INPUT

MARKET FORECAST

Canadian Information
Services Market

1994-1999

Canadian Information Services Market

1994-1999

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INPUT WORLDWIDE

Frankfurt
Sudetenstraße 9
D-35428 Langgöns-
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Germany
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London
17 Hill Street
London W1X 7FB
England
Tel. +44 (0) 71 493-9335
Fax +44 (0) 71 629-0179

New York
400 Frank W. Burr Blvd.
Teaneck, NJ 07666
U.S.A.
Tel. 1 (201) 801-0050
Fax 1 (201) 801-0441

Paris
24, avenue du Recteur
Poincaré
75016 Paris
France
Tel. +33 (1) 46 47 65 65
Fax +33 (1) 46 47 69 50

San Francisco
1881 Landings Drive
Mountain View
CA 94043-0848
U.S.A.
Tel. 1 (415) 961-3300
Fax 1 (415) 961-3966

Tokyo
Saida Building, 4-6,
Kanda Sakuma-cho
Chiyoda-ku, Tokyo 101
Japan
Tel. +81 3 3864-0531
Fax +81 3 3864-4114

Washington, D.C.
1953 Gallows Road
Suite 560
Vienna, VA 22182
U.S.A.
Tel. 1 (703) 847-6870
Fax 1 (703) 847-6872

Abstract

This report on the Canadian information services market for 1994 is INPUT's annual report. It contains projections of growth for 1994 through 1999 for the processing services, applications and systems software products, turnkey systems, systems integration, outsourcing, professional services and network services delivery modes. This report analyzes expenditures for information services by selected industries, including discrete and process manufacturing, finance and banking, insurance, wholesale and retail trade, utilities, telecommunication, business services and the federal government. Interest in client/servers, other technology, open systems, downsizing and outsourcing, is also explored.

Research for this report included data gathering from IT vendors and 148 users about current and projected use of information services, as well as interviews of selected industry experts and reviews of secondary sources of information.

Despite uneven economic conditions, results of the research indicate that recovery has taken place in the Canadian economy, and it is having a positive impact on the use of information services. The use of these services has increased significantly in 1994 and is forecast to increase rapidly. The reaction to NAFTA and competitive pressures are also encouraging more use of information services.

Current and planned increases in usage differ noticeably between market sectors (e.g. manufacturing versus insurance) and delivery sectors (turnkey systems versus outsourcing). Also, the impact of technology, particularly client/server systems, is more significant in some market sectors.

This report contains 130 pages, including 108 exhibits.

Canadian Information Services Market,
1994-1999

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I

Introduction

A
Purpose and Organization

1. Purpose

A description of the improving market for information services and INPUT's 1994 forecasts for the information services market in Canada are presented in this report. It contains a review of 1993 results and estimated expenditures from 1994 to 1999 for the processing and network services, applications and systems software products, turnkey systems, systems integration, outsourcing and professional services delivery sectors. The report includes discussion of recent market issues, trends and technological factors that are influencing the Canadian market. Plans for the use of client/server technology, open systems, downsizing and outsourcing will be discussed also. Reasons for the use of information services vendors will also be analyzed.

The vertical markets covered in detail in the report include finance and banking, insurance, manufacturing, wholesale and retail trade, utilities, business services, telecommunication, and the federal government.

In the previous report less vertical market information was provided. In this report, the number of markets analyzed has been expanded to ten, as listed above. The remaining vertical markets are aggregated and analyzed together as "other markets".

2. Organization

This chapter is the Introduction describing the purpose and organization of the report. The remainder of this report is organized as described below:

Chapter II, Executive Overview, presents an overview of the business environment, changes reported in information technology (IT) budgets, projected use of information services, and analysis of the use of information services by vertical market and geographic region. Comparative ratings of vendors by users and conclusions and recommendations arising from this report are also included in this chapter.

Chapter III, Market Analysis, analyzes factors, including technology, that drive and inhibit the use of information services. Totals for the use of information services by delivery sector and vertical market are developed together with an analysis of the reasons for using information services vendors. Problems encountered with information services vendors are also noted.

Chapter III also includes data from a selected group of interviews where the use of information services may increase substantially. This data provides additional insight into the market and analysis of information services use.

Chapter IV, Information Services Use in Industry Sectors, provides an analysis of the business forces, technological directions, and expenditures for information services in the vertical markets highlighted in this report. A comparison of user ratings for vendors in each market sector is also carried out.

Chapter V, Information Services Market, provides an analysis of expenditures for each product, service sector. The forces driving the use of the product/service sector and factors inhibiting use are discussed. A breakdown of user expenditures by subsectors and comparisons of the use of product/services in different industry sectors are provided.

Appendix A reviews definitions of terms used in this report and Appendix B summarizes information on the user respondents contacted to prepare this report.

Appendix C, which contains the forecast data base, presents a detailed forecast for the Canadian market by information services delivery sectors and selected subsectors, together with a reconciliation to the preceding forecast.

B
Methodology

1. User Data Gathering

The primary research carried out for this report included one hundred and forty-eight interviews that conducted with Canadian users of information services.

- The geographic location of user respondents is shown in Exhibit I-1.

  The number of interviews in each region is generally related to the relative amount of information services business in the region.

- More interviews were held in Ontario than in other areas because Ontario accounts for more information services expenditures than the other geographic areas.

Exhibit I-1

Geographic Location of User Respondents*

*Federal respondents not separated.
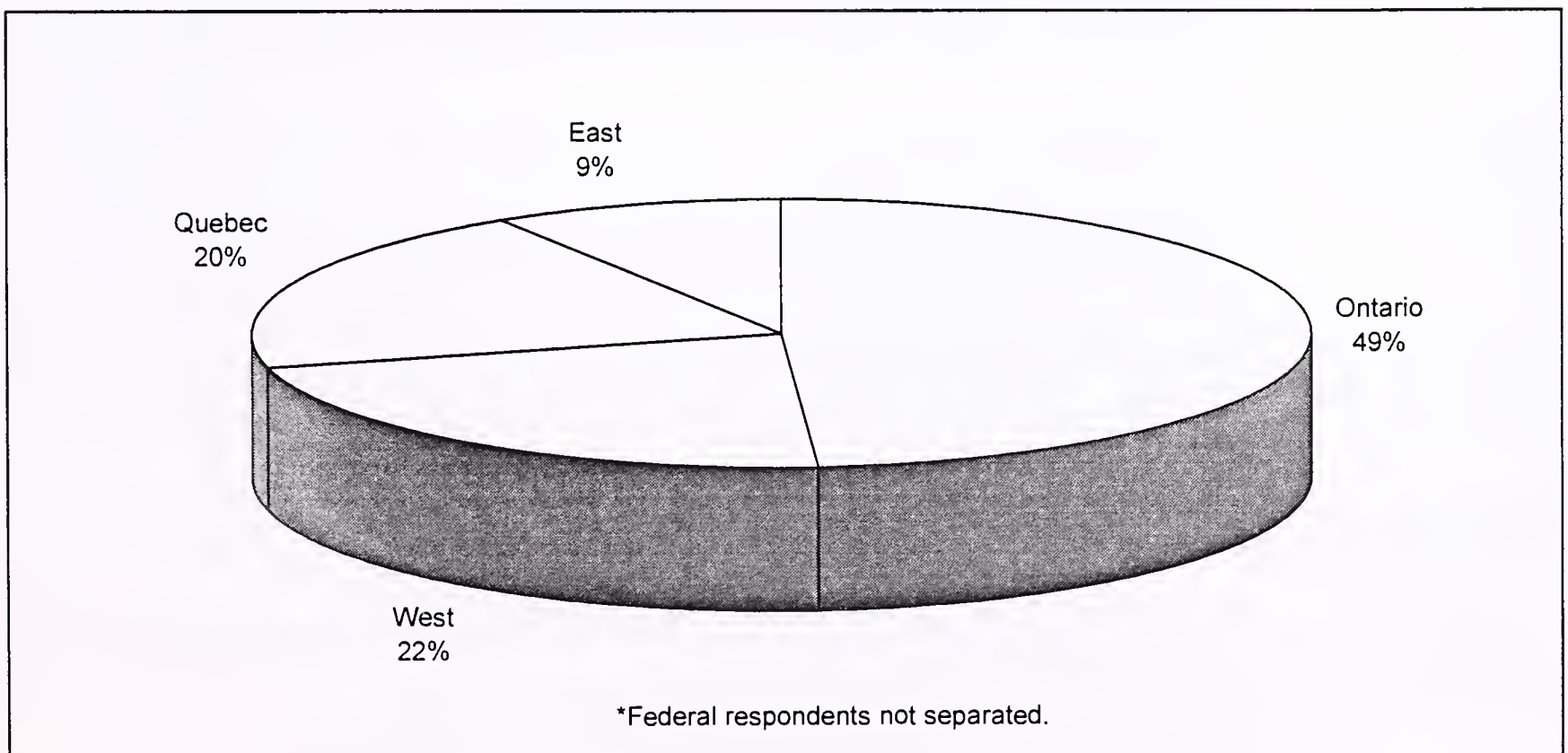
The percentage of interviews by industry sectors is shown in Exhibit I-2. Sufficient information was collected about industries to enable analyses of target market sectors to be made.

Exhibit I-2

Percentage of User Respondents by Market Sector

Vertical Market	Percentage
Manufacturing	26
- Process	16
- Discrete	10
Finance and Banking	14
Insurance	12
Wholesale Trade	12
Utilities	8
Business Services	6
Telecom	6
Retail Trade	4
Other, including Federal Government	12

Secondary research and interviews with 15 vendors (multiple interviews in some cases) were also conducted in support of the study.

2. Market Assumptions

Information on economic and financial conditions was obtained from Canadian sources and factored into the analysis conducted in this report. In particular, a GDP deflator was utilized in developing the forecasts in this report. The market assumptions were reviewed with selected vendors in the Canadian market.

C
Related Reports

Other reports from INPUT that could be of interest in relation to this report include:

- *Worldwide Information Services Forecast, 1994-1999*

- *European Information Services Industry Analysis and Forecast, 1994-1999*

- *U.S. Information Services Industry Forecast Report, 1994-1999*

II
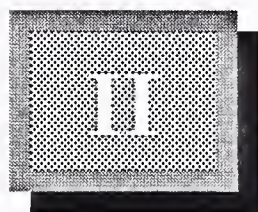
Executive Overview

A
Environment for Information Services

1. Business Environment

Exhibit II-1 lists the general factors that information services users report as important in their business environment, which have encouraged the use of information services.

- The uneven nature of the economy, the stimulus of NAFTA and increasing tax burdens have driven users to reduce costs and increase productivity through increased automation.

- The uneven nature of the economy, as noted by users refers to the fact that economic performance in some areas such as energy and car manufacturing has been much better than in selected areas of retail trade and consumer products, for example.

Business in general seems more vigorous in mid-1994 than it did in 1993. The IMF expects a growth rate of over 3% in Canada during the next two years, and most Canadian sources seem to agree with this estimate.

- Despite trans border purchases to avoid taxes, NAFTA appears more positive than negative in its impact on Canadian business. Trade to the U.S. has picked up due to the value of the Canadian dollar, changes in the calculation of the sales tax calculations in Canada (GST), and improving productivity in Canadian manufacturing.

- Increasing taxes in the U.S. may also aid Canadian trade by raising U.S. prices.

The impact of new information technology, particularly the use of client/servers, is having a significant impact on the Canadian business environment as indicated in Exhibit II-1. Users anticipate that new technology will reduce costs and improve business functions including customer service and sales.

- The rapid growth of outsourced aid in support of desktop and network advances, illustrates the drive to use new technology.

Exhibit II-1

Business Environment

Factor	Relative Importance*
Positive but Uneven Business Conditions	4.2
Impact of NAFTA	3.9
Impact of New Information Technology	3.8
Need to Increase Productivity	3.7
Federal Budget and Taxes	3.7
Limitations in Funding Automation	3.3

Rating: 5 = high and 1 = low.

- The notable success of the R3 integrated set of software, sold by SAP and supported by over four major SI vendors illustrates the appeal of new client/server technology.

2. Forces Driving Use of Information Technology

The factors having an impact on the business environment and driving the use of IT in Canada are different among market sectors, as indicated in Exhibit II-2.

- Cost pressures and movement to client/server technology are most important in manufacturing as factors that drive the use of IT. The impact of NAFTA and steps to improve productivity also drive the use of IT.

- Finance and banking users report that risks and opportunities in lending, pressure to reduce costs and the need to reengineer systems are having an effect on the use of IT. Costs reduction and reengineering are also important factors in the insurance market.

- Wholesale users report the need to cut costs and expand client/server use, as well as increasing trade opportunities, are factors driving the use of IT

- Factors affecting the federal government include pressure to reduce costs as well as to limit budgets. IT use is desirable to meet these objectives.

Factors Affecting Key Market Sectors

Industry	Key Factors Reported by Respondents
Manufacturing	• Cost pressure • Use of client/server technology • Impact of NAFTA • Need for increased productivity • Tax burden
Banking/Finance and Insurance	• Lending risk and opportunities • Need for client/server technology • Pressure to cut costs • Need to re-engineer systems • Tax burden
Wholesale Trade	• Pressure to cut costs • Increasing trade opportunities • Need to expand client/server use • Need to increase productivity • Need to upgrade service
Federal Government	• Very tight budgets • Need for automation upgrade
Utilities and Telecom	• Pressure to increase productivity and cut costs • Need for service improvement • Need to upgrade/re-engineer systems • Actions to use new IT • Regulatory changes/actions

Utilities and telecommunication users show interest in using IT for increased productivity and cost reduction, but also emphasize interest in improving service and upgrading business and automated systems through IT use. New storage and network technology as well as client/servers are of interest in upgrading systems.

3. Impact on Information Technology Budgets

In order to reduce costs, improve productivity, reengineer and upgrade business functions and increase use of client/server technology user respondents forecast an increase in IT budgets in 1994, as indicated in Exhibit II-3.

- The forecast of growth for user respondents is lower on the average for the largest respondents. Larger firms that were interviewed are much more automated and are likely to make a smaller change on a percentage basis.

- Respondents were less sure of the level of increase needed in the IT budget over a period of five years, although most felt a definite near-term need, through 1993 and 1994, to increase expenditures for IT. This is somewhat due to the fact that many users expect near-term expenditures for downsizing or outsourcing work to lead to reductions in budgets over a period of five years.

Exhibit II-3

Growth Forecast in IT Budget in 1994

Forecast	Increase 1994 vs. 1993 (Percent)
Average Growth Forecast by Respondents	7.5
Average Growth Forecast by Largest Organizations > $1 Billion Canadian in Annual Revenues	6.8

As Exhibit II-4 illustrates, the forecast of IT budget growth in 1994 is highest in Ontario. A high level of business expansion in Ontario, particularly in exports supports that growth.

- Quebec will also participate in growth through export expansion that together with other factors will cause an increased level of IT use.

- Western Canada is not far behind Quebec in the forecast of IT growth. It has been the leading area for economic growth in Canada in the recent past, based on development in the energy and mining sectors.

- Users in the Eastern region and the conference board expect Eastern or Atlantic Canada to lag in economic growth, and this will be reflected in slower growth of IT budgets.

Exhibit II-4

Forecast IT Budget Growth in 1994 by Region

Region	Percentage
Ontario	8.1
Quebec	6.1
West	5.8
East	4.1

A forecast of IT budget growth by market sector, summarized in Exhibit II-5, reveals that the highest level of growth is expected in manufacturing, where business recovery has been better than average.

- Forecasts of growth for IT budgets are high, because business in general is calling on IT to improve functions and reduce costs.

- Finance and banking, insurance, wholesale distribution and utilities all forecast a moderate level of growth of IT budgets, but large enough to support substantial growth of information services expenditures. Telecommunication ranks just above these delivery markets as an area of expansion in IT budgets.

Exhibit II-5

Forecast IT Budget Growth in Key Market Sectors

Market Sector	Growth in 1994 (Percent)
Manufacturing	14
Business Services	12
Telecom	9
Finance and Banking	7
Wholesale Trade	7
Insurance	6
Utilities	6
Retail Trade	5

B
Information Services Market, 1994-1999

The rate of growth of the information services market will increase more rapidly over the next five years, than was estimated in the previous report, driven by increases in trade and general recovery in the economy. As illustrated in Exhibit II-6, this will lead to a compound annual growth rate (CAGR) of 12% between 1994 and 1999, while expenditures increase from $6.4 billion to $11 billion Canadian.

Exhibit II-6

Canadian Information Services Market 1994-1999
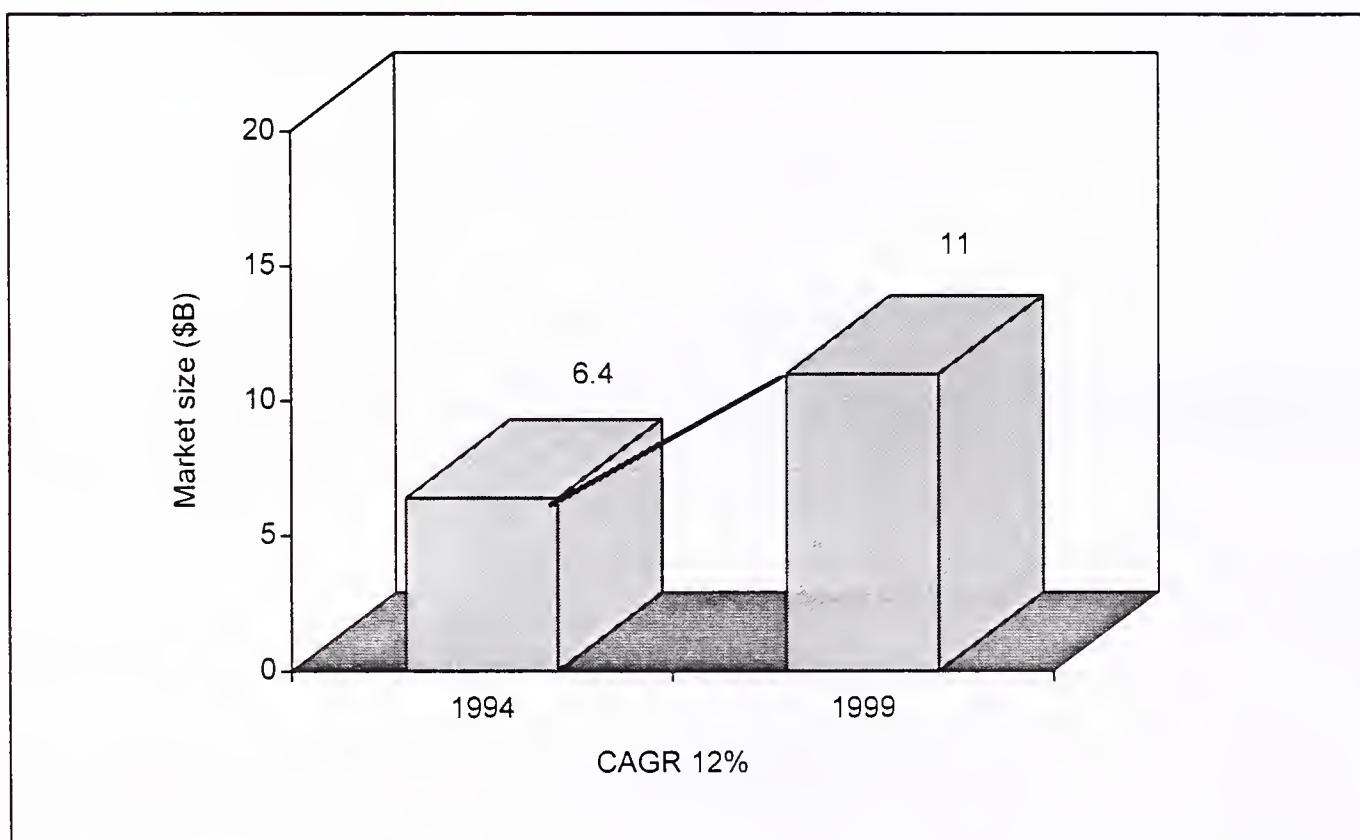
Two thirds of expenditures are projected to be made in Ontario, as indicated in Exhibit II-7.

- The division of expenses among geographic offices and the federal government would be as shown in Exhibit II-8.

- If expenditures for federal government offices and projects are counted separately, expenditures of the federal government are only outranked by those of Ontario.

Exhibit II-7

Division of Information Services Expenditures
by Geographic Area, 1994

Area	Percentage of Total Expenditures
Ontario	65
Quebec	15
West	19
East	1

Exhibit II-8

Geographic versus Federal Share of Expenditures, 1993

Category	Market Share (Percent)
Ontario	55
Quebec	12
West	16
East	1
Federal Government	16

As shown in Exhibit II-9, a breakdown of the use of information services by respondents indicates that professional services and applications software products are the most frequently used delivery sectors.

- Systems software products and network services rank third and fourth in frequency of usage.

- Systems integration and outsourcing involve more expenditures per contract, on the average, however.

- Although, professional services is the largest sector of information services in dollar volume in 1994 and is forecast to be the largest sector in 1999, a comparison of the projected increase in expenditures forecast for 1994 to 1999, shown in Exhibit II-10, reveals that outsourcing will have the greatest increase in annual expenditures.

