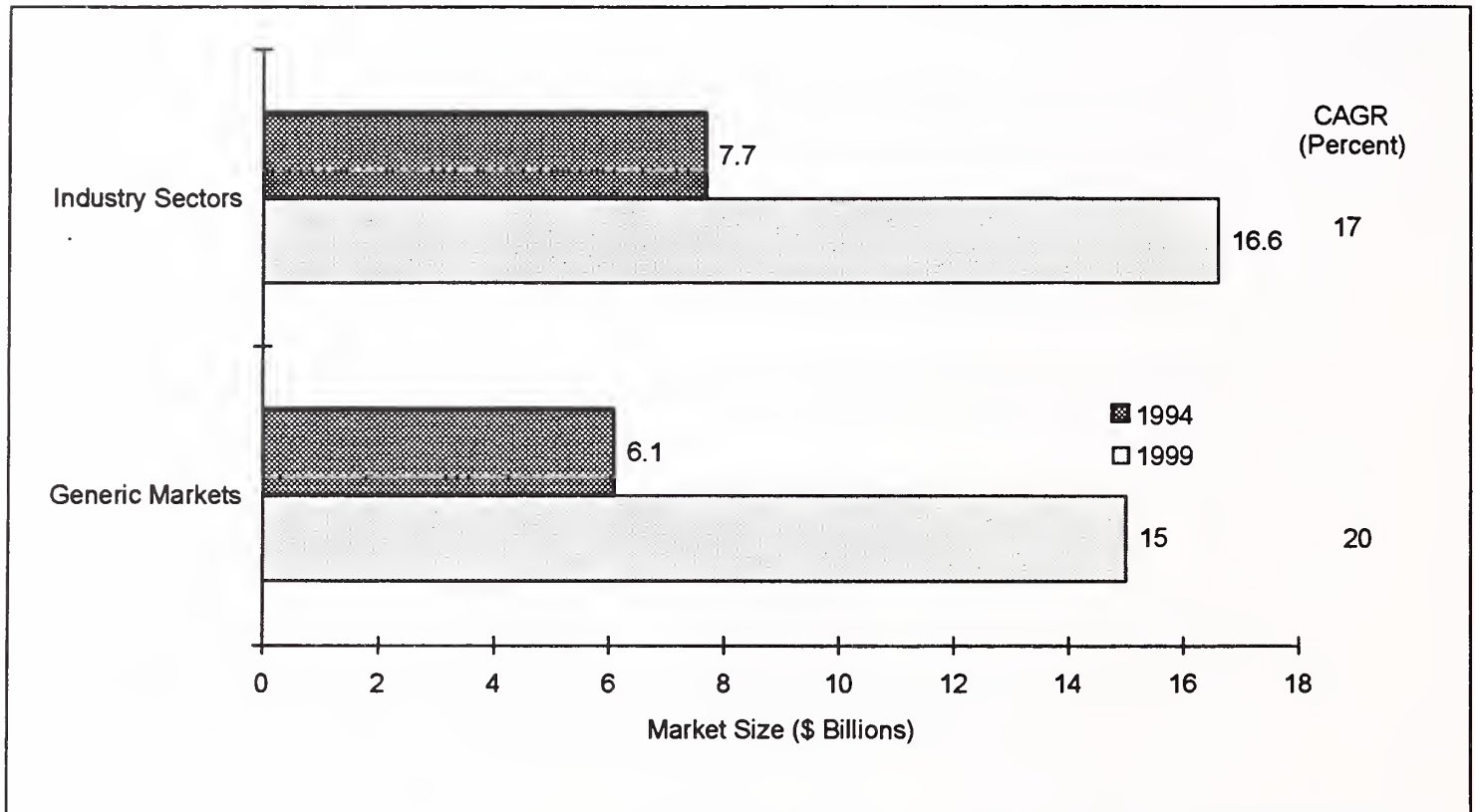
Source: INPUT

- The services for industry sectors include EIS and network applications that may serve only one market, such as financial institutions, manufacturing companies or other vertical markets.

- Generic services are not designed for any one vertical market, but have a generic application (such as the equity prices in some EIS services) that can be used in many industries.

The growth of services in some vertical markets is much higher than in others, as shown in Exhibit III-5.

- A number of vertical markets, including distribution and state government, have a growth rate above 20%, as shown in Exhibit III-5. As a result of its highly focused activities, the utilities industry stands out as a small and slowly growing market for network services.

Exhibit III-5

Network Services Market
User Expenditures by Industry, 1994-1999

Industry Sector	User Expenditures $ Millions		1994-1999 CAGR Percent
	1994	1999	
Wholesale Distribution	507	1,521	25
Retail Distribution	331	963	24
Discrete Manufacturing	156	410	21
State and Local Government	182	468	21
Telecommunications	169	420	20
Transportation	505	1,205	19
Health Services	795	1,712	17
Process Manufacturing	1,281	2,780	17
Banking and Finance	1,011	2,109	16
Education	298	638	16
Insurance	280	530	14
Business Services	754	1,383	13
Miscellaneous Industries	181	319	12
Federal Government	1,219	2,056	11
Utilities	35	57	10
Industry-Specific Total	7,704	16,571	17
Generic Markets	6,120	15,026	19
Total Network Services	13,824	31,597	18

Source: INPUT

3. Electronic Information Services (EIS) Market

EIS, which grew at a rate of 16% in 1993, will grow at the faster CAGR of 18% between 1994 and 1999, and account for $24.9 billion of user expenditures in that year, as shown in Exhibit III-6.

Exhibit III-6

U.S. Electronic Information Services Market, 1993-1999
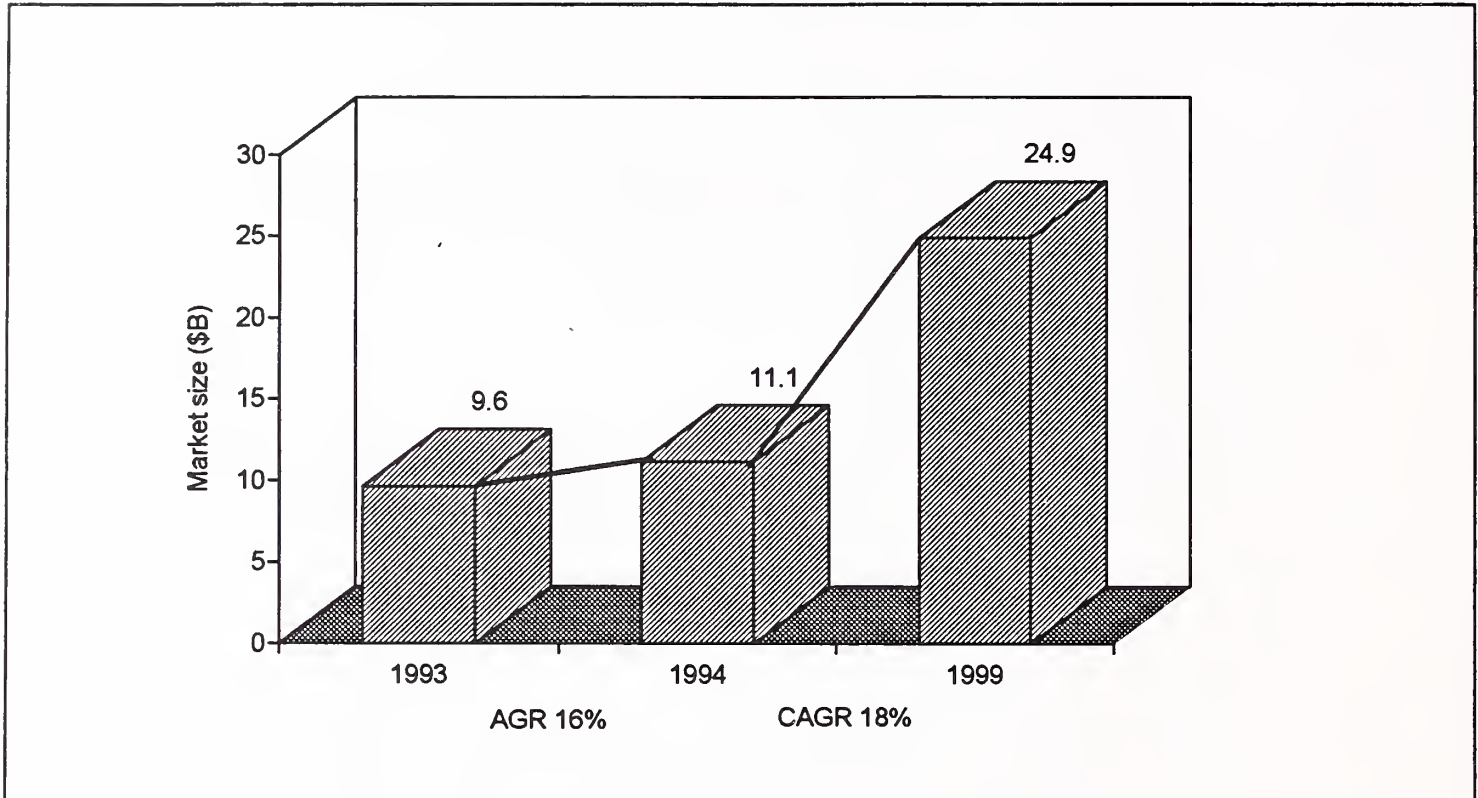
The expenditures for EIS grow faster for generic markets (as shown in Exhibit III-7) because generic data has an appeal to many vertical markets. Among other uses, equity pricing is used in banking and finance to evaluate collateral and in insurance companies and private educational institutions to evaluate investment opportunities; but it is also used in many other markets to evaluate possible investments, corporate holdings or the price and performance of competitors or possible acquisition candidates.