Exhibit II-9

Respondent Use of Information Services

Delivery Sector	Percent of Respondents Acquiring Products/Services in 1994
Processing	26
Turnkey	21
Applications Software	65
Outsourcing	32
Systems Integration	29
Professional Services	66
Network Services	51
Systems Software	60

- The high growth rate is the result of plans to outsource information systems, as well as plans to have knowledgeable vendors outsource aid for desktop systems and management of networks.

- In addition to outsourcing of IT related work, outsourcing has spread to work handling business processes by IT vendors but revenues from non IT work are not included in information services totals reported in this study.

Manufacturing and banking/finance have the highest levels of opportunity among vertical markets for outsourcing of business processes.

Exhibit II-10

Largest Gains in Information Services Delivery Modes, 1994-1999

Delivery Mode	CAGR 1994-1999 (Percent)	Projected Increase in Annual Expenditures 1994-1999 ($ Millions)
Outsourcing	18	1,103
Professional Services	11	1,071
Applications Software Products	12	676
Systems Integration	11	596

Exhibit II-11

Significant Gains in Information Services Expenditures

Market Sector	Increase in Annual Expenditure 1994-1999 ($ Millions)	CAGR 1994-1999 (Percent)
Discrete and Process Manufacturing	993	14
Banking and Finance	754	12
Telecom	226	16

* The increases in expenditures planned for information services between 1994 and 1999 show that banking and manufacturing have the highest dollar increase, as shown in Exhibit II-11.

* A review of key market sectors, shown in Exhibit II-12, indicates that manufacturing and banking/finance have the largest shares of expenditures in 1994.

Exhibit II-12

Share of Information Services Expenditures by Key Market Sectors, 1994

Vertical Market	Share (Percent)
Manufacturing	16
Banking and Finance	15
Federal Government	11
Insurance	5
Business Services	4
Wholesale Trade	3
Telecom	3
Utilities	2
Retail Trade	2

The federal government sector is third highest in expenditures in 1994, but its growth rate of 3% between 1994 and 1999 is substantially below that of the other key segments. Insurance and business services rank fourth and fifth in shares of expenditures in 1994 and offer more opportunities for new expenditures in the next years than the federal government.

C
Vendor Competition

As shown in Exhibit II-13 vendors of information services in the Canadian market tend to serve a number of market sectors and offer multiple delivery modes.

- A number of the firms including Andersen Consulting, Price Waterhouse, SHL and IBM also offer management consulting.

Exhibit II-13

Market Shares of Leading Vendors of Information Services Canadian Market, 1993

Company	Market Share (Percent)*	Key Products/Services
Andersen	5-10	Professional services, SI
CGI	under 5	Professional services, SI, systems operations
DEC	5-10	Software products, SI, professional services, network services
DMR	under 5	Professional services, SI
EDS	under 5	Systems operations, professional services
IBM	over 10	Software products, professional services, SI, processing, SO
ISM	5-10	Processing, systems operations, professional services (subsidiary of IBM)
IST	under 5	Processing, turnkey systems, professional services
LGS	under 5	Professional services, software products
SHL	5-10	SI, systems operations, professional services

* Noncaptive information services

- Most vendors serve four or more industry markets, as well.

Exhibit II-4 shows that the total number of vendors mentioned more than twice by user respondents in relation to information services assignments amounted to 18. The figures do not allow for instances in which users would not discuss vendors for various reasons such as a desire to maintain confidentiality about projects.

Exhibit II-14

Vendor Recognition by User Respondents

Vendor	Percentage of Users Who Rank Work of Vendor (Percent)
Andersen Consulting	29
Bell Sygma	3
CGI	22
Cognos	5
Computer Associates	2
Computer Task Group	4
Coopers & Lybrand	32
DEC	37
DMR	41
EDS	17
Ernst & Young	32
HP	3
IBM	63
LGS	25
Microsoft	10
Oracle	5
Price Waterhouse	25
SAS	2
SHL	32
Unisys	4

Vendors were rated at different levels by respondents for strategic consulting, systems building and technical consulting capabilities.

- The average rating for strategic consulting was highest for Andersen Consulting, as shown in Exhibit II-15.

- IBM Ernst & Young and LGS followed closely in ranking for strategic consulting. This type of service dealt with planning for projects (including re-engineering), designing systems, and selecting the information technology to be used.

Exhibit II-15

User Rating of Vendors by Strategic Consulting Capabilities

Vendor	Rating of Strategic Consulting*
Andersen Consulting	3.9
Bell Sygma	3.2
CGI	3.3
Coopers & Lybrand	3.5
DEC	3.2
DMR	3.3
EDS	3.4
Ernst & Young	3.7
IBM	3.7
LGS	3.6
SHL	3.4

*Rating: 5 = high, 1 = low.

Exhibit II-16 indicates that LGS led in the average ranking for systems building, followed closely by Andersen, IBM and EDS.

Exhibit II-16

User Rating of Vendors by Systems Building Capabilities

Vendor	Rating of Systems Building*
Andersen Consulting	3.7
Bell Sygma	3.2
CGI	3.6
Coopers & Lybrand	3.1
DEC	3.2
DMR	3.4
EDS	3.6
Ernst & Young	3.5
IBM	3.6
LGS	3.9
SHL	3.3

*Rating: 5 = high, 1 = low.

IBM led in the ranking for technical consulting with Andersen and CGI following closely as shown in Exhibit II-17. This work is generally associated with supplying personnel with high levels of technical skills for professional services or SI assignments or to aid in solving problems in the use of processing, outsourcing or other services.

Exhibit II-17

User Rating of Vendors by Technical Consulting Capabilities

Vendor	Rating of Technical Consulting*
Andersen Consulting	3.6
Bell Sygma	3.5
CGI	3.4
Coopers & Lybrand	3.2
DEC	3.4
DMR	3.4
EDS	3.3
Ernst & Young	3.4
IBM	3.7
LGS	3.6
SHL	3.5

*Rating: 5 = high, 1 = low.

D
Conclusions and Recommendations

1. Conclusions

Users report that business conditions are mixed or uncertain, but that a number of factors are contributing to opportunities for the use of information services as indicated in Exhibit II-18.

• NAFTA has encouraged IT expenditures to improve service.

• Cost reduction is being addressed with IT expenditures.

• New IT developments, particularly the growth of client/server use, is stimulating use of information services.

2. Recommendations

Based on plans of respondents, vendors should have a strategy for implementing and supporting the use of client/server technology.

- Desktop services, software for applications that run on client/servers and SI capabilities for client/server projects are all needed.

- Users also recognize the need for education and training to support client/server use.

- Users are also very interested in integrated applications for client/servers. The SAP R3 system has profited from this need.

Exhibit II-18

Key Conclusions and Recommendations

- Conclusions

  - Continuing uncertainty about business

  - NAFTA is having a positive impact

  - Cost reduction remains a major factor

  - Interest is high in use of client/server and network technology

  - More use of information services vendors planned

  - Interest shown in re-engineering

- Recommendations

  - Have capabilities to support demand for client/server technology

  - Track plans of customers for client/server alternatives

  - Respond to outsourcing opportunities

  - Anticipate differences in opportunities by market sector

One of the interesting findings of this study is the appeal of R3 software to respondents. In addition to those that have ordered the software, a number of respondents mentioned interest in acquiring it or talked enthusiastically about it.

- Users reported that five "big 6" firms, IBM and EDS had offered aid in planning use of R3.

- Users also reported that R3 offered a powerful set of integrated business capabilities including accounting, purchasing, inventory, human resources and operations modules.

Several R3 users stated that it was the only integrated set of multiple capabilities available, and they would have considered others had they been competitive.

Vendors should also take steps to participate in the rapid growth of outsourcing and network services.

Two other vendors received some recognition as vendors of client/server application software for multiple applications.

- Peoplesoft was mentioned as a vendor of significant human services application, with accounting products in development or market introduction. Respondents reported that they were interested in Peoplesoft as a vendor of integrated client/server products.

- Several respondents reported that JD Edwards planned to expand and integrate their client/server offerings.

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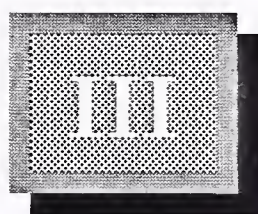
Market Analysis

A
Force Driving Use of Information Services

1. Business

Exhibit III-1 indicates the forces that user respondents report as drivers for their use of information technology.

- Just as reported last year , cost reduction ranks first. Users are reengineering and upgrading accounting and financial systems to control and cut costs in most market sectors.

- Some cost reduction efforts are in reaction to taxes and business costs.

- Users report that cost reduction is also being pursued to improve productivity and competitiveness.

Exhibit III-1

Forces Driving Use of Information Services

Forces Reported by Respondents	Relative Importance*
Cost Reduction	3.9
Need to Improve (or Re-engineer) Business Systems	3.7
Desire to Use Client/Server Technology	3.7
Response to Business Opportunities	3.6
Need for Improved Productivity	3.6

*Rating: 5 = high, 1 = low.

Discrete manufacturers have been trying to reduce costs in order to overcome a disadvantage in productivity against U.S.

manufacturers. This disadvantage has been largely overcome in
many areas. Cost reduction has been achieved in both discrete and
process manufacturing as well as other market sectors.

- The NAFTA agreement intensified efforts to improve productivity
  in manufacturing.

- Canadian corporations thought NAFTA would have a negative
  impact, but exports to the U.S. have grown. The revaluation of
  the Canadian dollar and changes in the GST, aided this increase,
  of course. Articles in the Financial Times during 1993 and 1994
  report that the results of NAFTA look much more promising.

To further support increasing trade with improved service and sales
systems, many Canadian manufacturers and distributors are
reengineering or upgrading their business through use of IT. The
use of client/server technology has increased notably to support
these objectives.

2. Trends in the Use of Information Technology

The impact of new technology on the use of information services in
the Canadian environment, is pointed out in Exhibit III-1. Even
more than was the case last year, leading trends in technology are
concerned with the use of client/servers.

- Client/server technology is being sought as a means of lowering
  costs and improving business productivity and competitiveness.

- Interest in downsizing is also stimulating client/server use.

New network technology and imaging are reported to be effective
means of redesigning or re-engineering business systems as well as
of extending the use of computing to more business functions and
locations.

Exhibit III-2

Key IT Related Trends in the Canadian Market

Trends Reported	Relative Interest*
Client/Server Technology	4.0
Re-engineering and BPR	3.6
Downsizing	3.5
Open Systems	3.4
New Network Technology	3.3
EDI	3.2
Imaging	2.5

*Rating: 5 = high, 1 = low.

Users report high interest in new banking, distribution, human resources, logistics and manufacturing systems that make use of client/servers. SAP has emerged as a leading vendor of client/server applications that meet needs in variety of markets.

Business re-engineering was mentioned by an increasing, percentage of respondents as a market force. It is growing rapidly, particularly in large companies and is rated much higher as a trend, as shown Exhibit III-2 than it was, last year. Interest is also growing in the use of EDI and network technology particularly in manufacturing and distribution.

Some vendors reported high increases in the use of EDI services that they have introduced.

B
The Use of Information Services Vendors

1. Factors Involved in Using Information Services Vendors

The reasons that users report for using information services vendors rather than in-house resources are listed in Exhibit III-3.

- Plans to move to client/server technology has caused technical knowledge to increase in importance as a reason for utilizing vendors.

- There is a need for technical knowledge to deal with new client/server technology, including graphical interfaces and object-oriented techniques of development.

The knowledge of business processes is also recognized as highly important in order to restructure them to take advantage of technology. This is reported to be one reason why major contracts were awarded to vendors who have recognized knowledge of certain industries.

Exhibit III-3

Reasons for Using Information Services Vendors

Reason	Average Importance*
Technical Knowledge	3.9
Application Knowledge	3.8
More Rapid Implementation	3.7
Cost Savings	3.6
Lower In-house Staff Requirements	3.1

*Rating: 5 = high, 1 = low.

Rapid implementation of business goals is very important to users today. The ability to meet near-term goals in support of business plans is mentioned in most industries as a reason for using vendors.

There are factors that can inhibit the use of vendors as indicated in Exhibit III-4.

• Economic, financial or corporate problems may have to be overcome to sell information services, but vendors should note that a substantial number of users report that no factor will inhibit use of these services.

• Vendors should also note that a lack of knowledge of the industry or applications of users use as well as a lack of technical skills are reported to inhibit use of vendors.

• High costs of information services can also be an inhibiting factor, but they are not as important as other considerations. Users report that they will shop around to lower costs if management questions information services plans.

Exhibit III-4

Factors Inhibiting Use of Vendors

Factor	Relative Importance*
Financial Plans or Budgets	3.9
Business Conditions	3.7
No Factors Will Inhibit Use	3.5
Lack of Vendor Knowledge of Industry or Applications	3.2
Lack of Technical Skills by Vendors	3.2
Cost of Information Services	3.1

*Rating: 5 = high, 1 = low.

2. Considerations in Vendor Selection

Cost may not always inhibit use, but it is reported to be an important factor in vendor selection as indicated in Exhibit III-5.

The net price with discounts or other factors taken into consideration is only outranked by reputation or references about work done elsewhere as a factor in vendor selection. However, decisions were reported to be made in favor of vendors who have a comprehensive solution to business problems including an approach for changing business to take advantage of technology, but were not the lowest bidder.

Exhibit III-5

Key Considerations in Vendor Selection

Consideration	Relative Importance*
Reputation	4.5
Technical Knowledge	4.4
Knowledge of Industry	4.4
Price cf Contract (Effective Price)	4.0
Experience	3.5
Size of Vendor	3.0

*Rating: 5 = high, 1 = low.

- Technical and industry knowledge can be thought of as necessary conditions for attracting clients in addition to pricing and reputation for successfully performing work.

- The size of a vendor is much less important today providing that a vendor's experience and reputation are good..

In many situations, vendors of information services do not fully consider the problems reported by users. Exhibit III-6, illustrates that almost one-third of users report problems.

- Delays or late delivery remains a leading problem. It is a problem that users may explore by contacting past customers of the vendor.

- Problems in support ranked higher than in the past The use of new technology, particularly client/servers and network capabilities is placing a higher value on support.

Exhibit III-6

Problems Encountered in Using Vendors

Percentage of Users Reporting Problems	31%

Problems Reported	Percentage of Users Reporting Problems
Delays or Late Delivery	8
Communication	6
Support	7
Billing	5
Lack of Application Knowledge Details	4
Don't have Promised Technical Knowledge	3

C
Forecasts of Expenditures for Information Services

1. Market Assumptions

Assumptions about the Canadian market that have been used in developing forecasts of information services use in the Canadian market are that the GDP deflator stayed in a range of 3% to 4% in 1993 and 1994 and will be below 4.5% in 1995 through 1998. These

assumptions are based on figures of the conference board reported in the Financial Times in 1993 and 1994.

2. Forecast of Delivery Modes

Exhibit III-7 shows user expenditures in each delivery sector tracked by INPUT. Professional services and applications software products will continue to be the leading delivery sectors, in use through 1999.

- Outsourcing, driven by demand for desktop services and network management, and network services, driven by the use of EDI, are the fastest growing modes reported by users.

- Turnkey systems is the slowest growing sector. Development that would have involved turnkey systems in the past has become more complex and now utilizes system integration services of vendors. In other situations, software products have been detached from the sale of hardware since multiple open systems hardware can be used.

Growth in the use of applications software products by 1999 will be fueled by the growth in use of workstation software products, which are growing over twice as fast as products for other platforms. Professional services and SI project work for workstation platforms is also growing much faster than work for other platforms.

Exhibit III-7

Information Services Expenditures by Delivery Mode, 1994-1999

Delivery Mode	1994	1999	CAGR (Percent)
Processing Services	784	1124	8
Network Services	334	705	16
Applications Software	884	1560	12
Systems Software	786	1148	8
Turnkey Systems	348	434	5
Systems Integration	914	1510	11
Professional Services	1474	2545	11
Outsourcing	830	1933	18

Market Size ($M)
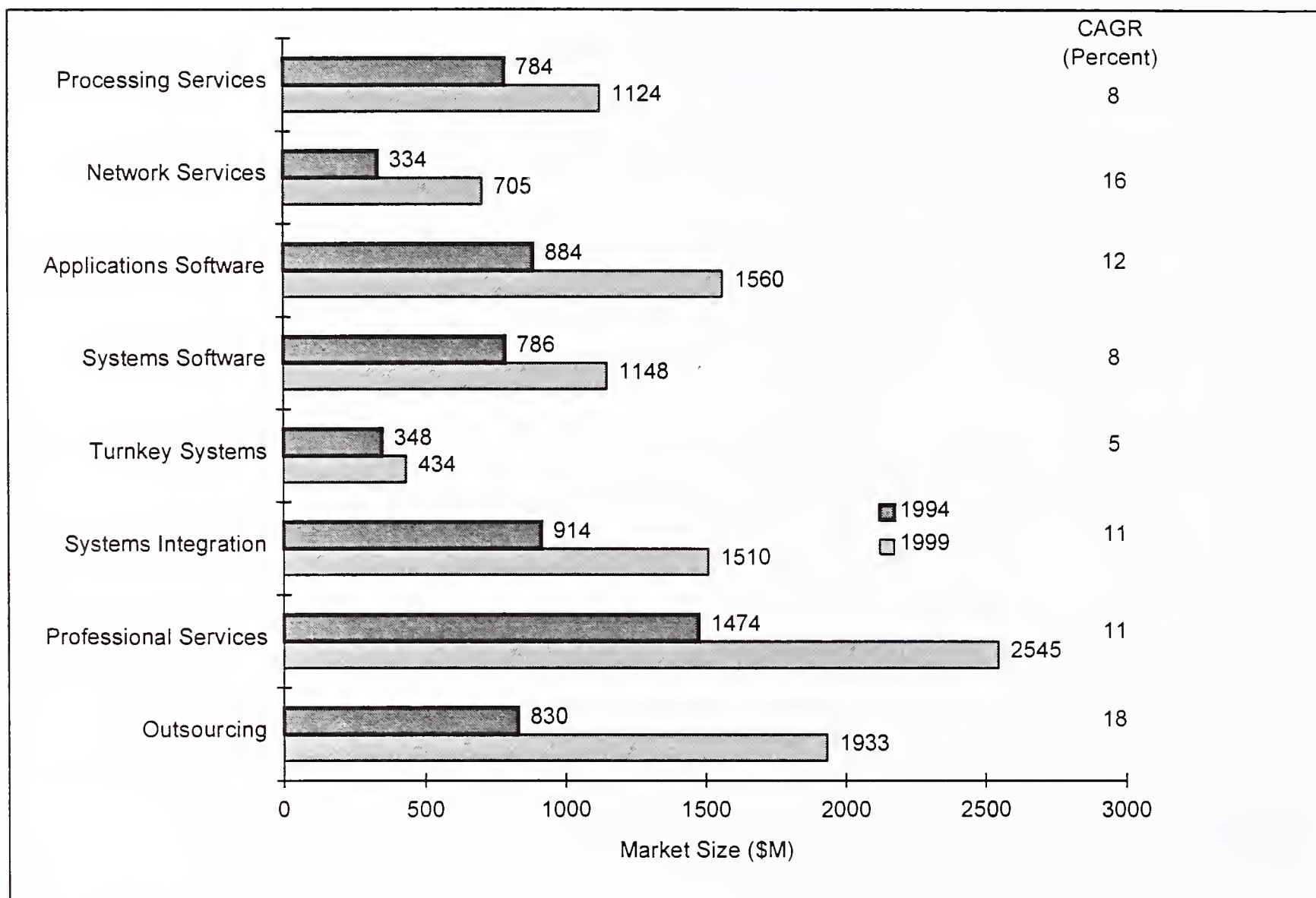
Expenditures by industry sector are shown in Exhibit III-8. Manufacturing has the largest amount and together with telecommunications shows faster growth rates than the other sectors being tracked.

Exhibit III-8

Expenditures by Industry Group
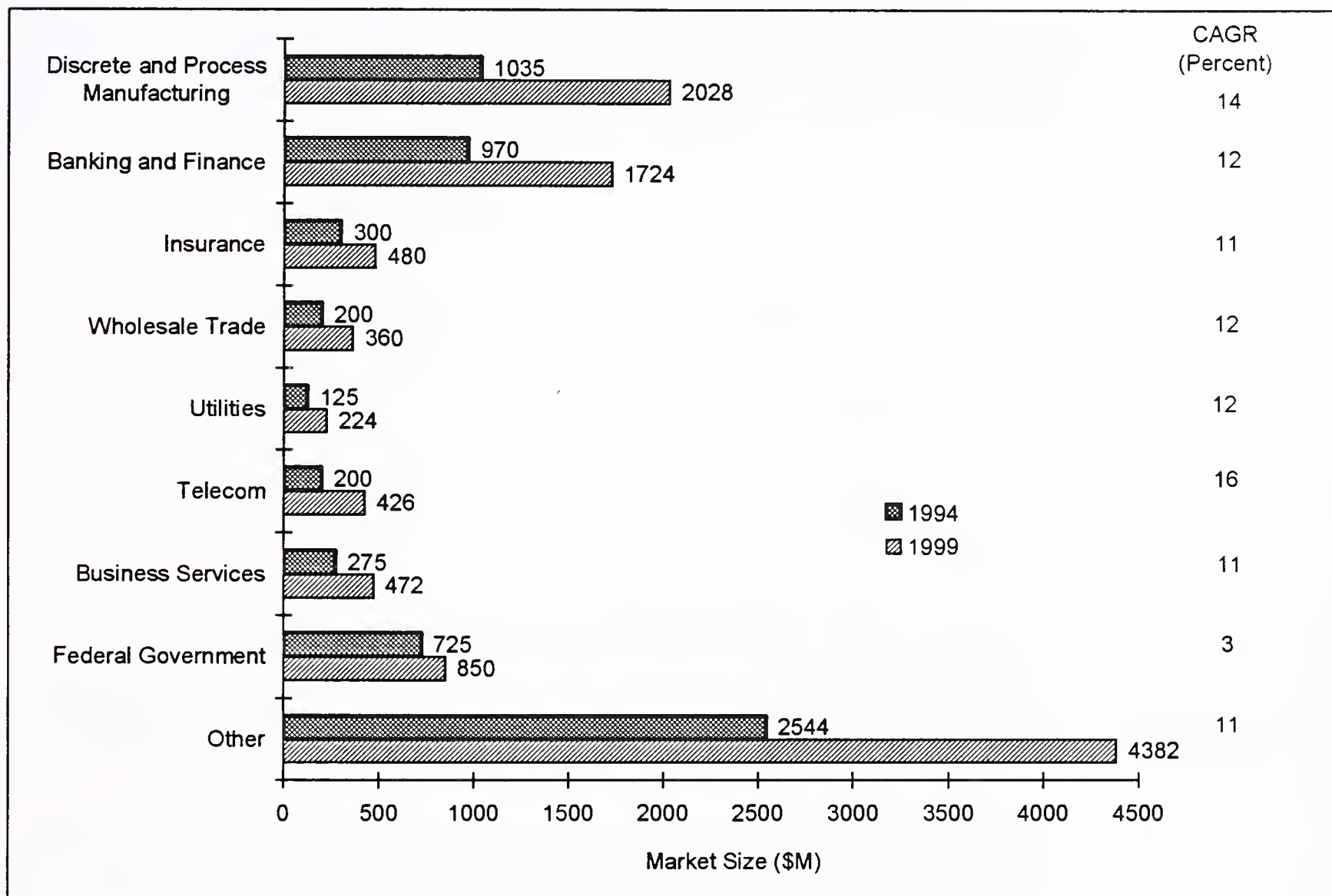
- Increases in industry growth rates have taken place in manufacturing, utilities, insurance, business services, and wholesale trade.

- There are industries with moderate growth in expenditures not shown in this exhibit since they were not analyzed to the same extent, including provincial/local government.

- The federal segment has a slow growth rate but is of interest to vendors in view of its size.

A comparison of the growth of information services delivery sectors in Canada (1994-1999) versus the U.S. (1994-1999) is shown in Exhibit III-9.

Exhibit III-9

Information Services Growth in Canada versus the U.S.

Delivery Mode	CAGR in Canada, 1994-1999 (Percent)	CAGR in U.S., 1994-1999 (Percent)
Processing	8	9
Network Services	16	18
Applications Software Products	12	15
Systems Software Products	8	8
Turnkey Systems	5	8
Systems Integration	11	15
Outsourcing	18	17
Professional Services	11	10
Outsourcing	18	17

- Outsourcing was growing less rapidly in Canada, but is moving slightly ahead of the rate in the U.S. due to the need for support for desktop and network management as well as the movement information business process outsourcing.

- The growth of turnkey systems and systems integration is below rates for the same sectors in the U.S. Some prospects for these sectors report use of professional services development as an alternatives.

3. Forecast by Market Sector

Growth rates in market sectors between Canada and the U.S. are compared in Exhibit III-10. Except for the federal government, these growth rates are not different by more than 3%.

- For the market sectors with the highest information services expenditures in Canada, manufacturing and finance, the growth rates are close to those in the U.S..

- The growth rate for information services as a whole in the U.S. is less than one percent above the growth rat in Canada despite differences in individual industry sectors..

Exhibit III-10

Growth in Selected Industries in Canada versus the U.S.

Industry Market Information Services (Percent)	Canada, 1994-1999	U.S., 1994-1999
Discrete and Process Manufacturing	14	15
Banking and Finance	12	12
Insurance	11	13
Wholesale Trade	12	13
Federal Government	3	8
Utilities	12	12
Business Services	11	11
Retail Trade	16	16
Other	11	11
Total	12	12

A list of some situation where companies report high rates of growth for the use of information services are shown in Exhibit III-11.

• The plans for the use of information services are listed together with applications that will be further automated.

• The criteria for selecting vendors to supply information services are also included.

Exhibit III-11

Examples of Rapid Growth in Use of Services

Region	Industry	Plans	Applications
East	Communications	Application software up by 50%, professional services up 25%	Traffic, accounting
East	Communications	SI up 100%	Financial
Ontario	Provincial Gov't	Application software and professional services up by $1.2 million	Operations
Ontario	Process Manufacturing	SI up 40%, EDI up 200%	Distribution
Ontario	Wholesale Trade	Software and professional services up 50%	Inventory, financial
Ontario	Discrete Manufacturing	Outsourcing up 100%, software up 50%	Accounting and administration
Ontario	Business Services	Professional services up 40%, EIS up 100%	Financial
Ontario	Discrete Manufacturing	Outsourcing will increase by 35%	Accounting and sales
Ontario	Discrete Manufacturing	Professional services up 50%	Financial and distribution
Ontario	Miscellaneous	Applications and systems software both to go up by 100%	Personnel and payroll
Ontario	Health	SI to increase by 50%	Accounting
Ontario	Retail Trade	Software increase 60%, EDI 100%	Merchandising, inventory and financial
Ontario	Wholesale Trade	Software expenditures to increase by 100%	Service to users
Ontario	Finance	Software up by 100%, professional services up 50%	ATM network
Ontario	Insurance	SI and professional services up over 100%	Accounting, financial

Exhibit III-11 (Cont.)

Examples of Rapid Growth in Use of Services

Region	Industry	Plans	Applications
Ontario	Communications	Large outsourcing expenditures	Accounting, billing
Ontario	Finance	SI up 50%	Retail banking
Ontario	Insurance	Outsourcing to double	Administration, operations
Ontario	Federal Government	Application software up 50%	Financial, accounting
Ontario	Utility	SI and network services up over 50%	Financial, purchasing
Ontario	Finance	Professional services, software up 50%	Lending applications
Quebec	Communications	Professional services, software up over 40%	Billing, accounting
Quebec	Retail Trade	Professional services and software up 50%	Accounting, POS
Quebec	Business Services	Outsourcing up 100%	Financial, accounting
Quebec	Wholesale	Professional services up 50%, EDI up 50%	Accounting, inventory
Quebec	Wholesale	Professional services and software up over 50%, EDI up 100%	Distribution
West	Transport	Application software up 100%, EDI up 50%	Operations
West	Wholesale	Outsourcing up over 100%	Financial, accounting
West	Process Manufacturing	Applications software up by 50%, professional services up by 30%	Inventory
West	Process Manufacturing	Outsourcing to increase by 50%	Exploration
West	Utility	Outsourcing up over 60%	Material management

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XGCM4

IV
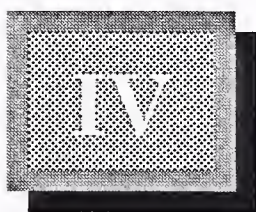
Information Services Use in Market Sectors

A

Manufacturing Market

1. Factor Affecting the Manufacturing Market

Manufacturing information services users report that the factors shown in Exhibit IV-1 are important in their business environment.

- Most of the important factors are economic or business related such as cost pressure, tax burden or need to increase productivity.

- The need to use clients/servers is also ranked very high, since users expect this technology to improve business performance by lowering costs and staff levels.

Exhibit IV-1

Factors Affecting Manufacturing

Factor	Relative Importance to Users*
Cost Pressure	3.8
Need to Use Client/Server Technology	3.7
Stimulus from NAFTA	3.5
Need to Increase Productivity	3.5
Tax Burden	3.2
Response to Competition and Opportunities	3.1

*Rating: 5 = high, 1 = low.

Users rate technological directions in manufacturing shown in Exhibits IV-2 and IV-3 differently between discrete and process manufacturing, but they both emphasize similar factors.

- Reengineering is of interest in both submarkets of manufacturing since it can lead to cost .

- Both submarkets are also reporting increased interest in EDI since it can save costs and facilitate business activity.

Exhibit IV-2

Technological Directions in Discrete Manufacturing

Technology	Relative Importance*
Client/Server Technology	3.9
Re-engineering	3.7
Downsizing	3.4
Open Systems	3.4
EDI	3.3
New Network Technology	2.9
Imaging	2.4
CASE	2.2

*Rating: 5 = high, 1 = low.

Exhibit IV-3

Technological Directions in Process Manufacturing

Technology	Relative Importance*
Client/Server Technology	4.0
Re-engineering	3.8
Downsizing	3.5
Open Systems	3.3
New Network Technology	3.2
EDI	3.2
CASE	2.3
Imaging	2.3

*Rating: 5 = high, 1 = low.

2. Growth of Information Services in Manufacturing, 1993-1998

The growth of expenditures for information services reported by users in Exhibit IV-4 shows that outsourcing and network services will have the highest growth rates in manufacturing between 1994 and 1999.

- The forecast of growth for most service sectors is higher for the period from 1994 to 1999 than in 1994 alone. This indicates that users feel that the need to use these services will increase over the five-year period..

- The high growth rate forecast for outsourcing is driven by the desire to outsource aid for desktop service and network management as well as to outsource the operation of applications and/or computing sites.

Exhibit IV-4

Growth Forecast by Manufacturing Users

Delivery Mode	1994	1994-1999
Processing Services	6	6
Turnkey Systems	5	6
Applications Software	10	12
Outsourcing	18	20
Systems Integration	10	11
Professional Services	11	13
Network Services	17	19
Systems Software	9	8

Percent Growth in Market Size
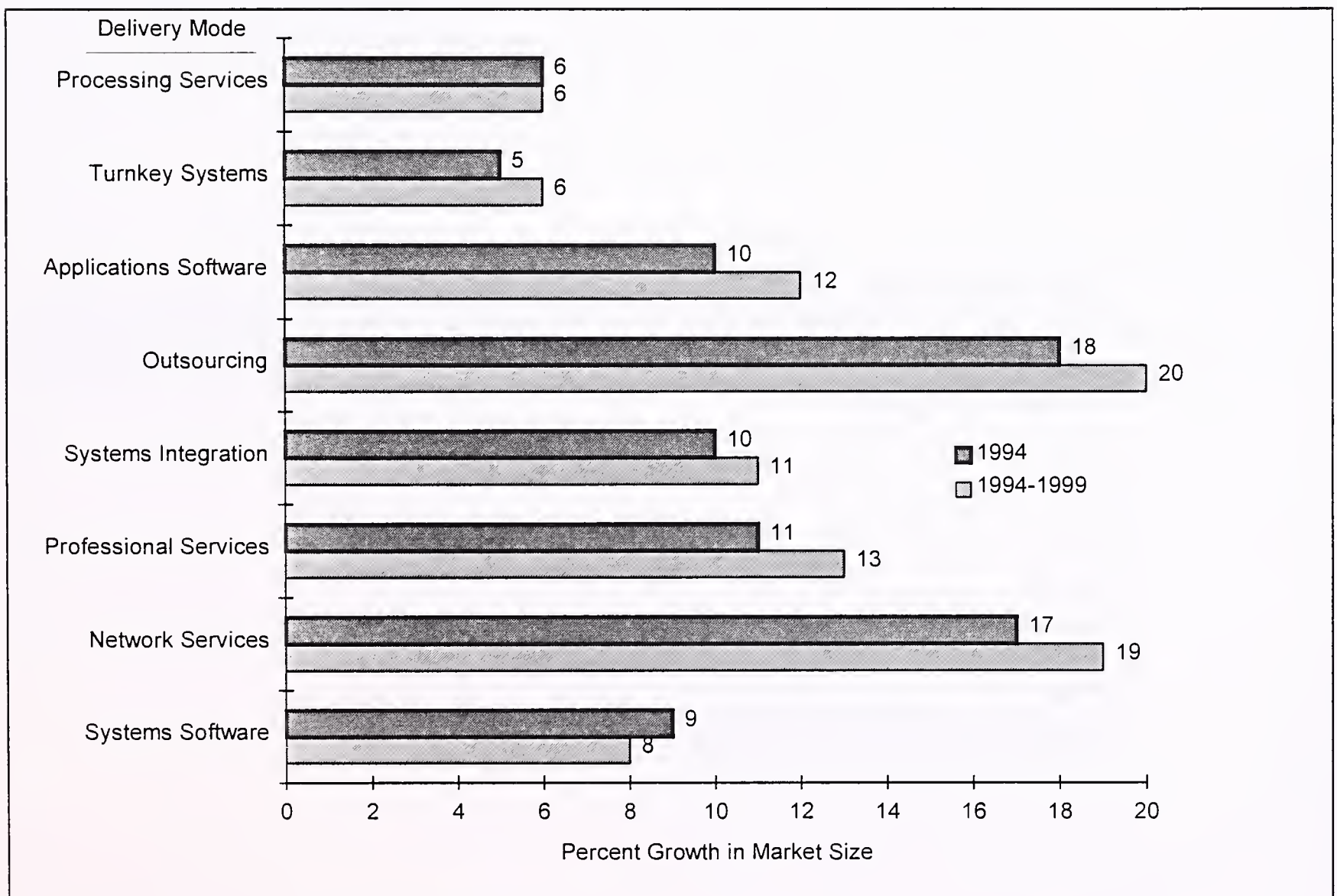
Manufacturing users reported a wide range of applications in relation to the use of information services.

- Accounting and financial applications as well as manufacturing operations were mentioned most often.

- Sales, inventory, purchasing, and materials management were also highlighted.

3. Rating Vendors Serving Manufacturing

There are differences in the ratings of vendors of information services by discrete and process manufacturing users, as shown in Exhibits IV-5a and IV-5b.

- Most vendors have ratings that are close in process and discrete and Ernst & Young has an identical ranking

- Andersen and Digital have differences of more than two percent.

Discrete users report a greater interest in planning and issues regarding data management where Andersen has been rated higher. Process users, report more interest in technical assistance to generate solutions.

Exhibit IV-5A

Vendors of Information Services to Discrete Manufacturing Users

Vendor	Relative Rating of Work by Discrete Manufacturing Users*
Andersen Consulting	4.0
E & Y	3.8
SHL	3.7
IBM	3.7
DMR	3.6
LGS	3.2
Digital	3.1

*Rating: 5 = high, 1 = low (ratings by 5 or more users).

Exhibit IV-5B

Vendors of Information Services to Process Manufacturing Users

Vendor	Relative Rating of Work by Process Manufacturing Users*
E & Y	3.8
SHL	3.6
IBM	3.6
DMR	3.5
Andersen Consulting	3.5
Digital	3.4
LGS	3.3

*Rating: 5 = high, 1 = low (ratings by 6 or more users).

B
Finance/Banking Market

1. Factors Affecting the Finance/Banking Market

Users in the finance and banking market report factors in their business environment as important in relation to the use of information services which is illustrated in Exhibit IV-6.

- There is a desire to reduce costs in front and back office functions that is encouraging greater use of information services.

- The current need to deal with lending problems and better evaluate lending opportunities is also leading to greater use of information services.

Exhibit IV-6

Factors Affecting Finance and Banking

Factor	Relative Importance*
Lending Risks and Opportunities	3.9
Pressures to Cut Costs	3.8
Need for Client/Server Technology	3.7
Need to Re-engineer Business Systems	3.6
Need to Improve Productivity	3.2
Tax Burden	3.2

*Rating: 5 = high, 1 = low.

Client/server technology was also reported to be of growing interest to users as a means of monitoring commercial loans and controlling costs in functional areas.

- Expanding use of client/server technology is leading finance and banking institutions to change and more effectively use IT.

- The desire to change IT use is also reflected in the technological directions of interest in finance/banking shown in Exhibit IV-7, which emphasizes downsizing, reengineering and client/server use. (Users also mentioned need for improved data management software to handle these trends).

Interest in using imaging and EDI as well as client/server technology has also risen sharply in the last year as shown in Exhibit IV-7.

Exhibit IV-7

Technological Directions in Finance and Banking

Technology	Relative Importance*
Client/Server	3.9
Open Systems	3.5
Downsizing	3.5
Re-engineering	3.5
New Network Technology	3.4
EDI	3.3
Imaging	3.2
CASE	2.2

*Rating: 5 = high, 1 = low.

2. Growth of Information Services in Finance/Banking, 1993-1998

User plans for the use of IT to meet business objectives are reflected in the user forecasts for the use of information services shown in Exhibit IV-8. These ideas together with data from vendors were used to develop the forecasts shown in Appendix B.

• Expenditures for application software products, professional services, outsourcing and network services will grow at rates above those for the market as a whole over the next five years.

• The growth in expenditures is particularly high for application software products for workstation platforms.

• Forecasts for the five-year period by users are notably above the rates forecast for 1994 for outsourcing and network services where users anticipate significant future growth due to expanding use of desktop and network support and process outsourcing as well as use of EDI and E-mail.

Exhibit IV-8

Growth Forecast by Finance and Banking Users

Delivery Mode

Delivery Mode	Value
Processing Services	4 / 4
Turnkey Systems	3 / 4
Applications Software	13 / 12
Outsourcing	16 / 19
Systems Integration	10 / 11
Professional Services	11 / 13
Network Services	12 / 15
Systems Software	9 / 8

■ 1994
□ 1994-1999

Percent Growth in Market Size
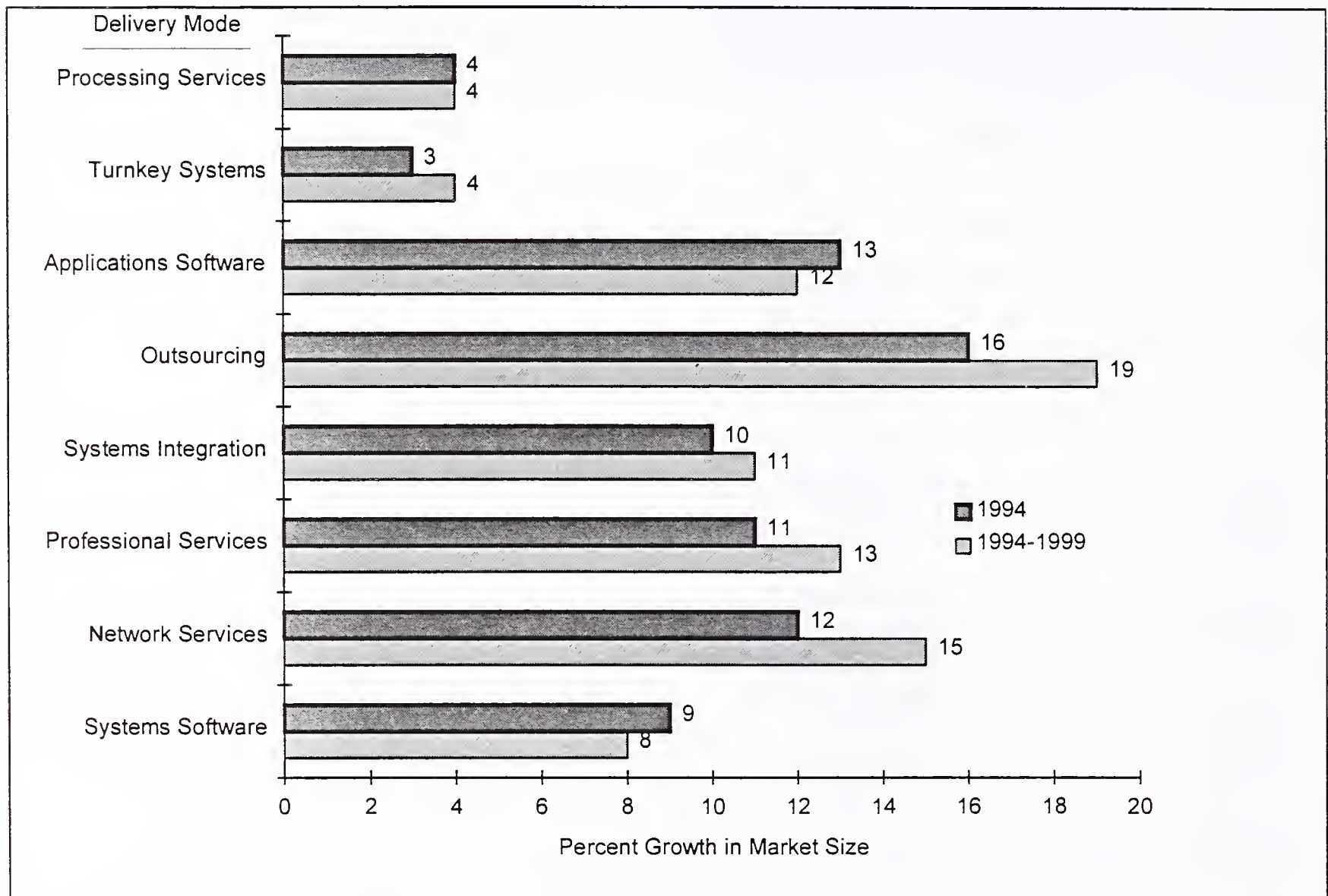
3. Rating Vendors Serving Finance/Banking

The vendors of information services ranked highest for their work by finance/banking users are also vendors who serve the manufacturing market as shown in Exhibit IV-9 .