Exhibit III-7

Electronic Information Services Market
Industry and Other Sectors, 1994-1999
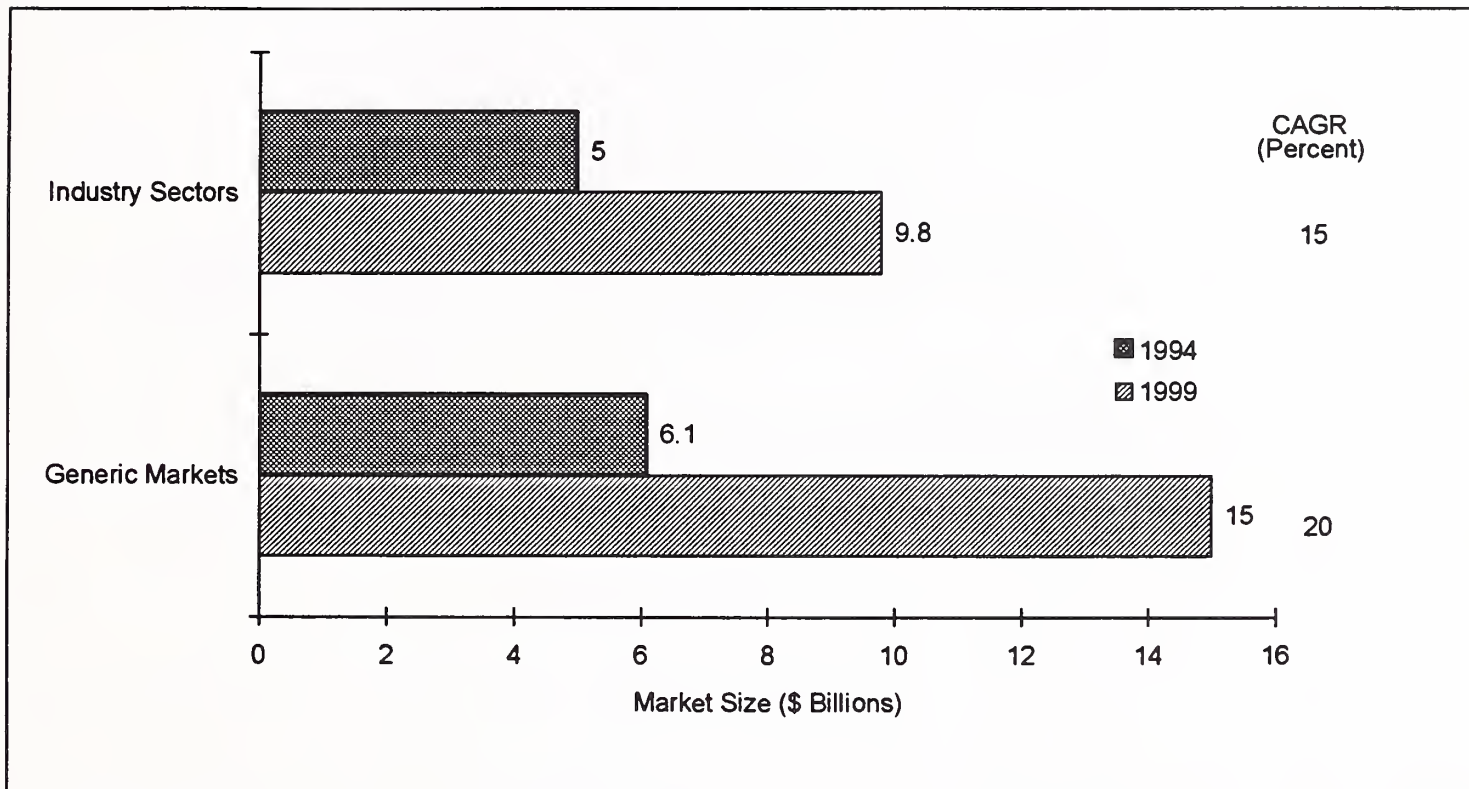
The information content of EIS can be divided into on-line structured databases and text services with news, legal and other textual information. Expenditures for the latter have been smaller, but they are growing at a slightly faster rate, as shown in Exhibit III-8.

Exhibit III-8

Electronic Information Services Market by Submode, 1994-1999

III-8

CAGR
(Percent)

On-line Databases   3.9
                     9.6   19

                                    ▣ 1994
News Services   2.2   20
                 5.4   ▨ 1999

0   1   2   3   4   5   6   7   8   9   10

Market Size ($ Billions)
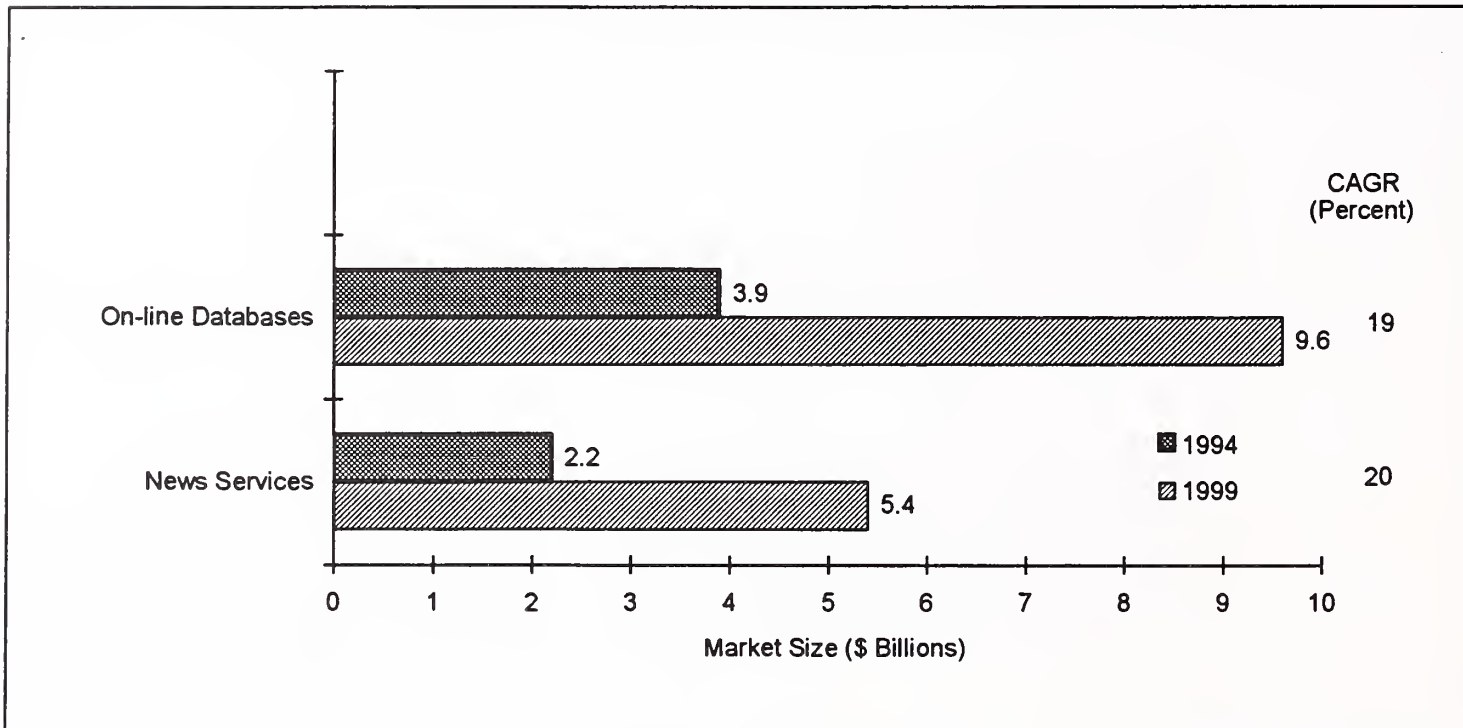
Based upon total expenditures, EIS are used much more in banking and finance, process manufacturing and business services than in other industry sectors, as shown in Exhibit III-9. The use of EIS is growing more rapidly in other sectors, however, including discrete manufacturing, telecommunications and retail distribution. This growth is due, in part, to the fact that the use of EIS has been lower in these industries because the benefits were not as apparent as they were for banking, process manufacturing and business services, where the use of financial databases or information on specific processes for materials were easily understood and of interest.