- There is a limited set of large vendors in Canada who tend to address multiple market sectors.

- The largest vendors in terms of current sales in banking/finance and manufacturing include vendors of computer hardware and auditing as well as firms dedicated to information services.

Exhibit IV-9

Vendors of Information Services to Finance and Banking Users

Vendor	Relative Rating of Work by Finance Users*
E & Y	3.9
DMR	3.8
IBM	3.6
SHL	3.5
Digital	3.2

*Rating: 5 = high, 1 = low (ratings by 5 or more users).

C
Insurance Market

1. Factors Affecting the Insurance Market

Exhibit III-10 indicates that information services users in the insurance market feel pressures to cut costs and move work to client/servers are important in their business environment.

- Pressure to cut costs are leading to changes in or restructuring of automated systems.

- Moving work to client/server server systems is taking place to improve business functions as well as to reduce costs.

Exhibit IV-10

Factors Affecting Insurance

Factor	Relative Importance*
Pressure to Cut Costs	3.9
Need to Use Client/Servers	3.7
Need to Re-engineer Business	3.6
Need to Improve Productivity	3.3
Tax Burden	3.2
Respond to Competition	2.9

*Rating: 5 = high, 1 = low.

The use of client/servers and downsizing also leads the technological directions of interest in the insurance market, as illustrated in Exhibit IV-11.

- Reengineering also ranks high as a technological direction both in reengineering of automated systems and the use of BPR in company processes.

- Other technologies, including network technology, EDI and the use of imaging are also of interest. Although users still report its use, CASE has been down valued and used less at the current time.

Exhibit IV-11

Technological Directions in the Insurance Market

Factor	Relative Importance*
Client/server Technology	3.9
Re-engineering	3.7
Downsizing	3.5
New Network Technology	3.4
Open Systems	3.3
EDI	3.0
Imaging	2.5
CASE	2.1

*Rating: 5 = high, 1 = low.

2. Growth of Information Services in Insurance, 1993-1998

The growth of information services expenditures anticipated by users for the insurance market, is indicated in Exhibit IV-12. Network services and outsourcing are expected to enjoy the highest growth rates between 1994 and 1999.

- Users predict a higher rate of growth for most of these service modes for the period from 1994 to 1999 than they do in 1994 by itself suggesting that users feel the need to use these services will increase over the five-year period.

- Outsourcing shows the greatest difference between the near-term growth rate and the rate for the next five years because users anticipate more use of vendor aid to run work and supply help as work is downsized. (Users report that the use of vendors has started to increase)

Exhibit IV-12

Growth Forecast by Insurance Users
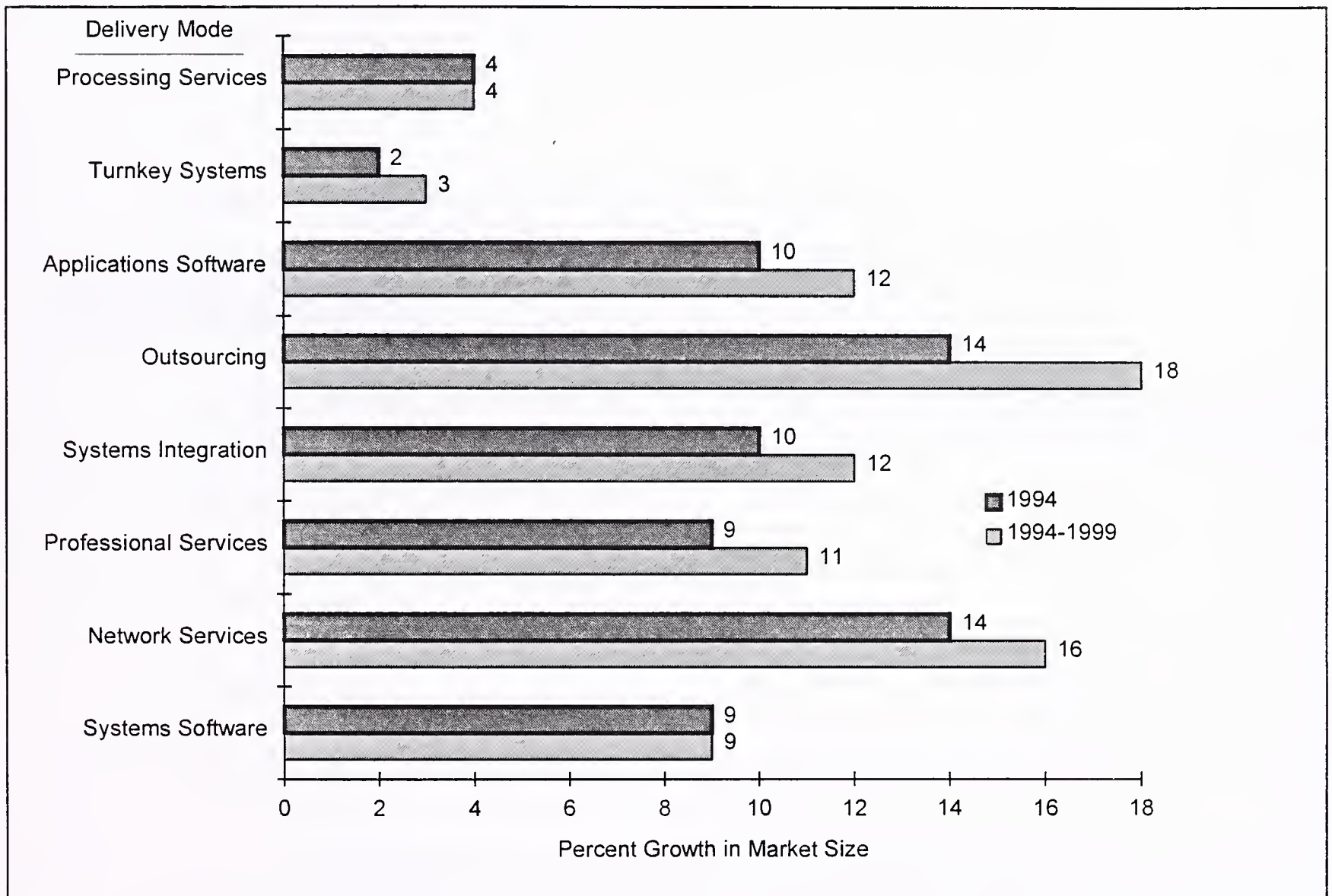
The use of SI is slightly above its average use in other vertical sectors, but the use of turnkey systems is less.

- More modification of software products is needed than would be provided in turnkey situations. This tends to favor the use of professional services or system integration solutions.

- An example of significant increase of information services use that is shown in Example III-11 for an insurance firm is concerned with a significant increase of SI and professional services to automate accounting and data management functions.

3. Rating Vendors Serving Insurance

Vendors of information services ranked high by insurance users are led by IBM and Andersen Consulting, as shown in Exhibit IV-13. Most of the vendors rated by users are bunched quite closely together in the ratings, indicating the potential for competition for information services work.

Exhibit IV-13

Vendors of Information Services to Insurance Users

Vendor	Relative Rating of Work by Insurance Users*
LGS	3.7
Andersen Consulting	3.6
IBM	3.6
E & Y	3.5
DMR	3.4
SHL	3.4
EDS	3.4
C & L	3.1
Digital	3.1

*Rating: 5 = high, 1 = low (ratings by 6 or more users).

- Other vendors were mentioned by a few users, but were not included in Exhibit IV-13 because they were not rated by six or more users. For example, CGI was rated highly by two insurance users who have used its services recently.

- The market share of vendors can make a difference in obtaining additional business. Several users have mentioned using IBM and DMR because they are leaders in market share.

D
Wholesale Trade Market

1. Factors Affecting the Wholesale Trade Market

Information services users in the wholesale market report the factors shown in Exhibit IV-14 as important in their business environment.

- The factors that are reported emphasize a positive business outlook as well as pressure to cut costs and improve productivity and service. These factors are promoting the use of information services.

- A strong desire to expand client/server use is also apparent in wholesale and is stimulating demand for software and services

Exhibit IV-14

Factors Affecting Wholesale Trade

Factor	Relative Importance*
Beginning of Recovery	3.8
Pressure to Reduce Costs	3.8
Need to Expand Client/Server Use	3.7
Need for Increased Productivity	3.6
Need for Service Improvement	3.6
Tax Burden	3.2

*Rating: 5 = high, 1 = low.

Development in the U.S. market in which giant retailers such as Wal-Mart and Home Depot are bypassing independent wholesalers and dealing directly with manufacturers is not as significant yet in the Canadian market.

The desire to utilize EDI to reduce costs and facilitate business is growing in Canada as well as the U.S. and is mentioned as a technological trend in Exhibit IV-15.

- The leading trend in relation to technological directions in wholesale trade is use of client/server equipment and software according to respondents.

- The use of open systems and downsizing are also noted as technological trends. Users mentioned interest in education and training and consulting aid from vendors in relation to these trends.

Exhibit IV-15

Technological Directions in Wholesale Trade

Technology	Relative Importance*
Client/Server Technology	4.2
Downsizing	3.6
Re-engineering	3.6
Open Systems	3.5
EDI	3.5
New Network Technology	3.4
Imaging	2.5
CASE	2.3

*Rating: 5 = high, 1 = low.

2. Growth of Information Services in Wholesale Trade, 1993-1998

Exhibit IV-16, shows expenditures for software products in total are expected to grow at rates above average over the next five years in wholesale.

- Applications mentioned most often in relation to this growth were inventory and financial in nature, but several of the users mentioned applications that would improve customer services, automate warehouse management and expand use of EDI.

- Expenditures planned for software products also indicate growth of downsizing and use of client/server technology.

Exhibit IV-16

Growth Forecast by Wholesale Trade Users

Delivery Mode

Category	1994	1994-1999
Processing Services	2	4
Turnkey Systems	3	5
Applications Software	12	14
Outsourcing	16	19
Systems Integration	10	12
Professional Services	10	12
Network Services	12	15
Systems Software	9	8

■ 1994
□ 1994-1999

Percent Growth in Market Size
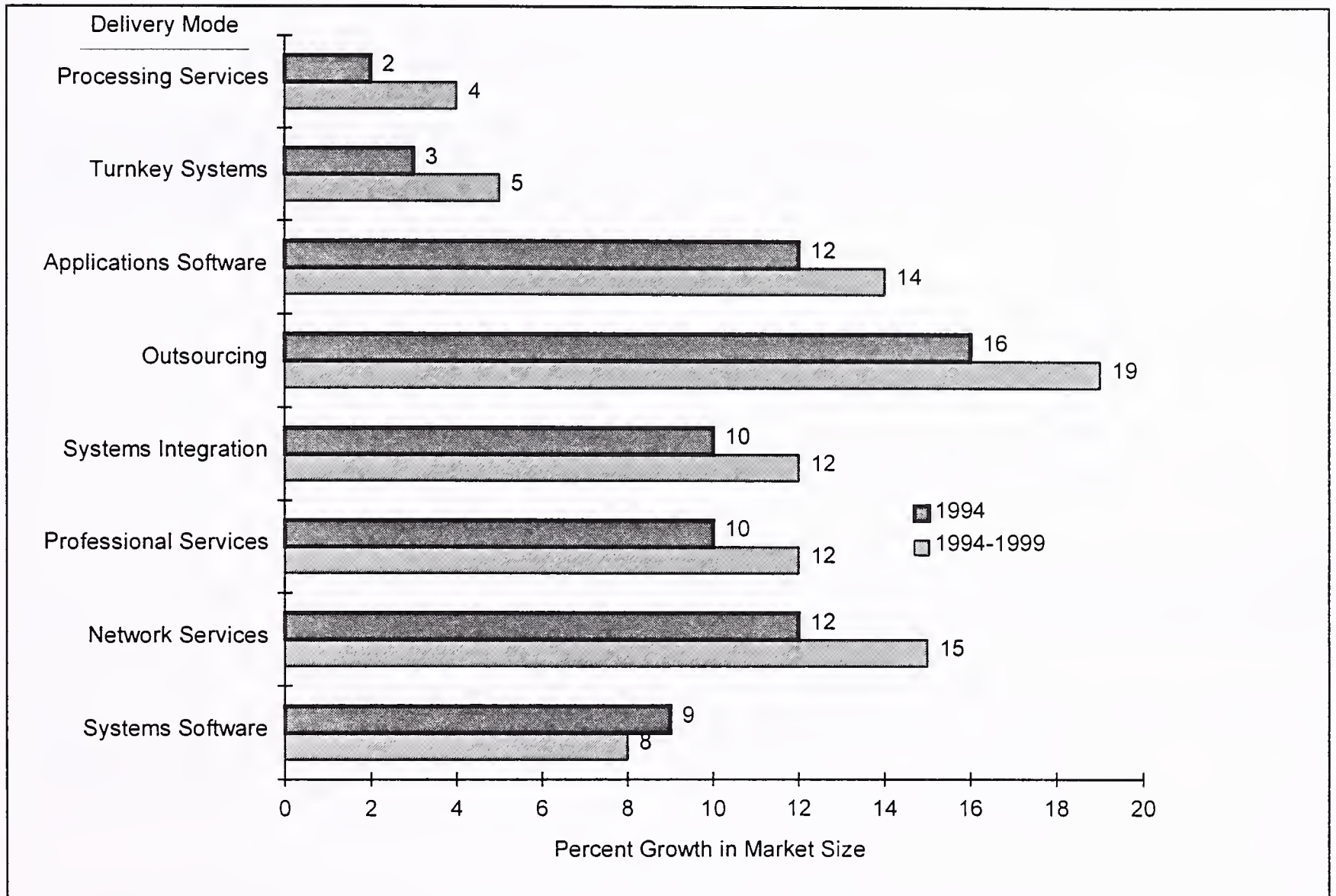
The growth anticipated for outsourcing in Exhibit IV-16 as well as examples of user plans in Exhibit III-11 illustrate that use of outsourcing is growing rapidly in the wholesale market, although it is growing from a small base. Network services is also growing at a fast rate, driven by the growth in use of EDI.

3. Rating Vendors Serving Wholesale Trade

Users rank a group of vendors at about the same level for their work in wholesale trade as shown in Exhibit IV-17.

- IBM and SHL are ranked as highest but followed closely by DMR and Ernst & Young in terms of their evaluation as prospective suppliers.

- CGI and Coopers & Lybrand were also ranked highly by small number of users.

Exhibit IV-17

Vendors of Information Services to Wholesale Trade Users

Vendor	Relative Rating of Work by Wholesale Users*
SHL	3.9
IBM	3.9
DMR	3.7
E & Y	3.6
Digital	3.4

*Rating: 5 = high, 1 = low (ratings by 5 or more users).

E
Retail Trade Market

1. Factors Affecting the Retail Trade Market

Information services users in the retail trade market report a group of factors as important in their business environment, as illustrated in Exhibit IV-18.

- Retailers feel that conditions of business are not as good in some areas of Canada or with some goods or services, but they feel all areas share the need to reduce costs.

- Retailers feel the need to improve service also ranks high although more weight is given to the use of new technology to reduce costs.

Exhibit IV-18

Factors Affecting Retail Trade

Factor	Relative Importance*
Uneven Business Conditions	3.9
Pressure to Cut Costs	3.9
Need to Improve Services	3.8
Plans to Use Client/Server Technology	3.8
Need to Upgrade Business Systems and Networks	3.7

*Rating: 5 = high, 1 = low.

Market factors tend to favor greater use of information services.

- The needs to improve services to customers and upgrade business systems and networks, while cutting costs are recognized by retail users as reasons to increase expenditures for IT and information services.

- The need to upgrade business systems through use of IT ranks high among most retailers, also.

There is also a close grouping of technology trends by retail users, as shown in Exhibit IV-19.

- Client/server technology, open systems and downsizing lead trends in retail, but reengineering, EDI and network technology rank close behind.

Exhibit IV-19

Technological Directions in Retail Trade

Technology	Relative Importance*
Client/Server Technology	3.3
Open Systems	3.2
Downsizing	3.1
EDI	3.0
Re-engineering	2.9
New Network Technology	2.9
Imaging	2.4
CASE	2.2

*Rating: 5 = high, 1 = low.

- Retail trade users commented that a trend in expanded data distribution is also important but is subsumed in trends for downsizing and greater use of client/server technology.

2. Growth of Information Services in Retail Trade, 1993-1998

Growth in use of information services forecast by retail users that are shown in Exhibit IV-20 indicate several notable changes will take place during the next five years.

- The use of outsourcing will grow rapidly to meet needs for aid with new client/server and network technology as well as increased operation of IT and IT applications. Outsourcing of business processes will also increase and be included in this delivery sector.

- Professional services are growing in use rapidly during 1994 to meet cost savings objectives in inventory handling and merchandising and to improve accounting and financial reporting, but this use will fall off as the use of SI and new application software products increase to meet these objectives.

Exhibit IV-20

Growth Forecast by Retail Trade Users

Delivery Mode

| Processing Services | 4 |
| | 5 |

| Turnkey Systems | 4 |
| | 5 |

| Applications Software | 12 |
| | 16 |

| Outsourcing | 11 |
| | 16 |

| Systems Integration | 9 |
| | 11 |

| Professional Services | 13 |
| | 11 |

| Network Services | 14 |
| | 18 |

| Systems Software | 10 |
| | 9 |

■ 1994
□ 1994-1999

0   2   4   6   8   10   12   14   16   18

Percent Growth in Market Size
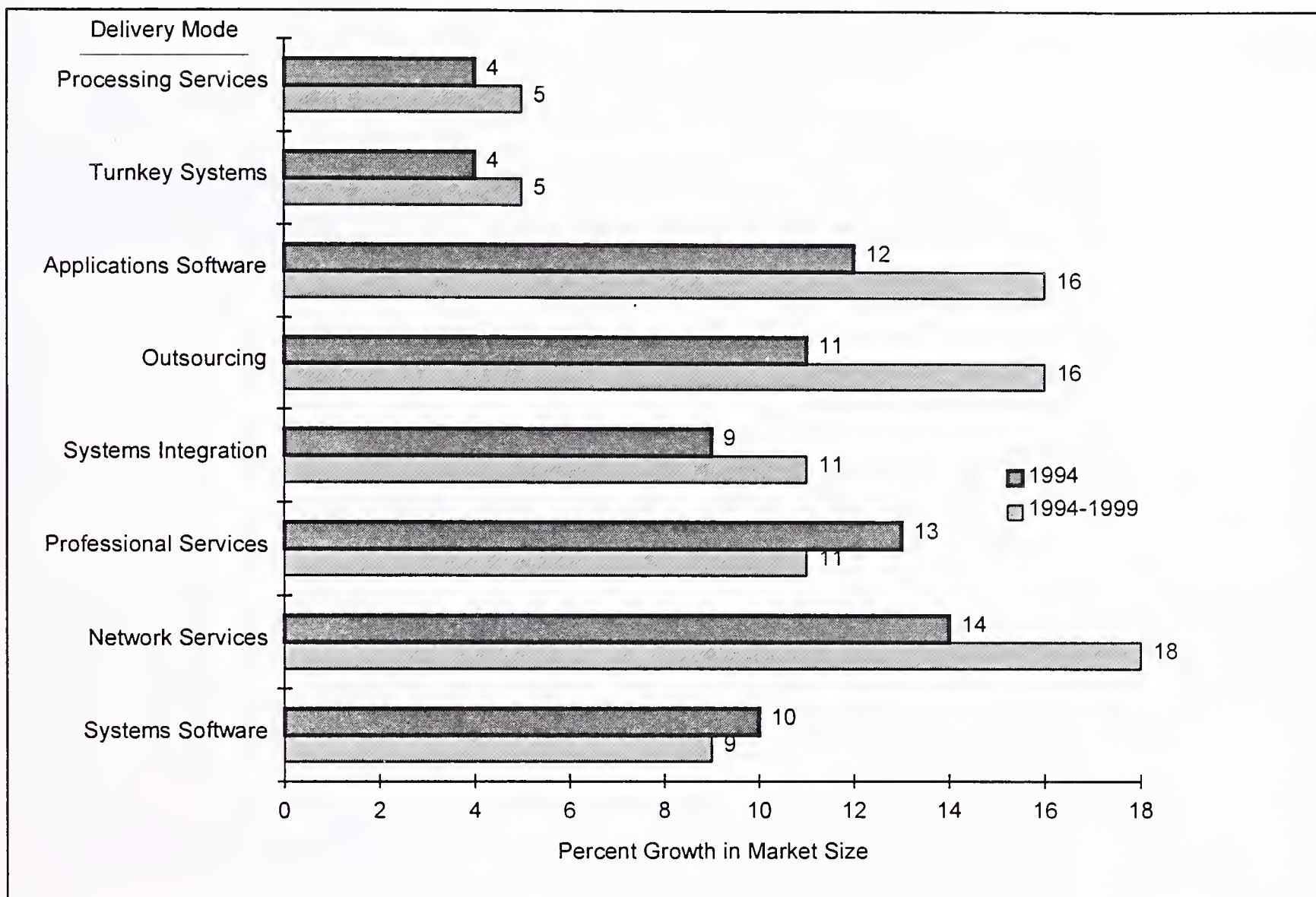
An example of a retail user shown in Exhibit III-11 involved an increase in use of professional services in the near term, followed by increasing use of software products to support the use of new technology.

3. Rating Vendors Serving Retail Distribution

Retail users ranked CGI, Coopers & Lybrand and IBM highest among the vendors serving their market sector.

Users reported they were most interested in vendors who had experience in retail application systems, including accounts payable, general ledger, inventory and merchandising. Knowledge of these applications and of EDI are important in retail trade.

Some users also reported they were uncertain about the services that they were obtaining from vendors because they were not certain about their own plans for future use of IT.

Exhibit IV-21

Vendors of Information Services Rated by Retail Trade Users

Vendor	Relative Rating of Work by Retail Users*
C & L	3.9
IBM	3.9
CGI	3.8
Andersen Consulting	3.7
Digital	3.5

*Rating: 5 = high, 1 = low (ratings by a small number of users).

F
Utilities and Telecommunication Markets

1. Factors Affecting Utilities and Telecommunication Markets

Factors that are reported by users of information services in the utilities and telecommunication market are ranked in importance in Exhibit IV-22.

- The factors mentioned by users emphasize cost reduction and service improvement.

- Users also feel there is a need to implement new IT developments to meet cost reduction and service goals. The new technology included client/servers, TCP/IP, ATM and other network and new storage products including RAID.

Exhibit IV-22

Factors Affecting Utilities and Telecom

Factor	Relative Importance*
Pressure to Increase Productivity/Cut Costs	4.0
Need to Implement New IT	3.9
Need for Service Improvement	3.8
Need to Upgrade or Re-engineer Business Systems	3.8
Regulatory Changes and Reporting	3.1

*Rating: 5 = high, 1 = low.

The use of client/server technology and downsizing are given highest importance as technological trends, as shown in Exhibit IV-23.

- Users reported that client/server technology would be used to convert mainframe applications such as inventory, purchasing, materials management and operations systems. Several users noted that software was being sought to meet these needs.

- The use of new network and storage capabilities were also mentioned as trends of importance. Both the utilities and telecommunication industries are seeking aid from vendors to investigate and use new technology.

Exhibit IV-23

Technological Directions in Utilities and Telecom

Technology	Relative Importance*
Client/Server Technology	4.0
Downsizing	3.7
Open Systems	3.6
New Network Technology	3.5
New Storage Devices Including RAID	3.3
Re-engineering	3.2
EDI	2.8
Imaging	2.2

*Rating: 5 = high, 1 = low.

2. Growth of Information Services in Telecommunication/Utilities, 1994-1999

The growth rates for the use of information services shown in Exhibit IV-24 indicate that outsourcing will be increasingly valued as a delivery sector.

- Several examples of rapid growth of information services use in utilities shown in Exhibit III-11 indicated high use of outsourcing.

- Exhibit IV-24 shows that outsourcing, application software and SI will increase in use while use of processing and turnkey systems decrease. Users report work will be moving from the latter to the former.

Exhibit IV-24

Growth Forecast by Utilities and Telecom Users

Delivery Mode

Delivery Mode	1994	1994-1999
Processing Services	7	5
Turnkey Systems	7	5
Applications Software	12	14
Outsourcing	19	23
Systems Integration	10	12
Professional Services	12	14
Network Services	14	16
Systems Software	9	10

Percent Growth in Market Size
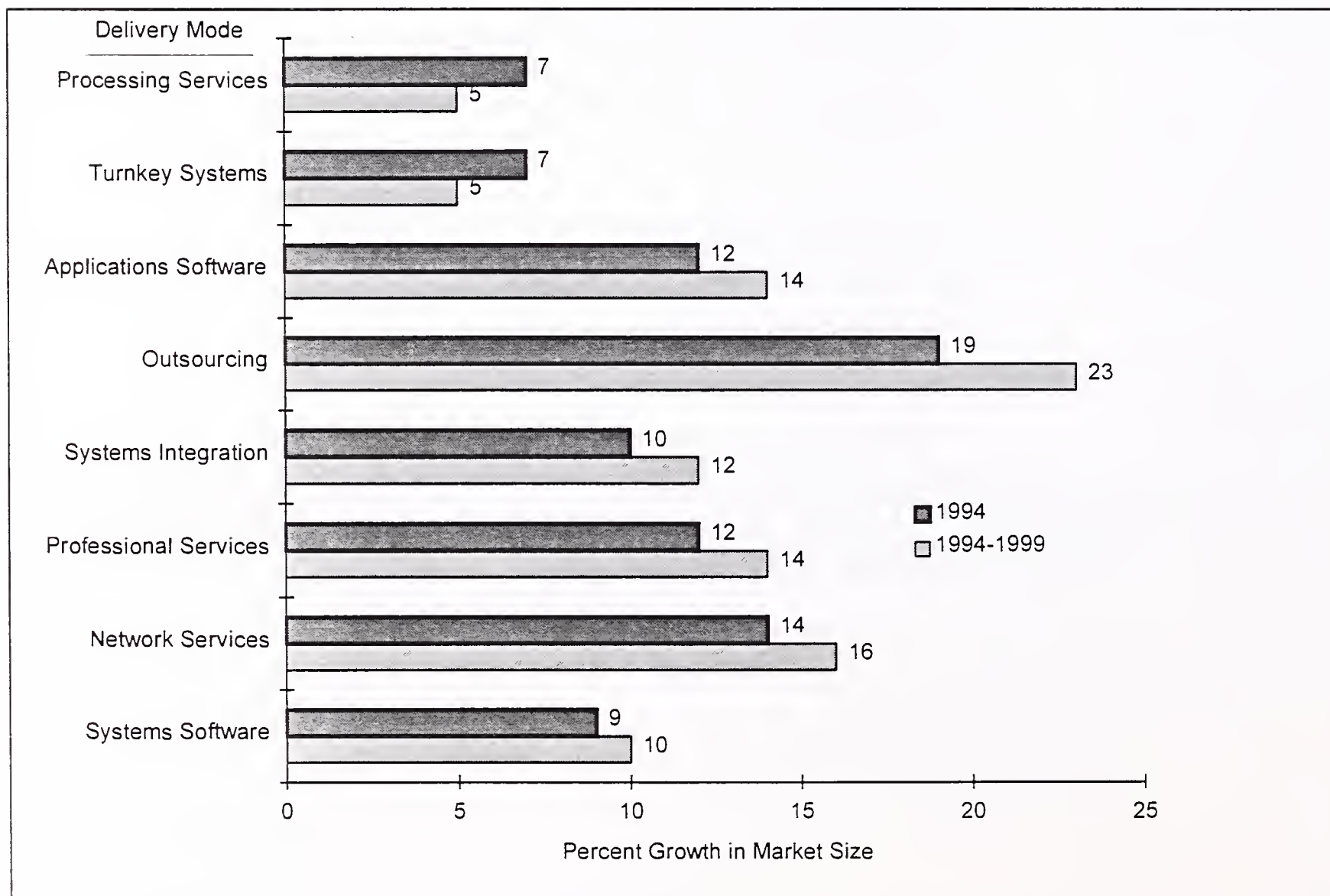
3. Rating Vendors Serving Telecommunication/Utilities

The vendors of information services ranked highest for their work by telecom/utilities are led by Andersen Consulting, as shown in Exhibit IV-25. Andersen leads primarily because of its high rating for consulting work involving systems and equipment planning for projects. Leaders in market share in this market include IBM/ISM, Digital, SHL and Andersen.

Exhibit IV-25

Vendors of Information Services Rated by Utilities/Telecom Users

Vendor	Relative Rating of Work by Utilities Users*
Andersen Consulting	4.0
SHL	3.8
IBM	3.8
LGS	3.7
Price Waterhouse	3.2
Digital	2.5

*Rating: 5 = high, 1 = low (ratings by 4 or more users).

G
Business Services Market

1. Factors Affecting the Business Services Market

Users of information services in business services feel the impact of uneven business conditions, funding limitations, and the tax situation, as shown in Exhibit IV-26. However, they report that their clients are increasing their use of business services.

Exhibit IV-26

Factors Affecting Business Services

Factor	Relative Importance*
Pressure to Lower Costs	3.9
Need to Use Client/Servers	3.8
Uneven Recovery	3.7
Need to Improve Services	3.7
Funding Limitations	3.4
Tax Burden	3.0

*Rating: 5 = high, 1 = low.

These users report a need to improve customer services and lower costs as well as a need to utilize new IT that might reduce costs. These needs are forecast to lead to greater use of information services.

Technology directions reported by business services users focus on downsizing and the use of client/server technology, as shown in Exhibit IV-27.

• Business services firms include many small companies that are seeking lower-cost alternatives for automation. However many larger firms in this industry have partnership structures that encourage the use of client/server capabilities.

• Several users also reported that client/server technology would be needed to enable their firms to expand services to customers.

Exhibit IV-27

Technological Directions in Business Services

Technology	Relative Importance*
Client/Server Technology	4.0
Downsizing	3.7
Re-engineering	3.7
Open Systems	3.6
New Network Technology	3.1
EDI	3.1
Imaging	2.6
CASE	2.2

*Rating: 5 = high, 1 = low.

2. Growth of Information Services in Business Services, 1993-1998

Exhibit IV-28 shows that users expect most delivery sectors of information services used in business services to increase their rates of growth during the forecast period.

- The only areas that won't participate in the increasing growth are processing services and turnkey systems where growth will be flat at best or may actually decrease since even small users want to move applications to workstation platforms.

- The use of professional services in this market will grow at an above average rate since many business services users will seek aid customizing software products to run on workstations or client/servers and meet needs of their clients.

Exhibit IV-28

Growth Forecast by Business Services Users

Delivery Mode

Category	1994	1994-1999
Processing Services	4	4
Turnkey Systems	5	5
Applications Software	12	14
Outsourcing	12	15
Systems Integration	11	14
Professional Services	13	13
Network Services	13	14
Systems Software	9	10

Percent Growth in Market Size
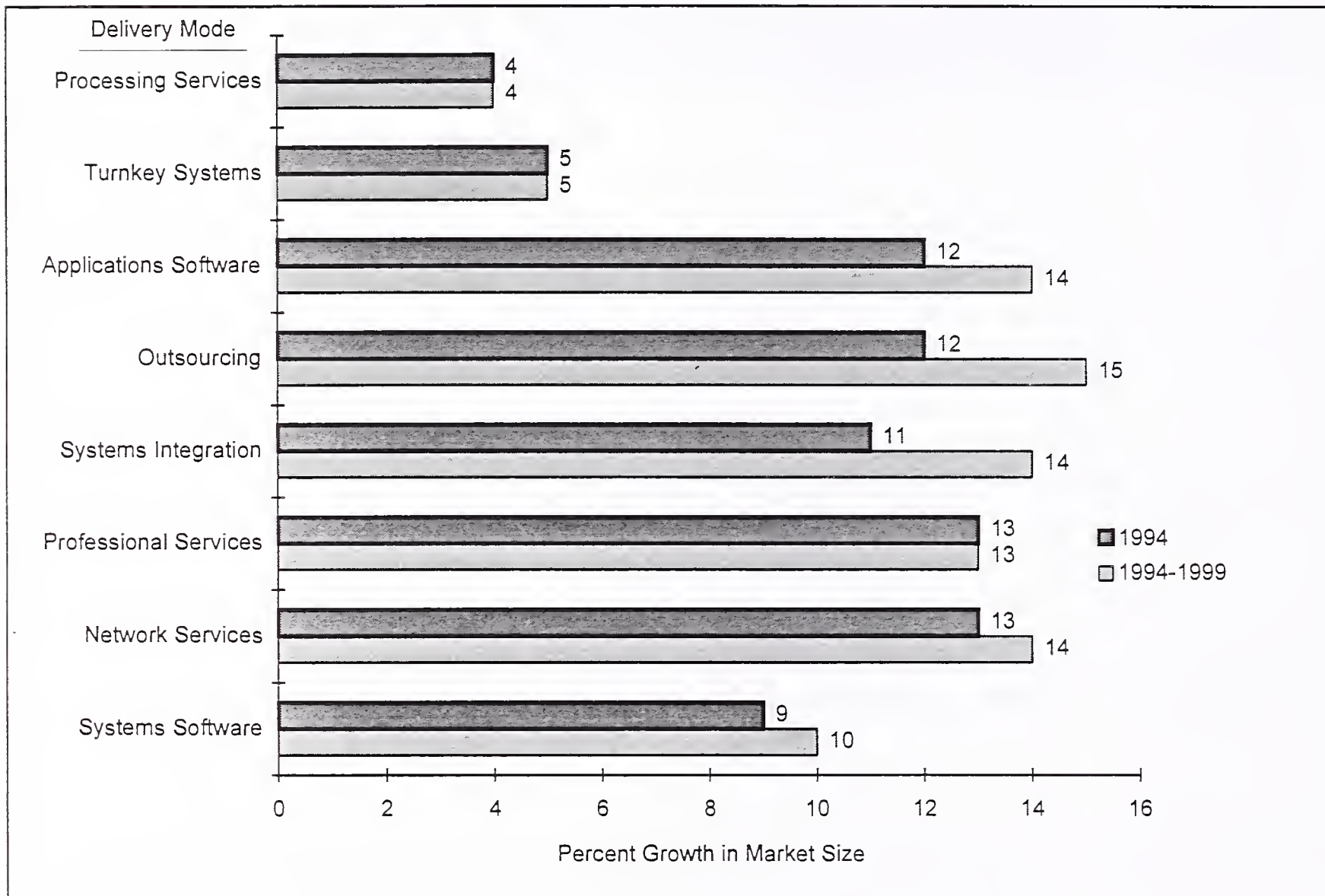
Accounting and financial functions as well as task management, reporting and customer services were mentioned as important by business systems users.

3. Rating Vendors Serving Business Services

IBM, Andersen and SHL showed the highest ratings by users in business services, as indicated in Exhibit IV-29, and together with Digital, they have the largest market shares in business services. All these vendors except Andersen also supply equipment, which is important to a number of users in the business services market, who are generally interested in one stop shopping and support from IT vendors

Exhibit IV-29

Vendors of Information Services Rated by Business Services Users

Vendor	Relative Rating of Work by Business Services Users*
IBM	3.7
Andersen Consulting	3.6
SHL	3.5
Digital	2.0

*Rating: 5 = high, 1 = low.

H
Federal Government and Other Market Sectors

1. Factors Affecting the Federal Government and Other Market Sectors

Information services users in the federal government and other markets such as transportation and health report issues similar to those mentioned for market sectors discussed in this section.

- Federal government users desire to cut or avoid costs and to find means of funding some projects. Growth of information services expenditures has been slow in this market sector due to shrinking budgets.

- In health, education and other sectors, there is more willingness to spend funds for information services because users, feel that information services are needed to reduce costs, improve service and restructure functions.

Exhibit III-11 illustrates that there are users in health, miscellaneous (construction and agriculture) and provincial/local markets making significant investments in information services.

2. Rating Vendors Serving the Federal Government and Selected Other Market Sectors

Vendors of information services with who were given a high rank for their work in the federal government and other market sectors are listed in Exhibit IV-30.

- IBM and EDS are noted by federal government users. Several other vendors were recognized for federal work, but ranked at lower levels.

- The exhibit also illustrates that large vendors are generally recognized for work in several industry sectors. There are fewer large Canadian vendors devoted to one or a few industries on a relative basis that in the U.S. Vendors report that it is necessary to gain a foothold in multiple industries in Canada to remain profitable.

Exhibit IV-30

Vendors Ranked High in Other Market Sectors

Vendor	Market Sector
CGI	Federal Government, Health
Digital	Education
DMR	Education, Health
E & Y	Miscellaneous, Transportation
EDS	Federal Government, Miscellaneous
IBM	Federal Government, Health
LGS	Federal Government, Education

V
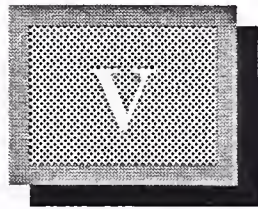
Information Services Market

The material in this chapter focuses on the use of information services delivery modes across all vertical markets. Data from user respondents about the use of delivery sectors have been collected and aggregated to develop exhibits.

A
Processing Services Market

1. Factors Encouraging Use of Processing Services

User respondents report that solutions that are applicable their problems, vendor experience and the ability to save costs drive the use of processing services as indicated in Exhibit V-1.

- Several users stated, they are looking for an expedient or rapid answer to a problem that will require little development time and internal resources.

- Some users also reported that they had been using processing services, for an application and expanded use of processing to accommodate related applications needs when the vendor had solutions available.

A number of companies are continuing to use processing services in a passive manner without examining the benefits of processing versus other information services since it would take time and money to convert.

Exhibit V-1

Factors Driving Use of Processing Services

Factor	Relative Importance to User Respondents*
Cost Reduction	4.1
Available Solutions to Meet Business Needs	3.7
Experience of Vendor	3.4
Cost or Time to Convert	3.3
Ability to Take Advantage of Vendor Technology	3.2

2. Factors Inhibiting Use of Processing Services

Many users are exploring alternatives to processing and might suddenly turn to workstation or client/server solutions as well as software products that could enable them to move processing work in-house to larger computers, as indicated in Exhibit V-2.

- Many long term users of processing services reported that they could reduce costs by moving in-house.

- Users also argue that moving in-house with client/server technology or standalone workstations could give them opportunities to easily add other work.

Exhibit V-2

Factors that Can Inhibit Use of Processing Services

Factor	Relative Importance to User Respondents*
Cost of Processing vs. Client/Server or Workstation	4.2
New Software Solutions	4.0
Outsourcing Alternative	3.9
Length of Processing Commitment	3.6

In view of this outlook, vendors of processing services should consider strategies for offering processing that would provide more incentive for continuing use of a vendor or offer products and

services to help clients move in-house in the event that a decision is made to do this.

Some vendors of processing services are now introducing new approaches to processing similar to those used with outsourcing which compare trade offs between internal work loads and external processing services to attract users.

3. Processing Services Market, 1994-1999

Exhibit V-3 shows the growth of processing services by subsector over the next five years.

• Transaction processing, particularly for billing and card processing, continues to grow.

• Use of utility processing continues to grow but at very slow rates and should not be counted upon as a source of revenue since users are ready to replace it when any opportunities become available.

• "Other processing" driven by new services, is growing at a rapid rate.

Exhibit V-3

Processing Services Submodes, 1993-1998

	1994	1999	CAGR (Percent)
Transaction Processing	483	725	8
Utility Processing	249	289	3
Other Processing	52	110	16

Market Size ($M)
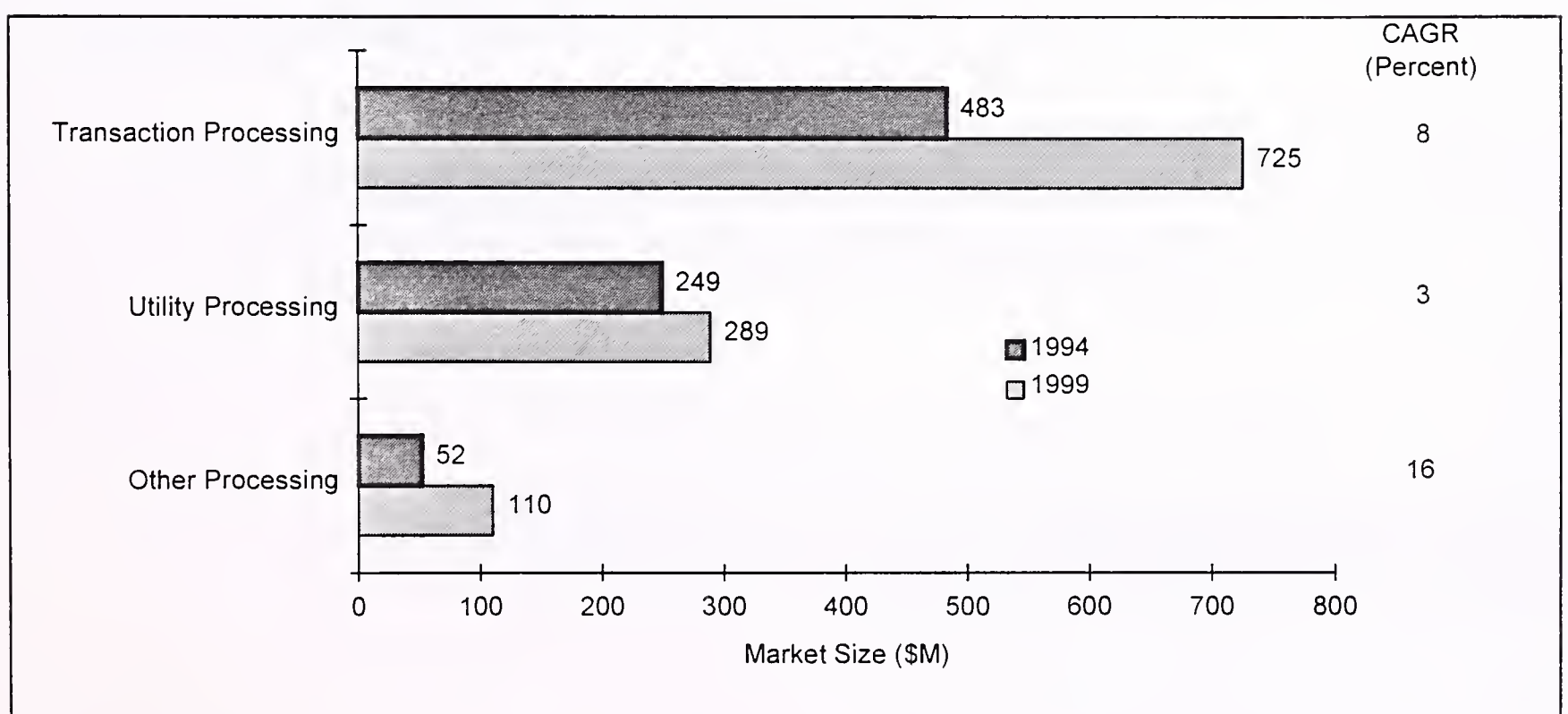
Work classified as other processing is growing at a faster rate than transaction processing, due chiefly to rising interest in disaster recovery and electronic offsite data storage, which is included in this category.