Exhibit III-9

Electronic Information Services Market
User Expenditures by Industry, 1994-1999

Industry Sector	User Expenditures $ Millions		1994-1999 CAGR Percent
	1994	1999	
Discrete Manufacturing	75	185	20
Process Manufacturing	1,073	2,106	14
Transportation	361	839	18
Utilities	31	50	9
Telecommunications	137	335	20
Wholesale Distribution	96	191	15
Retail Distribution	201	507	20
Banking and Finance	882	1,855	16
Insurance	208	361	12
Health Services	451	838	13
Education	194	424	17
Business Services	725	1,315	13
Federal Government	304	410	6
State and Local Government	67	124	13
Miscellaneous Industries	169	295	12
Industry-Specific Total	4,974	9,835	15
Generic Markets	6,120	15,026	20
Total EIS	11,094	24,861	18

Source: INPUT

4. Network Applications Market

As illustrated in Exhibit III-10, the growth of network services is projected to jump from 14% in 1993 to a compound rate of 20% between 1994 and 1999. User expenditures are projected to increase to $6.7 billion in 1999.

Exhibit III-10

U.S. Network Applications Market, 1993-1999
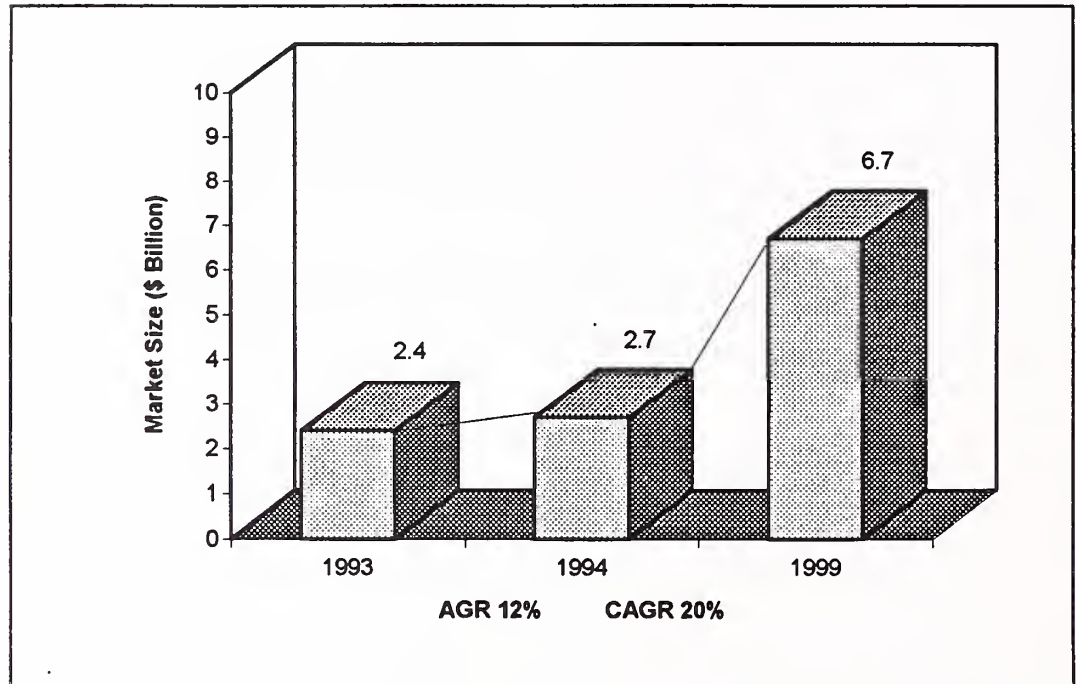
- Expenditures for network applications will grow more rapidly than EIS during the planning period, but will still be only about one-quarter as much as expenditures for EIS in 1999.

- Network applications are projected to grow more rapidly than network information services between 1994 and 1999 because they have the potential to reduce paper movement, postage or other handling charges, and labor and accounting expenses.

The expenditures for network applications by industry sector are shown in Exhibit III-11. Just as for EIS, use is much greater in some sectors than in others.

Exhibit III-11

Network Applications Market
User Expenditures by Industry, 1994-1999

Industry Sector	User Expenditures $ Millions		1994-1999 CAGR Percent
	1994	1999	
Discrete Manufacturing	81	225	23
Process Manufacturing	208	674	27
Transportation	144	366	21
Utilities	4	7	12
Telecommunications	32	85	22
Wholesale Distribution	411	1,330	26
Retail Distribution	130	456	29
Banking and Finance	129	254	15
Insurance	72	169	19
Health Services	344	874	21
Education	104	214	15
Business Services	29	68	19
Federal Government.	915	1,646	12
State and Local Government	115	344	24
Miscellaneous Industries	12	24	14
Industry Specific Total	2,730	6,736	20
Generic Markets	NA	NA	NA
Total Network Services	2,730	6,736	20

Source: INPUT

- Use is highest in the federal government, where there is a considerable opportunity to realize savings using EDI as well as E-mail and VANs.

- Use is quite low in utilities and miscellaneous industries, due to the focused nature of the utility, agriculture and construction industries.

Very high rates of growth can be seen for network applications in retail and wholesale distribution, where the use of EDI has been aggressively promoted. The expanding use of E-mail, bulletin boards and work group network applications will also drive the use of network applications.

5. The Internet Market

As indicated in Chapter 2, the Internet will play a key role in the global and US. information systems and information services markets for the

foreseeable future. The 1995-2000 Network Services report will chronicle the growth and size of this market segement, based upon the data gathered in 1995 by INPUT's new Internet Market Analysis Program. Note that Internet expenditures are not included in the network services forecasts contained in this report.

As a preliminary view of the current state of and potential for the Internet market, however, INPUT has developed a document, Internet Market Projections, which summarizes the initial INPUT Internet projections presented by INPUT's president in a series of recent speeches to industry executives. A free copy of this document can be obtained by calling your nearest INPUT office.

The market size estimates contained in the Internet Market Projections identify a 1994 worldwide Internet market of approximately $1 billion, growing to $200 billion in 1999. In 1994, U.S. expenditures represent the major portion of this market. By 1999, U.S. expenditures will account for only 60% of the worldwide market, or about $116 billion. Of the $116 billion, $81 billion is forecast to be for business-related products and services, while $35 billion comes from recreational use. These figures, including market percntages are summarized in Exhibit III-12 below.