4. Changes in Use of Processing Services

Based on information supplied by respondents, a list of changes in expenditures for processing services by application was estimated, as shown in Exhibit V-4.

- In some application areas such as payroll, a sizable percentage of the users who reported impending changes expect to decrease their use of processing services by moving applications in-house. The complexity of changing withholding and reporting requirements could delay this, however.

- In application areas, such as financial, accounting, transaction processing and manufacturing, work is being moved in-house to client/server system or to outsourcing vendors at the same time that the use of processing services is increasing. Vendors must maintain awareness of all user plans.

- The total volume of increased work is in excess of the volume of work.

- Some application areas such as other transaction processing are experiencing a net decrease.

Some application work shows a favorable increase in the use of processing, such as collection and analysis of sales prospect data, sales analysis and billing, where vendors can make use of their market and database expertise and capability to accomplish critical work.

Exhibit V-4

Use of Processing Services Reported by Users

Applications	Increases, Decreases Planned by Users
Payroll	40% increase; 33% decrease
Financial, accounting, billing	34% increase; 22% decrease
Transaction processing	30% increase; 33% decrease
Manufacturing	28% increase; 34% decrease
Customer data or sales data analysis	52% increase; 10% decrease

B
Turnkey Systems Markets

1. Factors Encouraging Use of Turnkey Systems

Factors that information services users report in relation to the use of turnkey systems are similar to those reported for processing services, as indicated in Exhibit V-5.

- Just as for processing, available solutions and the experience of vendors are important for users who feel they must meet business objectives in a short time. The relatively short implementation time for turnkey systems is reported to be of importance in this regard.

- The ability to predict development costs and obtain cost savings through the use of a turnkey is also important to users. Several users report that they were able to accurately determine what costs and savings would be by inspecting the use of turnkeys elsewhere.

Exhibit V-5

Factors Driving Use of Turnkey Systems

Factor	Relative Importance to User Respondents*
Available Solutions	4.2
Cost Savings	4.0
Experience of Vendor	3.9
Fast Implementation	3.9
Client/Server Solution	3.7

Users also report that turnkey systems offer them an opportunity to obtain an in-house solution that may be possible to modify or upgrade as required.

2. Factors Inhibiting Use of Turnkey Systems

As indicated in Exhibit V-6, some users feel that turnkey solutions have limitations..

- Limitations mentioned by user respondents included the capacity of turnkey systems, transaction processing speed, data base capacity and report formats.

- Users also report limitations in upgrading solutions to utilize new or different platforms or new types of software products.

Exhibit V-6

Factors that Can Inhibit Use of Turnkey Systems

Factor	Relative Importance*
Software Solution Independent of Equipment	3.9
Limited Solution with Turnkey	3.9
Limitations in Upgrading	3.7
Commitment to Vendor	3.4

Several users also noted that the use of turnkey systems could result in too great a commitment to a vendor. They felt that the vendor commitment could exert pressure on users to follow the equipment and/or application directions that the vendor decided were appropriate.

3. Turnkey Systems Market, 1993-1998

Information on the growth in use of turnkey systems shown in Exhibit V-7 indicates that the cost of the equipment component of the solution is not growing as fast as the software or professional services components.

- This situation is partially due to the decreasing cost of equipment solutions. Many turnkey systems are now available on client/server systems and standalone workstations that were formerly available only on mainframes or minicomputers.

- The number of software features and the ability to customize delivered solutions with professional services work are also growing in importance to users.

Exhibit V-7

Turnkey Systems Submodes, 1994-1999
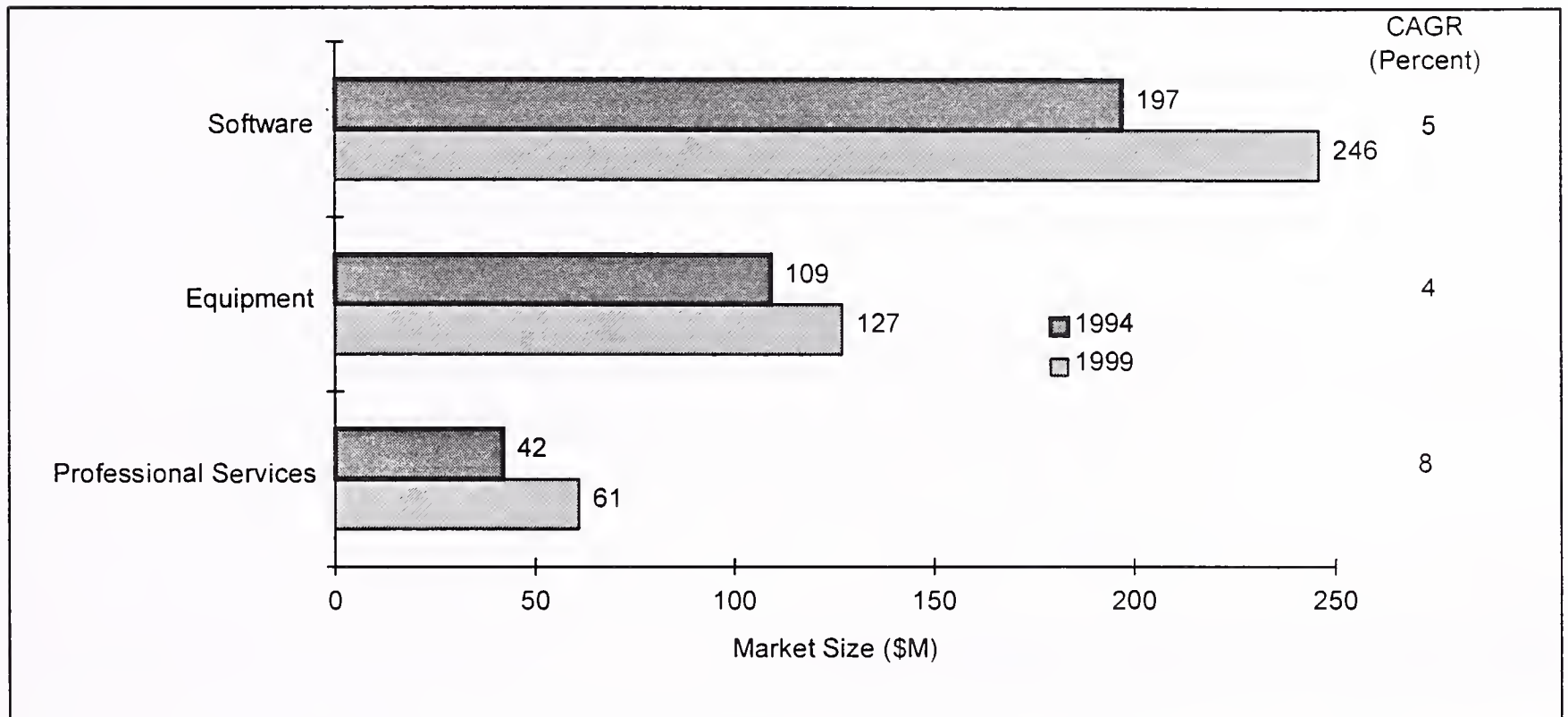
Although expenditures for turnkey systems are not growing as rapidly as those for other sectors, there is still growth in use forecast for these solutions.

4. Changes in Use of Turnkey Systems

Changes in use of turnkey systems in relation to application areas are estimated in Exhibit V-8.

- There are still areas where turnkey systems are increasing in use such as sales analysis.

- Decreases in use generally involve a movement of work to in-house client/server technology. Users report that these moves provide an opportunity to expand functional capabilities.

Exhibit V-8

Use of Turnkey Systems Reported by Users

Applications	Increases, Decreases Planned by Users
Accounting, finance	18% increase; 32% decrease
Order entry, processing	32% increase; 30% decrease
Sales analysis	38% increase; 32% decrease
Manufacturing	20% increase; 52% decrease
Office administration	16% increase; 37% decrease
Other	32% increase; 34% decrease

Many of the increases in usage were made for turnkeys on workstations or client/servers. There was increased use of mainframe and minicomputer turnkey solutions in manufacturing, accounting and order processing functions reported, but most vendors involved with these solutions are implementing or exploring downsized solutions.

C
Applications Software Products Market

1. Factors Encouraging Use of Applications Software Products

Information services users stress software features and functions and integration as reasons for using applications software products as shown in Exhibit V-9.

- Users stress that they want both integration and the set of features that meet their needs.

- The success of the integrated, feature rich functions of SAP software testifies to the need to satisfy both factors.

A group of users mentioned interest in new software techniques including object oriented as high, but these techniques are not dictating choice of products as yet.

Exhibit V-9

Factors Driving Use of Applications Software Products

Factor	Relative Importance to User Respondents*
Software Features/Functions	4.2
Integrated Capabilities	4.1
Need to Speed Up Development	3.9
Lower Development Costs	3.9
Range of Features	3.8

Users did report that another factor encouraging the use of applications software products in general was the ability to lower development costs by using vendor products instead of developing software solutions in-house.

2. Factors Inhibiting Use of Applications Software Products

Users are less likely to acquire applications software products that will require a high level of modification, as illustrated in Exhibit V-10. The acquisition of software products could also be inhibited if there was a possibility of changing to an equipment platform that could not run the software products. Decisions for mainframe software have been canceled for that reason according to respondents.

Concern about the ability of vendors to support software products in the future could also inhibit decisions in some corporate situations, as indicated in Exhibit V-10. Users investigate the ability to support software much more thoroughly at this time. The foregoing points emphasize, however, increasing willingness to rely on software products if questions about support platform and integrated functions are addressed.

Exhibit V-10

Factors that Can Inhibit Use of Applications Software Products

Factor	Relative Importance*
Lack of Confidence in Ability to Support Products	4.1
Amount of Modification Needed	4.0
Plans to Change Platforms	3.9
Lack of Support, Personnel of Vendor	3.6
Lack of Confidence in Vendor	3.5

3. Applications Software Products Market, 1994-1999

A breakdown of the applications software products market presented in Exhibit V-11 emphasizes that products for workstation/PC platforms are growing much more rapidly, than for larger platforms.

- By 1999, application software products on workstations/PCs will account for about 63% of all expenditures in this delivery sector.

- Application products for workstations and client/server systems are becoming available for many business functions, including human resources, integrated accounting, trust, commercial loan, distribution and material management, according to respondents. There is a limited set of integrated business modules available from vendors, available at present, and SAP is profiting greatly from this, according to respondents.

Exhibit V-11

Applications Software Products Submodes, 1994-1999

CAGR
(Percent)

Mainframe — 215, 265 — 4

Minicomputer — 250, 315 — 5

Workstation/PC — 419, 982 — 19

■ 1994
□ 1999

Market Size ($M)
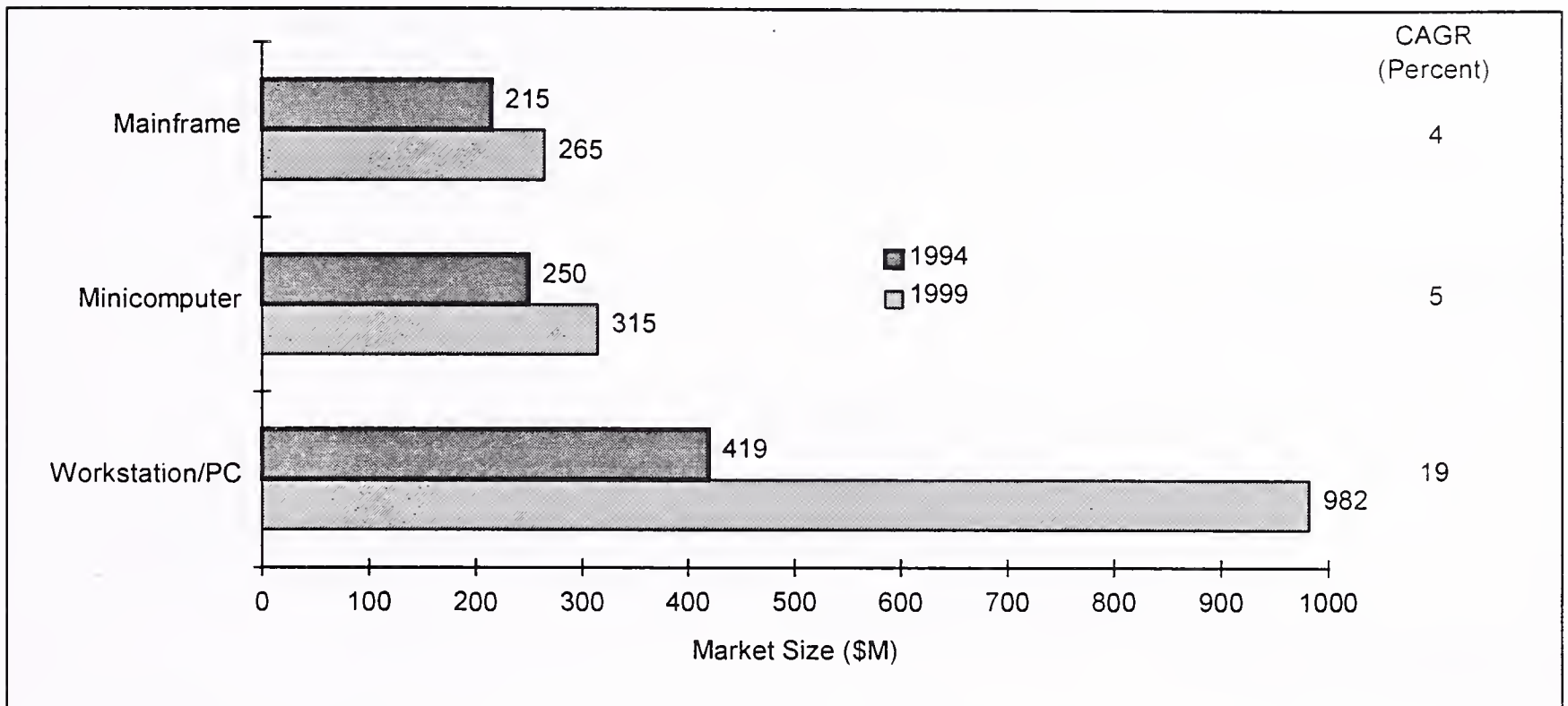
4. Changes in Use of Applications Software Products

Exhibit V-12 illustrates that there is much more increase than decrease in the use of software taking place. Some decrease is taking place through the use of professional service or SI. Many of the increases in use are involved with an integrated system utilizing a data base. Most of these increases involve client/server platforms, but some are still reported to be involved with mainframe and minicomputer technology.

Exhibit V-12

Use of Applications Software Products Reported by Users

Applications	Increases, Decreases Planned by Users
Accounting, finance, billing, payroll	52% increase; 11% decrease
Purchasing, order generation for supplier	57% increase; 14% decrease
Market or sales analysis	62% increase; 14% decrease
Inventory, warehouse	45% increase; 18% decrease
Manufacturing	42% increase; 24% decrease
Other	38% increase; 11% decrease

Users reported planned increases in product use for many application areas in addition to those highlighted in Exhibit V-12, including bank lending, investment, portfolio management/reporting, logistics, material management, work scheduling, order entry, POS, ATM networks, EDI, trust, insurance agency operation, customer service and energy related applications.

D

Outsourcing Market

1. Factors Encouraging Use of Outsourcing

Users report that the decision to use outsourcing often involves a long term evaluation particularly if a large activity is involved. One of the considerations that is explored in detail is the possibility of reducing overall costs.

Exhibit V-13

Factors Driving Use of Outsourcing

Factor	Relative Importance to User Respondents*
Reduction of Costs	4.1
Vendor Expertise/Ability to Aid	4.1
Improved Operations of Systems	3.9
Personnel Savings	3.9
Movement to New Technology	3.7

- A rating of factors driving the use of outsourcing, shown in Exhibit V-13, illustrates that cost savings is a major factor.

- Improved operations and/or equipment systems, personnel savings and the ability to rely upon the expertise of vendors in the use of IT also rank high as reasons for using outsourcing.

A number of users also feel outsourcing is a means of dealing with new technology because vendors are committed to maintaining a research staff that can stay up to date on new capabilities. This addresses one of the issues that information systems users identified as a major challenge during this study: handling the complex changes in IT equipment and services that are regularly occurring. Vendor expertise has led to the introduction and rapid

growth of outsourced services to aid with desktop computing and network management.

One of the factors that must be considered in relation to outsourcing is the rapid rise in business process outsourcing.

- This is generally used for non core functions in business such as human resources, sales, mail operations and accounting.

- The service is generally provided by IT vendors, but may involve much more non IT work than IT activities.

- It could add up to 25% to outsourcing revenues, but only the IT component is presently estimated and included in report data.

2. Factors Inhibiting Use of Outsourcing

Despite the rapid growth of outsourcing, users mention reservations about its use that could inhibit business, as indicated in Exhibit V-14.

- Loss of control of the use of IT is the chief deterrent. Many users feel that outsourcing vendors might be the ones who made decisions about whether systems upgrades or new applications could be implemented to meet business needs.

- Companies also feel that it may be very difficult to change vendors or reverse the move to outsourcing once a vendor starts to take over responsibility for operations or applications.

Exhibit V-14

Factors that Can Inhibit Use of Outsourcing

Factor	Relative Importance*
Loss of Control of IS Use	3.8
Amount of Work to Move Back Inside	3.7
Difficult to Change Vendors or Delivery Modes in Use	3.6
Length of Commitment	3.6

3. Outsourcing Market, 1994-1999

The new sectors of desktop services and network management are growing rapidly, as Exhibit V-15 indicates. User expenditures are

also rising more rapidly for applications outsourcing than for platform outsourcing.

- The platform sector involve the operation and possible ownership of platform capabilities for a corporate department or IS function on a long-term basis.

- The applications sector involves the provision of staff capabilities to handle modification and development of the applications systems that are being run as well as operational responsibilities.

Exhibit V-15

Outsourcing Submodes, 1994-1999
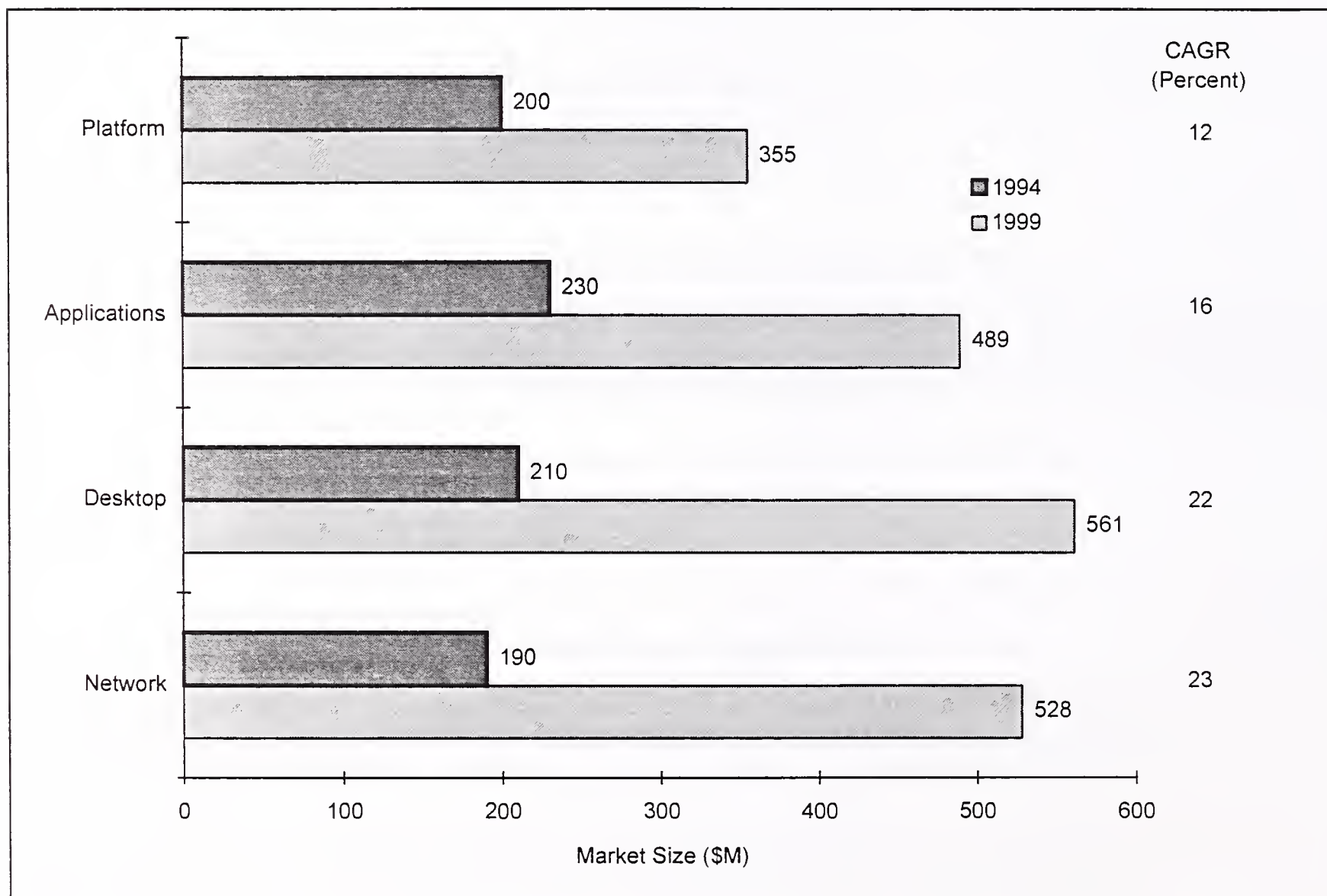
4. Changes in Use of Outsourcing

As Exhibit V-16 indicates, the changes in use planned in regard to systems operations are only concerned with increases.

- Users report they are considering alternatives to outsourcing for some applications including financial, trust and manufacturing work.

- In several situations, users reported that they might stay in-house and use systems integration, or professional services if vendors can meet their needs rather than court on an outsourcer.

Many of the application areas being considered for outsourcing are regarded as important to the companies involved, and management is inclined to rely on or at least consider large outsourcers for aid. Some users also emphasized that they were interested in the expertise of vendors for MRP, material management, integrated accounting, distribution and other systems.

Exhibit V-16

Use of Outsourcing Reported by Users

Applications	Increases, Decreases Planned by Users
Financial, accounting	26% increase
Manufacturing	38% increase
Trust, branch automation and other banking/financial	33% increase
Sales administration and analysis	38% increase
Material management and purchasing	41% increase
Other	26% increase

E
Systems Integration Market

1. Factors Encouraging Use of Systems Integration

Information services users report that they consider the use of systems integration to analyze and implement complex systems where expertise in a number of areas including the industry and application, applications software products that might be used, network components of the solution and platforms and tools would be necessary.

- Users emphasize industry/application knowledge, technical expertise, and experience of vendors as factors for using vendors, as indicated in Exhibit V-17.

- A systems integrator also enables users to make more effective use of their own resources because the integrator will take responsibility for meeting the needs of the project.

Exhibit V-17

Factors Driving Use of Systems Integration

Factor	Relative Importance to User Respondents*
Need for Industry/Application Knowledge	4.1
Need for Technical Expertise	4.1
Experience of Vendor	4.0
Faster Implementation	3.9
More Effective Use of Resources	3.5

2. Factors Inhibiting Use of Systems Integration

The investment commitment required for SI projects, as well as the possible loss of control of projects, can inhibit SI as indicated in Exhibit V-18.

- Feelings of loss of control can result when an in-house staff gains only limited experience of the technology and approaches used in applications.

- Integrators incorporate material on their education and technology transfer programs in presentations to lessen worries of loss of control.

There is a small group of users who are unhappy about SI projects due to the limitations of vendors that they utilized. They are not inclined to use SI, again.

Exhibit V-18

Factors that Can Inhibit Use of Systems Integration

Factor	Relative Importance*
Investment Commitment	4.2
Less Control of Work	3.9
In-house Staff Gains Limited Experience	3.7

3. Systems Integration Market, 1994-1999

The increase in SI from 1994 to 1999, can be broken down into the increases in delivery subsectors shown in Exhibit V-19.

- By 1999, professional services will become the leading subsector since it is growing more rapidly.

- Software expenditures are also growing faster than equipment expenditures, but will remain less than half of the amount spent on equipment on average. In some cases where smaller platforms are involved, the software products represent a higher percentage, however, and users are still becoming adjusted to that possibility.

Exhibit V-19

Systems Integration Submodes, 1994-1999
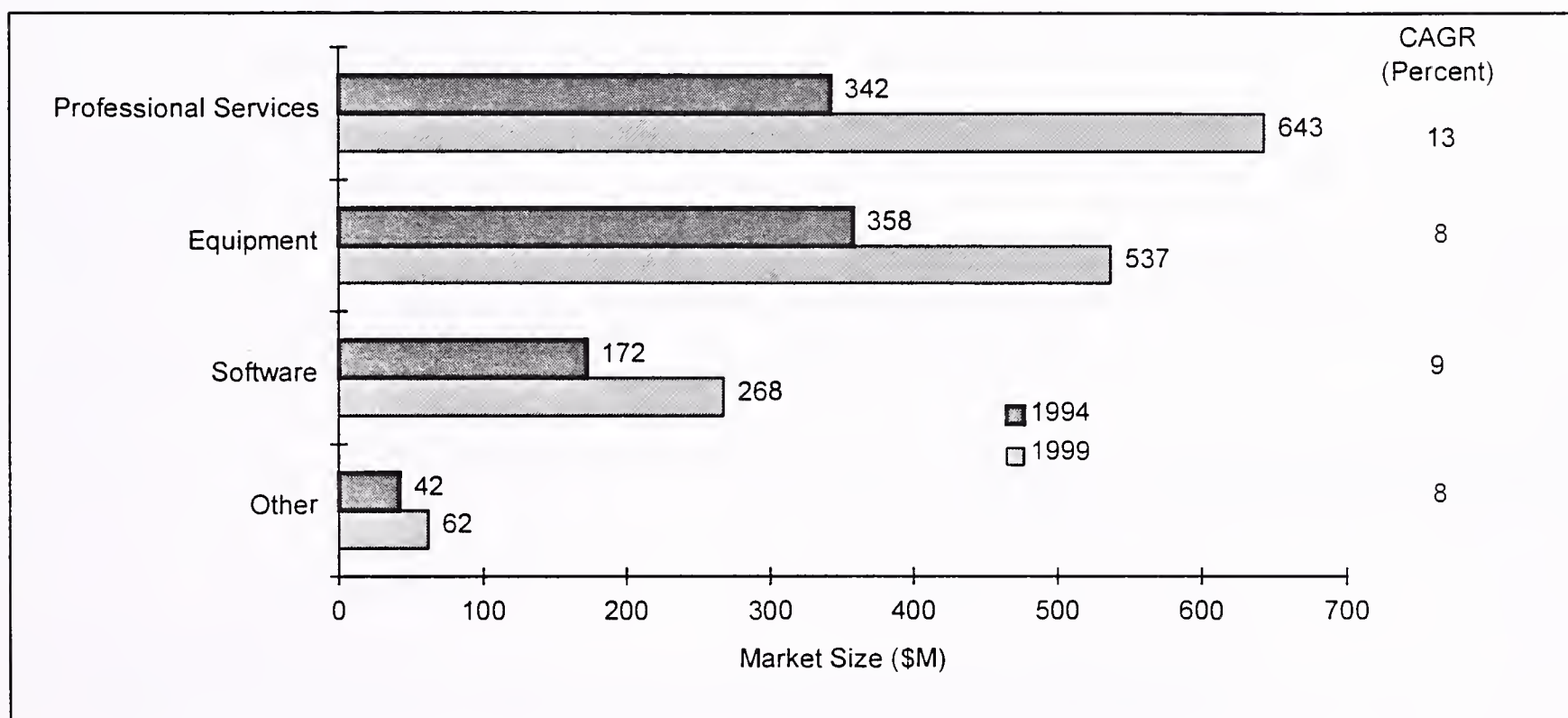
Changes are taking place in the value of equipment in both SI and professional services projects. In 1993, about 25% of these projects involved client/server technology or standalone workstations. By 1999, 80% will, according to forecasts. This will reduce the growth rate for equipment expenditures.

4. Changes in Use of Systems Integration

User respondents report that, there will be increases as well as decreases in use of systems integration (SI), as shown in Exhibit V-20.

- Users involved in financial and banking projects plan the greatest increase in their use of SI in general , but all application areas forecast increases.

- Users with current projects tended to forecast increases, even though decreases will occur as projects are finished.

- Some users have had unfavorable experiences with SI projects due to vendor deficiencies and forecast decreases in use.

Exhibit V-20

Use of Systems Integration Reported by Users

Applications	Increases, Decreases Planned by Users
Financial/accounting	38% increase, 9% decrease
Inventory, warehouse	35% increase
Sales and market analysis	33% increase; 8% decrease
Banking functions, including trading, ATM and branch systems	43% increase; 11% decrease
Manufacturing	33% increase
Distribution, logistics	23% increase
Other	33% increase; 9% decrease

F
Professional Services Market

1. Factors Encouraging Use of Professional Services

Need for aid with IT technology and application development or modification encourages organizations to use professional services, as illustrated in Exhibit V-21.

- A number of users report that these needs are divided between application and technical expertise.

- However, some users report that the need that sends them to professional services firms when personnel are being sought for temporary assignments is for technical skills, such as experience with Novell, Windows, or UNIX.

Exhibit V-21

Factors Driving Use of Professional Services

Factor	Relative Importance to User Respondents*
Aid Needed with Client/Server	4.3
Need for Application and Industry Experience	4.2
Need for Technical Knowledge	4.2
Desire to Hold Personnel Count Below Peak Period Demand Levels	3.9

2. Factors Inhibiting Use of Professional Services

As indicated in Exhibit V-22, plans to use professional services can be inhibited by shortages of funds or lack of confidence in vendors.

Other solution alternatives can reduce use of professional services, also.

- This could include using turnkey systems, processing or applications software products in situations where modification to the software systems utilized by vendors was minor.

- Downsizing may reduce use of professional services, also. This has happened in cases where users have modified or used facilities available with software to tailor systems to meet their needs.

Exhibit V-22

Factors that Can Inhibit Use of Professional Services

Factor	Relative Importance*
Lack of Budget	4.1
Interest in Outsourcing	3.9
Interest in Software or SI Vendor Solution	3.8

3. Professional Services Market, 1994-1999

An 11% CAGR forecast of growth for professional services over the next five years is accompanied by increases in consulting and education and training, as shown in Exhibit V-23.

- Education and training will enjoy a growth rate of 12% as a result of continuing interest in training in software products used for downsizing and client/server systems. This training is being provided by firms dedicated to education and training as well as SI and professional services firms interested in using education/training to support products as well as penetrate accounts further. One major vendor highlighted that strategy in regard to client/server initiatives.

- Consulting is growing in use at a 13% rate also, due to the growing need for planning to support changes in the use of IT brought about by business reengineering. Some users stated that they also needed aid in planning to restructure functions for client/server systems.

Exhibit V-23

Professional Services Submodes, 1994-1999
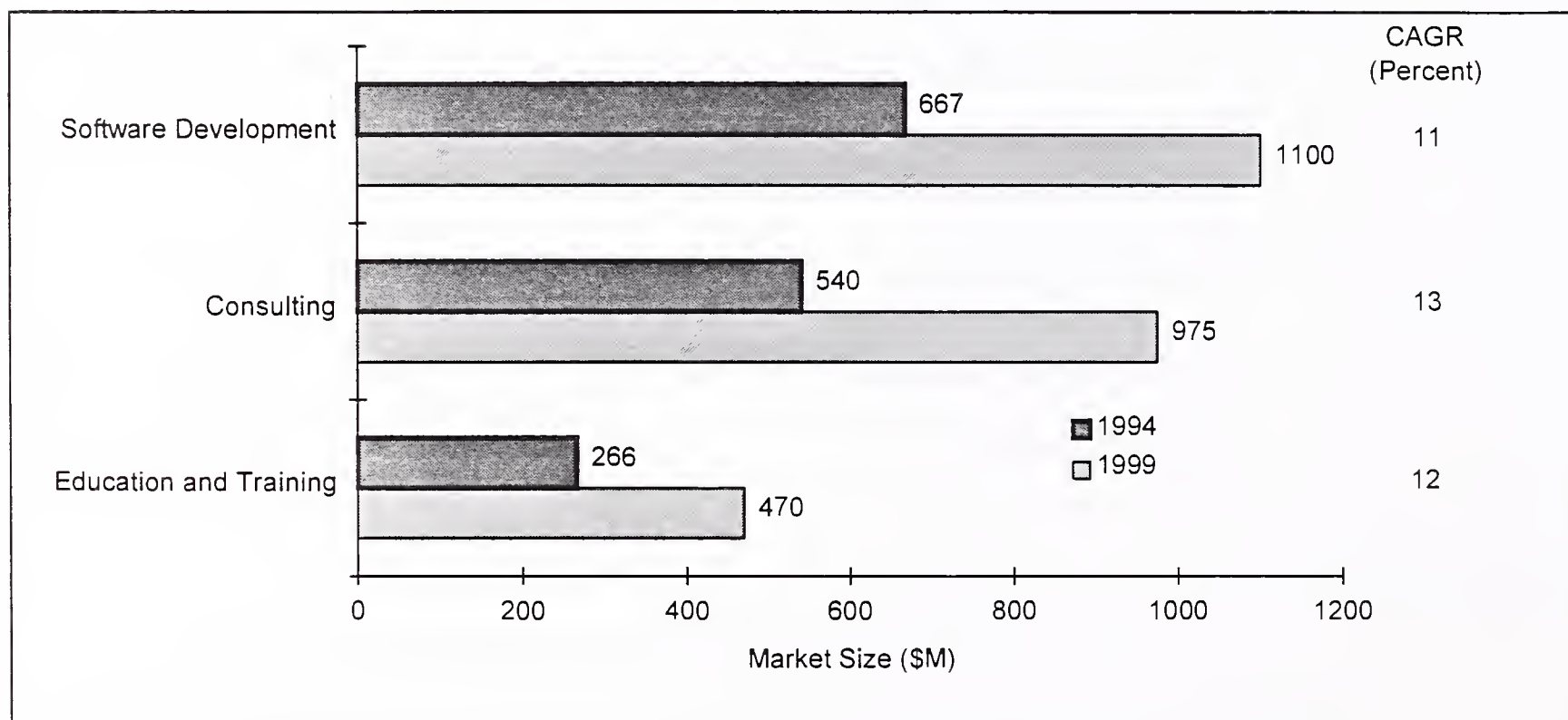
4. Changes in Use of Professional Services

Exhibit V-24 indicates the application areas in which users will increase their use of professional services in order to enhance, upgrade or in some cases, develop applications as well as to provide consulting and education/training services.

- SI and application software products are more favored choices for new development, but software products may be accompanied with professional services to customize solutions.

- Several vendors reported that they develop specialties in customizing certain software products.

Exhibit V-24

Use of Professional Services Reported by Users

Applications	Increases, Decreases Planned by Users
Financial, accounting, billing	42% increase; 11% decrease
Inventory, warehouse	28% increase; 4% decrease
Sales and market analysis	35% increase; 18% decrease
Manufacturing	32% increase; 10% decrease
Purchasing, order generation for suppliers	35% increase; 17% decrease
Other	32% increase; 12% decrease

Exhibit V-24 shows that users plan to have decreases as well as increases in the use of professional services in most application areas. This is due to the completion of assignments as well as to the use of SI rather than professional services for development in a number of cases where complex systems are involved.

- Education/training expenditures at a number of respondents stay at high levels or grow, from year to year. Together with the current need for client/server related education, this has provided a good opportunity for professional services vendors.

- Consulting assignments continue to grow as noted before although they tend to grow rapidly and then decrease at a user's site as assignments finish. Some vendors try to secure ongoing work or have add on training work to counter this.

G
Network Services Market

1. Factors Encouraging Use of Network Services

Exhibit V-25 shows that, demands for specific network services such as EDI or EIS (electronic information services or on-line data bases of information) is the primary driver for this delivery sector.

- Cost benefits of using EDI for ordering and payment and EIS to supply pricing or industrial information also drive these services.

- The interest of corporate users and individuals in new multimedia features is also increasing interest in using these services. AT&T and MCI as well as other carriers and a wide range of IT vendors including Mircrosoft have been promoting new capabilities in network services.

Exhibit V-25

Factors Driving Use of Network Services

Factor	Relative Importance to User Respondents*
Demand for EDI and On-Line Data Bases	3.8
New Features Including Multimedia	3.7
Cost Benefits	3.7
Expanding Network Use	3.3

2. Factors Inhibiting Use of Network Services

There are also factors reported that could inhibit use of network services, including attempts to use internal capabilities, as shown in Exhibit V-26.

- Fax is in use in place of EDI in some companies despite its limitations.

- There is also reluctance in some companies to use vendors for E-mail and VANs since they are concerned about security.

Exhibit V-26

Factors that Can Inhibit Use of Network Services

Factor	Relative Importance*
Use of Internal Systems	3.1
Inadequate Capabilities	2.9
Reluctance to Use Vendors	2.7

3. Network Services Market, 1993-1998

Exhibit V-27 demonstrates that the growth of expenditures for network services is fueled by the growth of both network applications and EIS.

- Network applications is the largest subsector and is growing at a faster rate. Expenditures for it are fueled chiefly by interest in EDI, but growth is also contributed by VANs (value-added networks) and electronic mail.

- A number of on-line data bases contribute to the growth of EIS, but the users claim services providing equity prices and other financial information are the most significant.

Exhibit V-27

Network Services Submodes, 1994-1999

CAGR
(Percent)

Network Applications — 215 / 465 — 17

☐ 1994
☐ 1999

Electronic Information Services — 119 / 240 — 15

Market Size ($M)
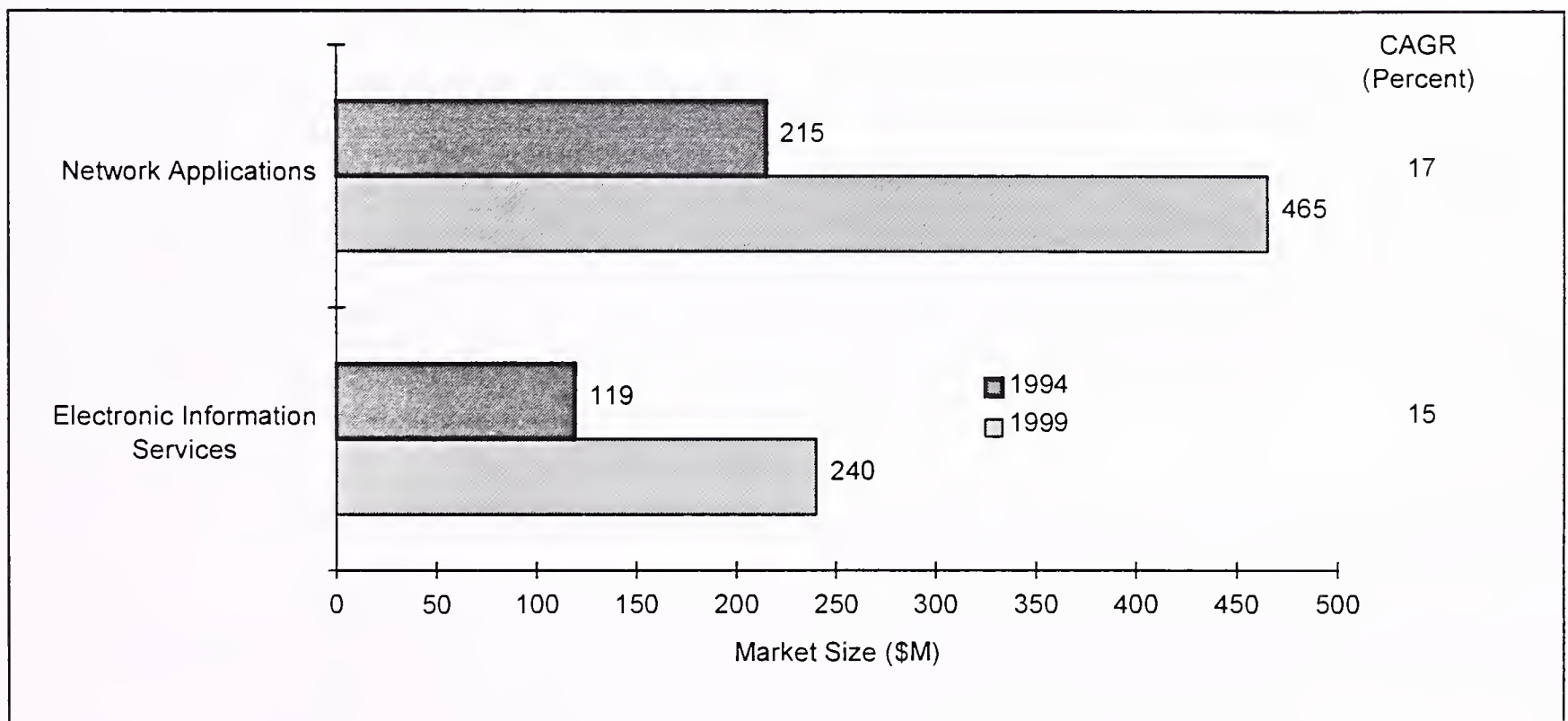
4. Changes in Use of Network Services

Respondents report only planned increases in use of network services, as shown in Exhibit V-28. Decrease are not foreseen.