Exhibit III-12

U.S. Internet Market, 1999
(Total Market $116 Billion)

IV
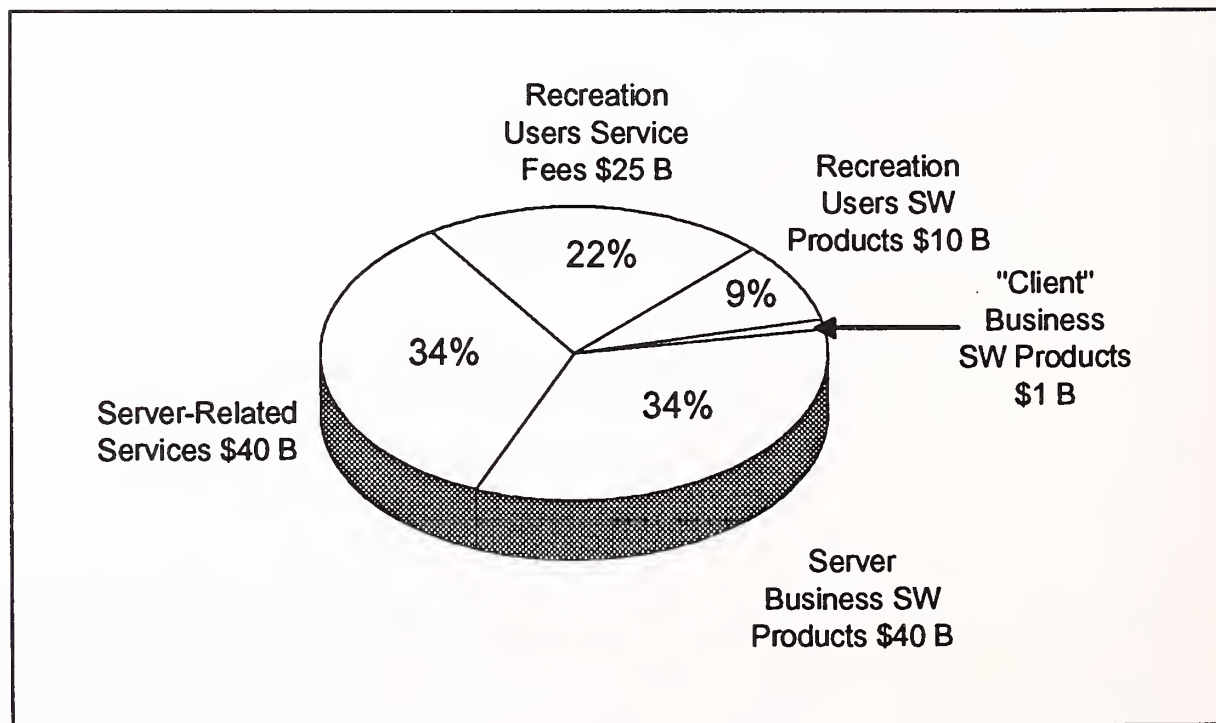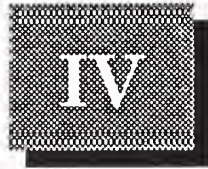
Competitive Analysis

A
Vendor Business

1. Services Offered

The largest subsector of network services is EIS, which accounts for about 80% of expenditures. The major vendors in this subsector are the largest vendors in the network services marketplace, as illustrated in Exhibit IV-1.

Exhibit IV-1

Selected Vendors of Network Services—1993 Revenues

Vendor	Network Services Revenue	Type of Service
Dun & Bradstreet	750	EIS
TRW	620	EIS
Mead Data Central	490	EIS
Reuters	337	EIS
CompuServe	315	EIS & VANs
IRI	201	EIS, EDI
GEIS	150	EIS, EDI, E-mail
Advantis	35	EDI, E-mail

Source: INPUT

- The three vendors of EIS at the top of the list in Exhibit IV-1 account for over 10% of the annual revenues from network services.

- The largest vendors of EIS and network services (as a whole) are also focused on the delivery of financial information—including equity and credit data. Some of these vendors, including Dun & Bradstreet and Reuters, originally provided information by means of paper (written/printed material) before they offered electronic delivery.

A number of network services vendors now provide both EIS and network applications services to customers, as exemplified by CompuServe and IRI in Exhibit IV-1. Of 10 EIS vendors that were interviewed, eight offered network application services as well.

- One of these vendors, GEIS, noted that it offered an on-line database service (EIS) through Genie, as well as network applications including EDI, VANs and E-mail.

- Three of the larger vendors of EIS—Dun & Bradstreet, Dialog and CompuServe—also offer E-mail, and CompuServe offers VAN capabilities.

A number of network services vendors offer only one subsector of such services. Network application vendors such as Sterling and Harbinger do not offer EIS, and EIS vendors such as Mead Data Central and Chemical Abstracts (CAS) do not offer network applications. Some EIS vendors (including Reuters and D&B) have started to introduce some network applications—such as the delivery of special requests by E-mail—in order to support their EIS business or obtain additional revenue. A respondent from Reuters stated that its main purpose in introducing new network services is to increase revenue from target markets.

2. Vendor Perspective on Drivers and Inhibitors

A number of EIS vendors report that their services are driven by user needs, whereas vendors of network applications report that their services are driven by cost savings and convenience, as shown in Exhibits IV-2A and IV-2B. This tends to correspond in general with the findings reported by users in Chapter II.

Exhibit IV-2A

Vendor Assessment of EIS Drivers

Driver

Driver	Value
User Needs	67
Accuracy, Timeliness, and Range of Data	58
Ease of Use	50

Percentage of Respondents

(Multiple responses by vendors)
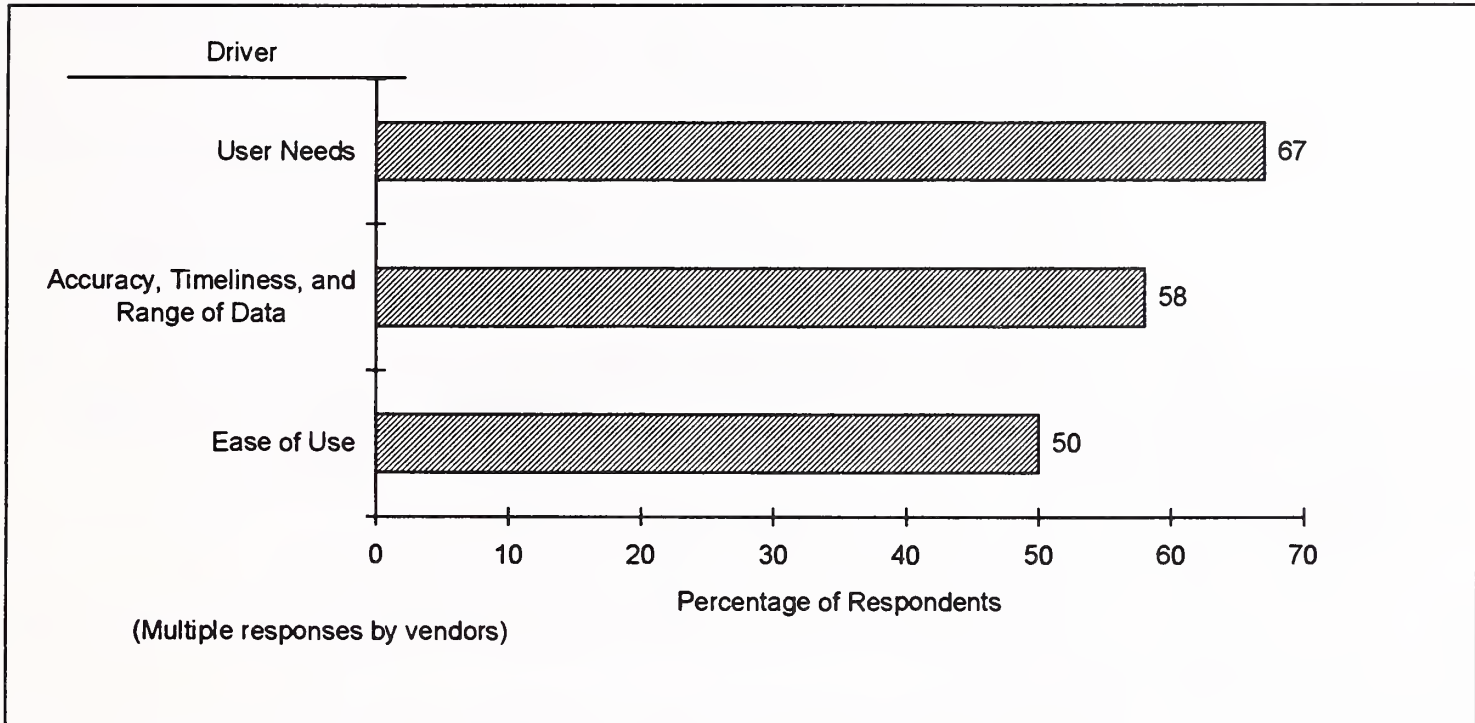
Source: INPUT

Exhibit IV-2B

Vendor Assessment of Network Applications Drivers

Driver

Driver	Value
Cost Savings	92
Ease or Convenience of Systems	58
Necessary for Business Partner	33

Percentage of Respondents

(Multiple responses by vendors)
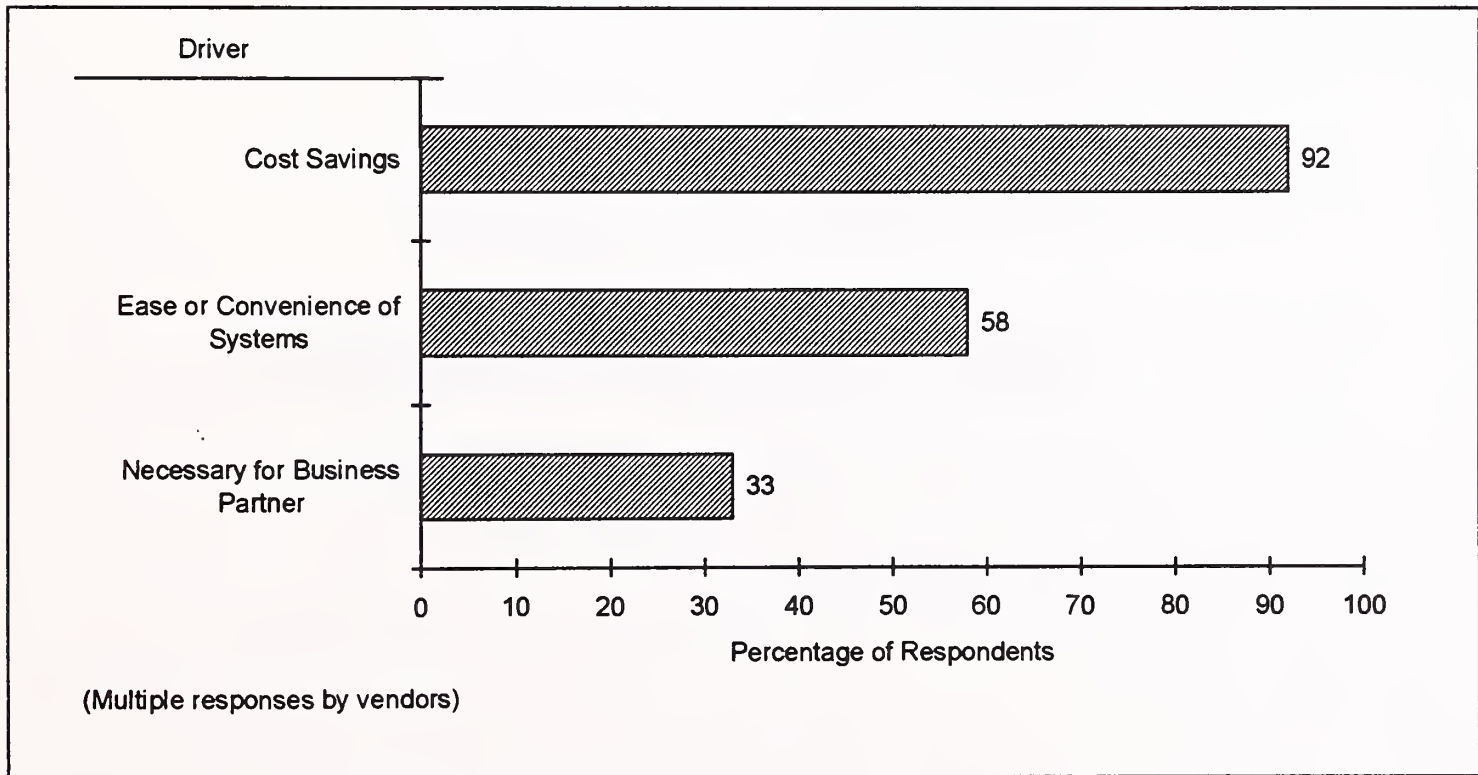
Source: INPUT

- EIS vendors also feel that breadth of information being provided and ease of access or use can be drivers. Several EIS vendors pointed out that their service requires constant review of the information being offered and ease of access in order to maintain competitiveness.

- Vendors offering network applications noted that cost savings and ease of use were key motivators, but also reported that features such as communication with overseas locations or the ability to speed up delivery were also drivers. In addition, they reported that expanded features in the use of E-mail or EDI could drive use.

Vendors are not highly concerned about factors that might inhibit growth of their services, as shown in Exhibit IV-3. Users showed much more concern about inhibiting factors, as discussed in Chapter II.

Exhibit IV-3

Factors that Can Inhibit Network Services Growth

(Multiple answers supplied by some respondents)
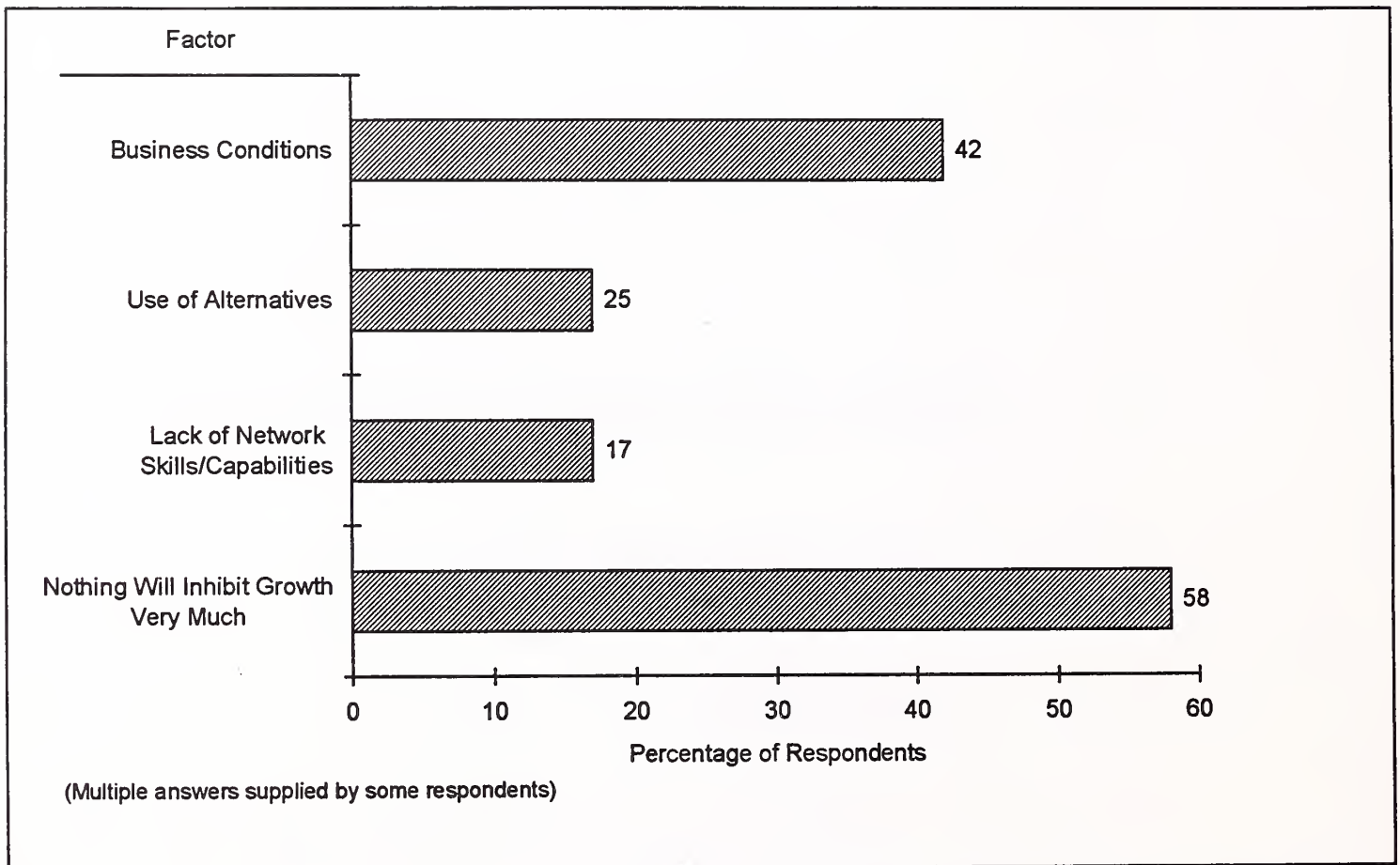
Source: INPUT

- Although over half the vendors felt that use of network services would increase despite any inhibiting factors, almost 40% of EIS users reported that there were factors that could have a negative impact on their use.

• About 30% of network application users felt that there were negative factors that could impact their use.

Vendors feel that the trend toward increased use of network services is sufficiently strong to overcome near-term factors that might inhibit use. . Vendors also are not perturbed about the fact that some clients or prospects might seek alternatives to their services, as considered in Exhibit IV-4.

Exhibit IV-4

Vendor Reaction to Service Alternatives

Possible Alternative	Reaction of Network Services Vendors
CD ROM in place of some use of EIS	Can only be used for static data We can sell it if users are interested
Fax in place of some E-mail or EDI	It will have limited use It will be used for less important items

Source: INPUT

• EIS vendors note that they are aware of the use of or plans for the use of CD ROM in their accounts. However, most vendors feel that, to meet user demands, they can offer more strategic or interesting static data on CD ROM as a supplement to their present on-line services. They recognize that users can save money or obtain-an-easy to use service to meet some needs through CD ROM, but they feel that this service is so limited that it won't really have a significant effect on their sales.

• Several vendors of E-mail and EDI noted that fax may be an alternative to their service in limited circumstances, but they didn't feel that it would have a significant effect.

Because vendors feel that alternatives to their services will have little impact on their business, they may not pay sufficient attention to competitors offering such services or products at accounts of interest to them. Some competitors would also benefit from the use of presentations on alternative services as a means of penetrating accounts.

B
Competitive Positioning

1. Vendor Strategies

As noted in section A, a number of network services vendors are expanding the number of network services that they offer. In addition, many services are being upgraded, as noted in Exhibit IV-5.

Exhibit IV-5

Expanded Features/Services
Planned for Network Services Market

- Expansion of EIS to cover more industry niches
- More granularity of data in EIS
- Increased data available on CD ROM
- More powerful E-mail products
- EDI capabilities that support workflow moves
- Expanding use of or plans for multimedia
- Faster and more flexible network technology

Source: INPUT

- More categories of data and more granularity are included in EIS for financial markets as well as for technical, industry and other users. In addition, more textual material from financial and technical sources is being provided in text databases.

- There are improvements in user interfaces and controls being made and significant efforts are under way to provide or consider providing   · multimedia, including graphic, picture, film and sound capabilities, with on-line data.

There have been significant announcements of new services in 1994, including those from MCI and Microsoft. The most striking announcement is the new service that Microsoft is calling "Network Services." This service will be similar to America Online, Prodigy and CompuServe, and include news, weather, financial, business, science, technology, education and other on-line information in 35 countries and 20 languages—as well as offer network applications. Software to use it will be bundled with Windows 95, which will make it automatically available (and tempting to try) to many individuals and companies. Several competitors have complained that this is unfair competition. Microsoft has also announced that providers will have more say in the

MMNE

presentation and pricing of what they offer through "Network Services," and users will benefit from decreasing charges for ongoing service.

• Microsoft is attempting to enter the network services field with a dominant or very strong offering based on its technological strength. Other vendors—including MCI, Oracle and leading foreign information services companies—are also taking or planning to take steps to use their technological capabilities in the network services sector.

• In many cases, new or expanded offerings will offer multimedia capability to provide additional capabilities and attract user attention.

2. Plans for Multimedia

As indicated previously, many vendor responses indicate that they have been thinking of the potential for multimedia products and services in their current business. Only two of 15 network services vendors that were interviewed or contacted during this study did not expect to use multimedia capabilities in the near future.

• All respondents who offered EIS claimed that they were offering or planning to offer multimedia services.

• Some of these respondents emphasized the use of software products such as Notes that could make it easier to deliver multimedia. Others were taking specific steps, such as making it easier for clients to choose the delivery of data in new graphical presentations rather than only in tables or spreadsheets.

Some of the multimedia services being offered or considered are shown in Exhibit IV-6. Several industry experts have pointed out that these and other so-called multimedia offerings do not really constitute multimedia since they involve a greater variety of output (such as pictures or graphics as well as data), but only in one "medium." However, many vendors feel that a step beyond data or text on the screen, such as still pictures as well as moving pictures or voice (audio), should be thought of as an additional medium.

Exhibit IV-6

Multimedia-Related Plans and Offerings for Network Services

Dow Jones Telerate	Deliver video of trading data to customers
Reuters (newly formed subsidiary)	Plan to deliver multimedia services to financial market and also health and education markets
MCI (together with selected allies)	Offering on-line, interactive catalogs, EDI capabilities, E-mail and video-conferencing services
AT&T	Among other plans, texts of multimedia on phone lines and improved "help desk" capabilities
Prodigy	Integrated, interactive TV and E-mail in "America's Talking" program
Bloomberg Financial	Plan to deliver video clips, text, audio and still images to customers
Lotus Notes	Will be used on the Internet as a means of accessing EIS (on-line databases) and delivering EIS data together with graphs, films or other media

Source: INPUT

3.   Plans for New Network Technology

Ninety percent of vendor respondents report that they have taken or plan to take steps to upgrade network technology. In most cases, vendors have kept users well aware of plans or pending changes. This is necessary because users would have to be prepared for changes to facilities. In addition, many users have definite ideas about the changes that they feel should be made to improve their services, as was indicated in Chapter II.

V
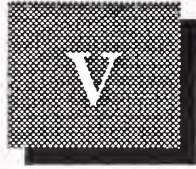
Conclusions and Recommendations

A
Conclusions

Although the rate of growth of network services was not as high in 1993 as in previous years, the rate of growth of both EIS and network applications increased in 1994 and promises continued strength through 1999. A significant fact about the network services market is that it is growing more strongly than a number of other information services markets, as pointed out in Exhibit V-1.

Exhibit V-I

Conclusions

- Expenditures for network services are growing at a faster rate than for most other information services.

- Users are interested in enhancements to network services that can improve the effectiveness of these offerings.

- Multimedia enhancements are of interest to both vendors and users of network services.

- Alliances and acquisitions are being made to improve network services capabilities.

- Significant new offerings, such as the Microsoft Network, will have an impact on other vendors.

Source INPUT

- The growth of user expenditures is greater for network services than for any other product/service sector. Outsourcing is only one percent behind in CAGR at a rate of 17%, but all other sectors are noticeably lower in growth. However, the rate of growth of expenditures for the software product submarkets for workstation/PCs is slightly higher.

- From an industry perspective, only telecommunications has a growth rate for user expenditures (19%) that is higher than that of network services (18%). No cross-industry market is growing at over 15%.

Many changes and additions are taking place in network services to meet user needs as well as to differentiate services for competitive advantage. Vendors are adding new modes of delivery to their services and expanding the amount of data and/or capabilities offered with their services, as discussed in the previous chapter. In addition, vendors are adding or experimenting with multimedia services as a means of adding value to their services or attracting clients from competitors.

- The use of multimedia has proven to add value to the use of information, as noted in the conclusions in Exhibit V-1. Graphs and new ways of presenting data graphically make it possible to review data more rapidly. Pictures and film strips add value to textual material. "Voice-over" and other audio techniques can quickly point out items of interest.

- The high level of interest in multimedia (on the part of both users and vendors of network services) suggests that this service sector will play a leading role in the implementation of the concept of the information super highway.

Together with expansions in the capabilities of network services vendors, there has been a considerable increase in the use of network technology. Some vendors have made use of new modes of network delivery, such as the Internet or the services of large communications carriers. Vendors are also planning means of expanding bandwidth in order to deliver multimedia.

The desire to offer more features and network capabilities has led to a number of arrangements, alliances and acquisitions by providers of network services.

- Both Reuters and Dun & Bradstreet are using Lotus Notes to deliver expanded capabilities.

- Reuters has acquired Reality Technologies in order to gain access to 25,000 on-line subscribers in the consumer marketplace that need aid in monitoring investments and trading.

- America Online, which offers access to over 100 databases and has an E-mail service, has formed an alliance with Shoppers Express that provides interactive grocery and pharmacy shopping and delivery.

• Dow Jones—which offers 70 databases with information from over 1,700 sources, including data and news text—has made an arrangement with MCI to utilize its electronic mail service.

B
Recommendations

As summarized in Exhibit V-2, this is a time for vendors of network services to consider what enhancements or additions to their services could be made to gain increased market share or revenue, or to protect their offerings from powerful new competitors such as Microsoft. There will be opportunities to add additional data to current EIS (on-line databases) or to market subsets of on-line data that are relatively static on CD ROM. E-mail will be used to deliver custom searches for or presentations of data from EIS. Multimedia service additions (even on an experimental basis) will be desirable to current customers or to prospects.

Exhibit V-2

Recommendations

Recommendations
• Take advantage of expanding user interest in network services.
• Investigate needs of users and prospects to uncover opportunities and interest in competitive announcements.
• Introduce or experiment with multimedia offerings, if possible.
• Consider allies or acquisitions to aid in the introduction of service enhancements.
• Consider offering information services that can be used in conjunction with network services.

Source INPUT

• Vendor research with their own customers and prospects is needed to find out or confirm what specific offerings or services will be of value to clients and/or what will cause them to consider the new or enhanced offerings of a competitor. Proceeding without research will involve a high degree of risk.

• The use of allies or acquisitions should be considered in the supply of new or enhanced services, in order to deliver them faster and at less cost.

The use of multimedia must also be seriously explored by all vendors, because users of network services expect to use this capability in the near

future. It improves the effectiveness of information delivery, and it will also make vendor offerings more competitive.

Another opportunity for vendors of network services is to offer services or products that can aid in the use of EIS or network applications such as processing, outsourcing, software products and/or professional services consulting, training, or software development that might be needed by clients of network services. These services might be needed, for instance, to support the use of EDI for complex payment procedures or the use of on-line equity pricing for the evaluation of collateral.

A
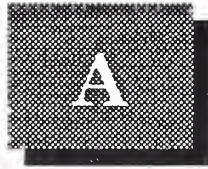
Forecast and Reconciliation

A

Forecast Database

Exhibit A-1 presents the overall 1993-1999 forecast of user expenditures for the network services market. Forecasts for the electronic information services (EIS) and network applications submarkets are presented in Exhibits A-2 and A-3.

Exhibit A-1

User Expenditures Forecast by Market Sector, 1993-1999

MARKET SECTORS	1993 ($)	Growth 93-94 (%)	1994 ($)	1995 ($)	1996 ($)	1997 ($)	1998 ($)	1999 ($)	CAGR 94-99 (%)
Total All Sectors	11993	15%	13824	16137	19086	22538	26679	31597	18%
Vertical Industry Markets	6838	13%	7704	8811	10221	11960	14092	16571	17%
Banking and Finance	897	13%	1011	1151	1327	1542	1798	2109	16%
Business Services	691	9%	754	826	913	1037	1197	1383	13%
Discrete Manufacturing	129	21%	156	189	229	278	338	410	21%
Education	254	17%	298	348	404	469	547	638	16%
Federal Government	1232	-1%	1219	1300	1432	1597	1830	2056	11%
Health Services	671	18%	795	904	1048	1232	1448	1712	17%
Insurance	258	9%	280	317	360	409	465	530	14%
Miscellaneous	161	12%	181	204	231	261	286	319	12%
Process Manufacturing	1110	15%	1281	1477	1719	2021	2390	2780	17%
Retail Sales	271	22%	331	408	503	624	775	963	24%
State and Local Government	152	20%	182	219	264	318	386	468	21%
Telecommunications	142	19%	169	203	243	292	350	420	20%
Transportation	427	18%	505	596	719	850	1013	1205	19%
Utilities	32	9%	35	38	43	47	52	57	10%
Wholesale Sales	411	23%	507	631	786	983	1217	1521	25%
Other Markets	5155	19%	6120	7326	8865	10578	12587	15026	20%
- On-line Databases	3365	17%	3937	4685	5669	6775	8062	9594	19%
- On-line News Services	1790	22%	2183	2641	3196	3803	4525	5432	20%

Exhibit A-2

Electronic Information Services User Expenditures
Forecast by Market Sector, 1993-1999

MARKET SECTORS	1993 ($M)	Growth 93-94 (%)	1994 ($M)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	CAGR 94-99 (%)
Delivery Submode Total	9544	16%	11094	12949	15298	17972	21125	24861	18%
Vertical Industry Markets	4389	13%	4974	5623	6433	7394	8538	9834	15%
Banking and Finance	785	12%	882	1006	1162	1352	1578	1855	16%
Business Services	665	9%	725	795	879	998	1150	1315	13%
Discrete Manufacturing	62	21%	75	90	108	128	154	185	20%
Education	162	20%	194	228	265	309	362	424	17%
Federal Government	326	7%	304	317	336	355	385	410	6%
Health Services	380	19%	451	499	575	654	733	838	13%
Insurance	192	8%	208	232	260	290	323	361	12%
Miscellaneous	148	14%	169	190	215	243	265	295	12%
Process Manufacturing	915	17%	1073	1216	1389	1600	1856	2106	14%
Retail Sales	171	18%	201	241	289	348	421	507	20%
State and Local Government	56	20%	67	76	86	97	110	124	13%
Telecommunications	115	19%	137	164	195	235	280	335	20%
Transportation	305	18%	361	425	509	598	709	839	18%
Utilities	29	7%	31	34	38	41	45	50	10%
Wholesale Sales	78	23%	96	110	127	146	167	191	15%
Generic Markets	5155	19%	6120	7326	8865	10578	12589	15026	20%
On-line Databases	3365	17%	3937	4685	5669	6775	8062	9594	19%
- Securities	1350	17%	1574	1857	2285	2725	3215	3794	17%
- Credit	1650	17%	1925	2300	2748	3284	3925	4690	19%
- Economic/Other	365	19%	438	528	636	766	922	1110	20%
On-line News Services	1790	22%	2183	2641	3196	3803	4525	5432	20%
- Bibliography/Text	560	23%	686	820	980	1170	1399	1670	19%
- News	1230	22%	1497	1821	2196	2633	3126	3762	20%

Exhibit A-3

Network Applications User Expenditures
Forecast by Market Sector, 1993-1999

MARKET SECTORS	1993 ($M)	Growth 93-94 (%)	1994 ($M)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	CAGR 1993 (%)
Delivery Submode Total	2441	12%	2730	3188	3788	4590	5554	6736	20%
Vertical Industry Markets	2441	12%	2730	3188	3788	4590	5554	6736	
Banking and Finance	114	13%	129	145	165	190	220	254	15%
Business Services	26	12%	29	31	34	39	47	68	19%
Discrete Manufacturing	67	21%	81	99	121	150	184	225	23%
Education	92	13%	104	120	139	160	185	214	16%
Federal Government	906	1%	915	983	1096	1242	1445	1646	12%
Health Services	291	18%	344	405	473	602	715	874	20%
Insurance	66	9%	72	85	100	119	142	169	19%
Miscellaneous	13	92%	12	14	16	18	21	24	15%
Process Manufacturing	185	12%	208	261	330	421	534	674	27%
Retail Sales	100	30%	130	167	214	276	354	456	29%
State and Local Gov.	96	20%	115	143	178	221	276	344	24%
Telecommunications	27	19%	32	39	48	57	70	85	22%
Transportation	122	18%	144	171	210	252	304	366	21%
Utilities	3	3%	4	4	5	6	7	7	12%
Wholesale Sales	333	23%	411	521	659	837	1050	1330	26%

B

Forecast Reconciliation

Exhibits A-4, A-5 and A-6 present reconciliations with the forecast databases for the 1993 network services report and the two submarkets discussed in that report, EIS and network applications.

Exhibit A-4

1994 Database Reconciliation—Network Services Market

MARKET SECTORS	1993 Market				1998 Market				93-98 CAGR per data '93 Rpt (%)	93-98 CAGR per data '94 Rpt (%)
	1993 Market Frcst ($M)	1994 Report (Actual) ($M)	Variance From 1993 Frcst ($M)	Variance From 1993 Frcst (%)	1993 Market Frcst ($M)	1994 Report Frcst ($M)	Variance From 1993 Frcst ($M)	Variance From 1993 Frcst (%)		
Delivery Modes Total	11926	11993	67	1%	26546	26679	133	1%	17%	17%
Vertical Industry Markets	6781	6838	57	1%	14341	14092	-249	-2%	16%	16%
Banking and Finance	892	897	5	1%	1859	1798	-61	-3%	16%	15%
Business Services	685	691	6	1%	1148	1197	49	4%	11%	11%
Discrete Manufacturing	128	129	1	1%	334	338	4	1%	21%	21%
Education	253	254	1	0%	553	547	-6	-1%	17%	17%
Federal Government	1252	1232	-20	-1%	2278	1830	-448	20%	13%	8%
Health Services	661	671	10	2%	1420	1448	28	2%	17%	17%
Insurance	256	258	2	1%	478	465	-13	-3%	13%	13%
Miscellaneous	158	161	3	2%	286	286	0	0%	13%	13%
Process Manufacturing	1079	1110	21	2%	2265	2390	125	6%	16%	16%
Retail Sales	269	271	2	1%	734	775	41	6%	22%	23%
State and Local Gov.	150	152	2	1%	377	386	9	2%	20%	20%
Telecommunications	141	142	1	1%	349	350	1	0%	20%	20%
Transportation	422	427	5	1%	997	1013	16	2%	19%	19%
Utilities	32	32	0	0%	46	52	6	13%	8%	9%
Wholesale Sales	403	411	8	2%	1217	1217	0	0%	25%	24%
Generic Markets	5145	5155	10	0%	12205	12587	382	3%	19%	19%
On-line Databases	3345	3365	20	0%	7170	8062	892	12%	16%	19%
- Securities	1340	1350	10	1%	2830	3215	385	14%	16%	19%
- Credit	1640	1650	10	1%	3520	3925	405	12%	17%	19%
- Economic/Other	365	365	0	0%	820	922	102	12%	18%	20%
On-line News Services	1800	1790	-10	-1%	5035	4525	-510	-10%	23%	20%
- Bibliography/Text	560	560	0	0%	1560	1399	-161	-10%	23%	20%
- News	1240	1230	-10	-1%	3475	3126	-349	-10%	23%	21%

Exhibit A-5

1994 Database Reconciliation—Electronic Information Services Market

MARKET SECTORS	1993 Market				1998 Market				93-98 CAGR per data '93 Rpt (%)	93-98 CAGR per data '94 Rpt (%)
	1993 Market Frcst ($M)	1994 Report (Actual) ($M)	Variance From 1993 Frcst ($M)	(%)	1993 Market Frcst ($M)	1994 Report Frcst ($M)	Variance From 1993 Frcst ($M)	(%)		
Total Electronic Information Services Mkt.	9534	9552	18	0%	17615	21125	3510	20%	17%	17%
Vertical Industry Markets	4389	4389	8	1%	7365	8538	1173	16%	14%	14%
Banking and Finance	785	793	8	1%	1402	1578	176	13%	16%	16%
Business Services	665	665	0	0%	960	1150	190	20%	11%	12%
Discrete Manufacturing	62	62	0	0%	5	154	30	24%	19%	20%
Education	162	162	0	0%	313	362	49	16%	18%	18%
Federal Government	326	326	0	0%	488	385	-103	-21%		3%
Health Services	380	380	0	0%	610	733	123	20%	13%	14%
Insurance	192	192	0	0%	306	323	17	6%	11%	11%
Miscellaneous	148	148	0	0%	243	265	22	9%	12%	12%
Process Manufacturing	915	915	0	0%	1510	1856	346	23%	14%	13%
Retail Sales	171	171	0	0%	332	421	89	27%	18%	20%
State and Local Gov.	56	56	0	0%	83	110	27	33%	10%	13%
Telecommunications	115	115	0	0%	234	280	46	20%	19%	20%
Transportation	305	305	0	0%	585	709	124	21%	18%	18%
Utilities	29	29	0	0%	38	45	7	18%	7%	9%
Wholesale Sales	78	78	0	0%	127	167	40	31%	13%	14%
Generic Markets	5145	5155	10	0%	10250	12587	2337	23%	19%	20%
On-line Databases	3345	3365	20	1%	6150	8062	1912	31%	16%	19%
- Securities	1340	1350	10	1%	2435	3215	780	32%	16%	19%
- Credit	1640	1650	10	1%	3020	3925	905	30%	17%	19%
- Economic/Other	365	365	0	0%	695	922	227	33%	18%	20%
On-line News Services	1800	1790	-10	-1%	4100	4325	225	5%	18%	19%
- Bibliography/Text	560	560	0	0%	1270	1399	129	10%	18%	20%
- News	1240	1230	-10	-1%	2830	3126	296	10%	18%	20%

Exhibit A-6

1994 Database Reconciliation—Network Applications Market

| MARKET SECTORS | 1993 Market | | | | 1998 Market | | | | 93-98 | 93-98 |
	1993 Market Frcst ($M)	1994 Report (Actual) ($M)	Variance From 1993 Frcst ($M)	Variance From 1993 Frcst (%)	1993 Market Frcst ($M)	1994 Report Frcst ($M)	Variance From 1993 Frcst ($M)	Variance From 1993 Frcst (%)	CAGR per data '93 Rpt (%)	CAGR per data '94 Rpt (%)
Total Network Appplications Market	2392	2441	49	2%	5889	5554	-335	-6%	20%	18%
Vertical Markets	2392	2441	49	2%	5889	5554	-335	-6%	20%	18%
Banking and Finance	107	114	7	7%	219	220	1	0%	15%	14%
Business Services	20	26	6	30%	48	47	-1	-2%	19%	13%
Discrete Manufacturing	66	67	1	2%	186	184	-2	-1%	23%	23%
Education	91	92	1	1%	190	185	-5	-3%	16%	15%
Federal Government	926	906	-20	-2%	1730	1445	-285	-16%	13%	10%
Health Services	281	291	10	4%	720	715	-5	-1%	21%	20%
Insurance	64	66	2	3%	150	142	-8	-5%	19%	17%
Miscellaneous	10	13	3	30%	21	21	0	0%	16%	11%
Process Manufacturing	164	185	21	13%	540	534	-6	-1%	27%	24%
Retail Sales	98	100	2	2%	348	354	6	2%	29%	29%
State and Local Gov.	94	96	2	2%	286	276	-10	-4%	25%	24%
Telecommunications	26	27	1	4%	69	70	1	1%	22%	22%
Transportation	117	122	5	4%	302	304	2	1%	21%	21%
Utilities	3	3	0	0%	5	7	2	40%	14%	18%
Wholesale Sales	325	333	8	2%	1075	1050	-25	-2%	27%	26%

For the 1993 EIS market, vertical markets held to the 1993 forecast made in late 1993, with virtually all variation, none greater than 1%, occurring in generic markets. The reconciliation of the 1998 EIS submarket shows that a general increase in usage is anticipated (except in the federal government) over the forecast expenditures in the prior study. This increase is due to the mounting demand for more detail or granularity in information, as well as the use of information in new areas.

The reconciliation of the network applications submarket shows that there was a shortfall in anticipated expenditures of less than 10% in all market sectors except the federal government, where greater cutbacks are anticipated. The shortfall is due to delay in business use of network applications resulting from the slow recovery in 1993.