- Increased use of EDI is mentioned most often by users in manufacturing, wholesale and retail trade and banking/finance.

- Increased use of EDI was also mentioned by some users in business services, transportation, utilities and "miscellaneous" market sectors.

- A high percentage of users plans some increase in EIS use. Part of this use is reported as experimental or trial, but there is strong commitment to the expansion in use of financial data as well as data bases of corporate information that can be used in sales activities.

Exhibit V-28

Use of Network Services Reported by Users

Most Common Use	Increases, Decreases Planned by Users
EDI	33% will increase use
EIS (on-line data bases)	47% will increase use
VANs	18% will increase use
Electronic mail	30% will increase use

Users in banking, insurance, manufacturing, utilities, business services and distribution mentioned increases in use of EIS or on-line data bases of financial, industrial and other information that could be driven by new multimedia or interactive features. Users also mentioned that they had plans in regard to EDI, VANs and electronic mail that could take advantage of these capabilities.

H
Systems Software Products Market

1. Factors Encouraging Use of Systems Software Products

Information services users report that the use of new IT is encouraging sales of systems software products are shown in Exhibit V-29.

- Users reported that they were buying an increasing amount of systems software products for workstations and client/servers to support the expanding use of this equipment.

- New network and data management capabilities are also driving purchases of system software.

Users also reported that a lack of technical expertise increased the need for software products that could help to analyze or improve

performance of new technology. The desire to increase the effectiveness of systems has been extended to workstation equipment.

Exhibit V-29

Factors Driving Use of Systems Software Products

Factor	Relative Importance to User Respondents*
Use of Client/Server Technology	3.9
Other New Equipment and Network Capabilities	3.5
Desire to Increase Effectiveness of Systems	2.9

2. Factors Inhibiting Use of Systems Software Products

Data center consolidation and cost of products can inhibit expenditures for systems software products, as shown in Exhibit V-30. In addition, downsizing can reduce expenditures for systems software products on an overall basis. A reduction in the growth rate of mainframe and minicomputer systems, resulting from downsizing and the use of client/server systems is bringing about decreased expenditures for systems software products for the larger platforms.

Exhibit V-30

Factors that Can Inhibit Use of Systems Software Products

Factor	Relative Importance*
Downsizing, When It Reduces Need for More Expensive Products	3.3
Data Center Consolidation	3.3
Cost	3.1

3. Systems Software Products Market, 1994-1999

The growth in expenditures for systems software products for workstation/PC equipment is responsible for the 1994-1999 growth rate, as shown by Exhibit V-31.

- Expenditures are growing at a CAGR of 19% for workstation/PC systems software products and are responsible for an increase of $269 million in the annual level of expenditures during the five-year period.

- Expenditures for mainframe and minicomputer systems are growing at a rate that is a fraction of the rate for workstation/PC systems.

Exhibit V-31

Systems Software Products Submodes, 1994-1999
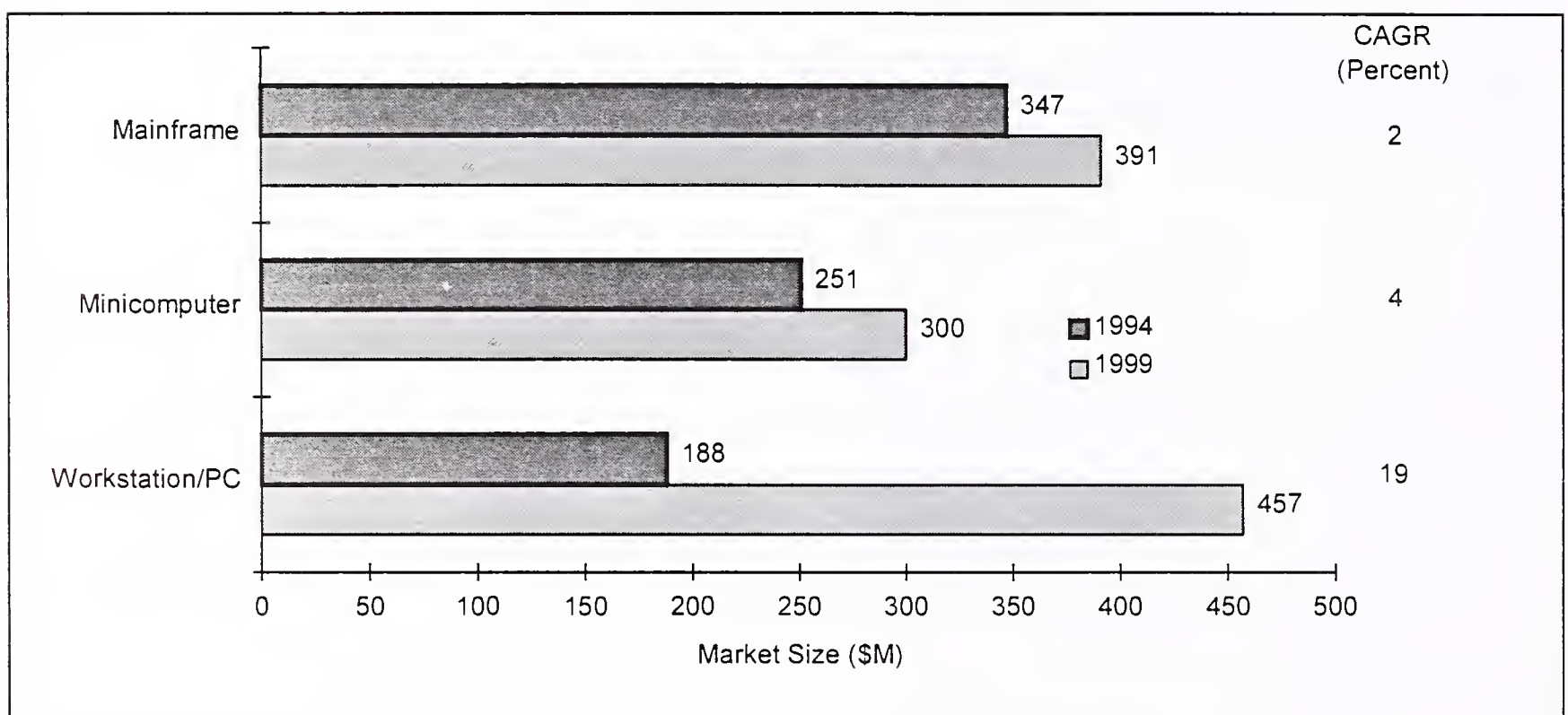
4. Changes in Use of Systems Software Products

For the users who reported changes in use of systems software products, the most common change reported was an increase in use to support client/server or open system platforms, as illustrated in Exhibit V-32. The changes reported included increases in use of windows releases, UNIX, graphical user interfaces, tools, and programming and development languages.

Exhibit V-32

Use of Systems Software Products Reported by Users

Most Common Plans	Likelihood of Increase
Supporting Client/Server Use	High
Supporting Open Systems	High
Network expansion	High/Medium
Other	Medium
Improve System Effectiveness	Medium

(Blank)

V-28
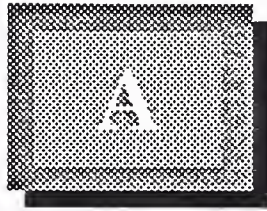
Definition of Terms

A
Introduction

INPUT's *Definition of Terms* provides the framework for all of INPUT's market analyses and forecasts of the information services industry. It is used for all U.S. programs. The structure defined in Exhibit A-1 is also used in Europe and for the worldwide forecast.

One of the strengths of INPUT's market analysis services is the consistency of the underlying market sizing and forecast data. Each year INPUT reviews its industry structure and makes changes if they are required. When changes are made they are carefully documented and the new definitions and forecasts reconciled to the prior definitions and forecasts. INPUT clients have the benefit of being able to track market forecast data from year to year against a proven and consistent foundation of definitions.

B
Overall Definitions and Analytical Framework

1. Information Services

Information Services are computer/telecommunications-related products and services that are oriented toward the development or use of information systems. Information services typically involve one or more of the following:

• Use of vendor-provided computer processing services to develop or run applications or provide services such as disaster recovery or data entry (called *Processing Services*)

- A combination of computer equipment, packaged software and associated support services which will meet an application systems need (called *Turnkey Systems*)

- Packaged software products, including systems software or applications software products (called *Software Products*)

- People services that support users in developing and operating their own information systems (called *Professional Services*)

- The combination of products (software and equipment) and services where the vendor assumes total responsibility for the development of a custom integrated solution to an information systems need (called *Systems Integration*)

- Services that provide operation and management of all or a significant part of a user's information systems functions under a long-term contract (called *Systems Operations*)

- Services that support the delivery of information in electronic form—typically network-oriented services such as value-added networks, electronic mail and document interchange (called *Network Applications*)

- Services that support the access and use of public and proprietary information such as on-line databases and news services (called *Electronic Information Services*)

- Services that support the operation of computer and digital communication equipment (called *Equipment Services*)

In general, the market for information services does not involve providing equipment to users. The exception is where the equipment is part of an overall service offering such as a turnkey system, a systems operations contract or a systems integration project.

The information services market also excludes pure data transport services (i.e., data or voice communications circuits). However, where information transport is associated with a network-based service (e.g., electronic data interchange services), or cannot be feasibly separated from other bundled services (e.g., some systems operations contracts), the transport costs are included as part of the services market.

The analytical framework of the information services industry consists of the following interacting factors: overall and industry-specific business environment (trends, events and issues); technology environment; user information system requirements; size and structure of information services markets; vendors and their products, services and revenues; distribution channels; and competitive issues.

2. Market Forecasts/User Expenditures

All information services market forecasts are estimates of *User Expenditures* for information services. When questions arise about the proper place to count these expenditures, INPUT addresses them from the user's viewpoint: expenditures are categorized according to what users perceive they are buying.

By focusing on user expenditures, INPUT avoids two problems which are related to the distribution channels for various categories of services:

• Double-counting, which can occur by estimating total vendor revenues when there is significant reselling within the industry (e.g., software sales to turnkey vendors for repackaging and resale to end users)

• Missed counting, which can occur when sales to end users go through indirect channels such as mail order retailers

Captive Information Services User Expenditures are expenditures for products and services provided by a vendor that is part of the same parent corporation as the user. These expenditures are not included in INPUT forecasts.

Noncaptive Information Services User Expenditures are expenditures that go to vendors that have a different parent corporation than the user. It is these expenditures which constitute the information services market analyzed by INPUT and that are included in INPUT forecasts.

3. Delivery Modes

Delivery Modes are defined as specific products and services that satisfy a given user need. While *Market Sectors* specify *who* the buyer is, *Delivery Modes* specify *what* the user is buying.

Of the nine delivery modes defined by INPUT, six are considered primary products or services:

- *Processing Services*
- *Network Services*
- *Professional Services*
- *Applications Software Products*
- *Systems Software Products*
- *Equipment Services*

The remaining three delivery modes represent combinations of these products and services, combined with equipment, management and/or other services:

- *Turnkey Systems*
- *Systems Operations*
- *Systems Integration*

Section C describes the delivery modes and their structure in more detail.

4. Market Sectors

Market Sectors or markets are groupings or categories of the buyers of information services. There are three types of user markets:

- *Vertical Industry* markets, such as Banking, Transportation, Utilities, etc. These are called "industry-specific" markets.

- *Functional Application* markets, such as Human Resources, Accounting, etc. These are called "cross-industry" markets.

- *Other* markets, which are neither industry- nor application-specific, such as the market for systems software products and much of the on-line database market.

Specific market sectors used by INPUT are defined in Section E, below.

5. Trading Communities

Information technology is playing a major role in re-engineering, not just companies but the value chain or *Trading Communities* in which these companies operate. This re-engineering is resulting in electronic commerce emerging where interorganizational electronic systems facilitate the business processes of the trading community.

- A trading community is the group or organizations—commercial and noncommercial—involved in producing goods or services.

- Electronic commerce and trading communities are addressed in INPUT's EDI and Electronic Commerce Program.

6. Outsourcing

Over the past few years a major change has occurred in the way clients are buying some information services. The shift has been labeled *outsourcing*.

INPUT views outsourcing as a change in the form of the client/ vendor relationship. Under an outsourcing relationship, all or a major portion of the information systems function is contracted to a vendor in a long-term relationship. The vendor is responsible for the performance of the function.

INPUT considers the following submodes to be outsourcing-type relationships and in aggregate to represent the outsourcing market. See Exhibit A-1. Complete definitions are provided in Section C of this document. INPUT provides these forecasts as part of the corresponding delivery modes.

- *Platform Systems Operations* - The vendor is responsible for managing and operating the client's computer systems.

- *Applications System Operations* - The vendor is responsible for developing and/or maintaining a client's applications as well as operating the computer systems.

- *Network Management* - The vendor assumes full responsibility for operating and managing the client's data communications systems. This may also include the voice communications of the client.

Outsourcing Components
INPUT's View

```
                        ┌──────────────┐
                        │ Outsourcing  │
                        └──────┬───────┘
              ┌────────────────┴────────────────┐
      ┌───────────────────┐          ┌──────────────────────┐
      │ Systems Operations│          │ Professsional Services│
      └─────────┬─────────┘          └───────────┬──────────┘
      ┌─────┬───┼───────┐                         │
 ┌──────────┐ ┌──────────┐             ┌────────────────────────┐
 │ Platforms│ │ Network  │             │ Applications Management│
 │Operations│ │Management│             └────────────────────────┘
 └──────────┘ └──────────┘
   ┌──────────┐   ┌──────────┐
   │Applications│ │ Desktop  │
   │Operations │  │ Services │
   └──────────┘   └──────────┘
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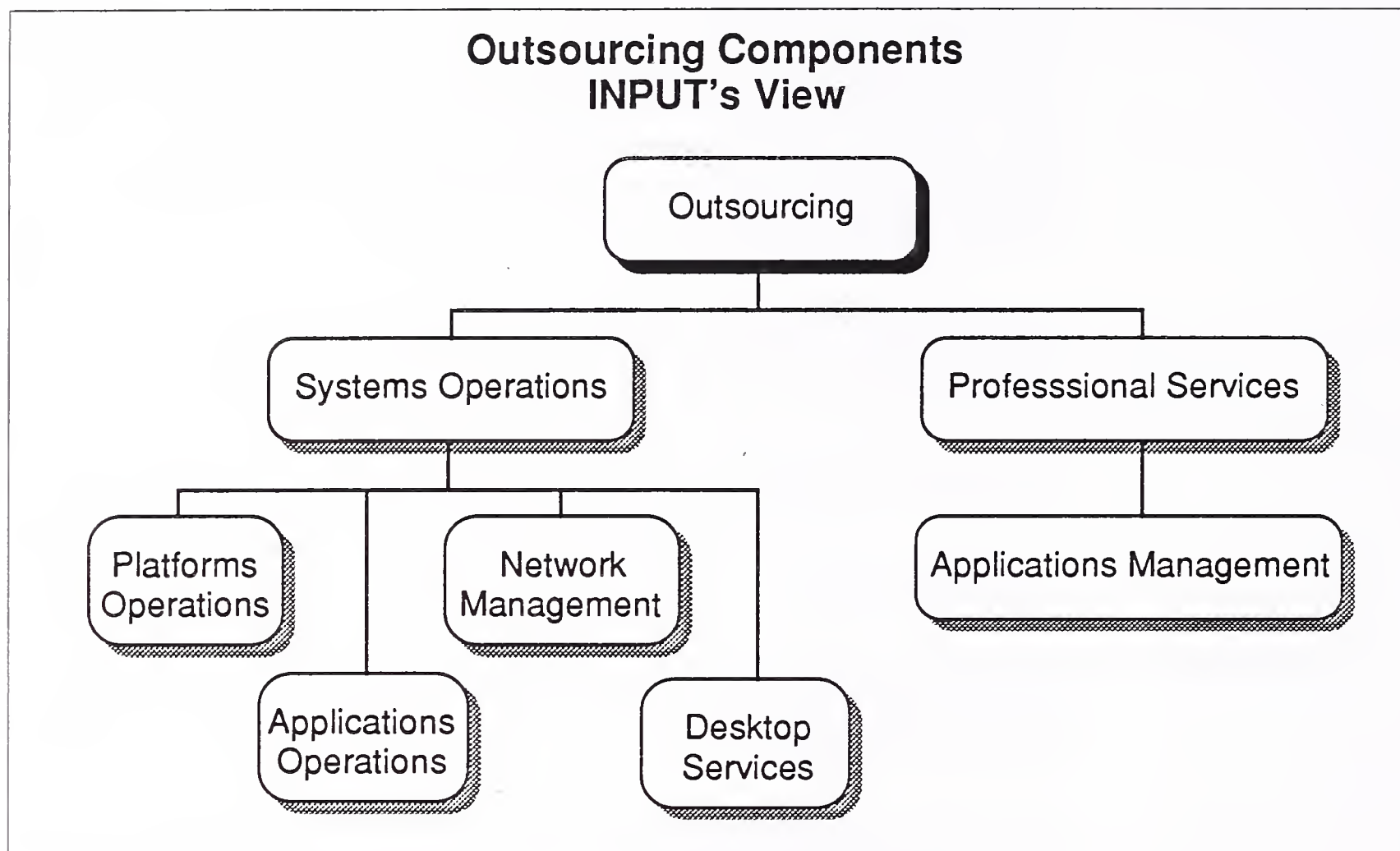
- *Applications Management / Maintenance* - The professional services vendor has full responsibility for developing and/or maintaining some or all of the applications systems that a client uses to support business operations. The services are provided on a long-term contractual basis.

- *Desktop Services* - The vendor assumes responsibility for the deployment, maintenance, and connectivity between the personal computers and/or intelligent workstations in the client organization. The services may also include performing the help-desk function. The services are provided on a long-term contractual basis.

C
Delivery Modes and Submodes

Exhibit A-2 provides the overall structure of the information services industry as defined and used by INPUT. This section of *Definition of Terms* provides definitions for each of the delivery modes and their submodes or components.

Exhibit A-2

Information Services Industry Structure

Systems Software Products	Applications Software Products	Turnkey Systems	Equipment Services	Professional Services	Systems Integration	Systems Operations	Processing Services	Network Services

Systems Software Products
- Mainframe
- Minicomputer
- Workstation/PC

Applications Software Products
- Mainframe
- Minicomputer
- Workstation/PC

Turnkey Systems
- Equipment
- Software Products
- Professional Services

Equipment Services
- Equipment Maintenance
- Environmental Services

Professional Services
- Consulting
- Education & Training
- Software Development/Maintenance
- Application Management/Maintenance

Systems Integration
- Equipment
- Software Products
- Professional Services
- Other

Systems Operations
- Platform Operations
- Applications Operations
- Desktop Services
- Network Management

Processing Services
- Transaction
- Utility
- Other

Network Services
- Electronic Information Services
- Network Applications

Source: INPUT

1. Software Products

INPUT divides the software products market into two delivery modes: systems software and applications software.

The two delivery modes have many similarities. Both involve purchases of software packages for in-house computer systems. Included are both lease and purchase expenditures, as well as expenditures for work performed by the vendor to implement or maintain the package at the user's sites. Vendor-provided training or support in operation and use of the package, if part of the software pricing, is also included here.

Expenditures for work performed by organizations other than the package vendor are counted in the professional services delivery mode. Fees for work related to education, consulting, and/or custom modification of software products are also counted as professional services, provided such fees are charged separately from the price of the software product itself.

a. Systems Software Products

Systems software products enable the computer/communications system to perform basic machine-oriented or user interface functions. INPUT divides systems software products into three submodes. See Exhibit A-3.

- *Systems Control Products* - Software programs that manage computer system resources and control the execution of programs. These products include operating systems, emulators, network control, library control, windowing, access control and spoolers.

- *Operations Management Tools* - Software programs used by operations personnel to manage the computer system and/or network resources and personnel more effectively. Included are performance measurement, job accounting, computer operation scheduling, disk management utilities and capacity management.

- *Applications Development Tools* - Software programs used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Included are traditional programming languages, 4GLs, data dictionaries, database management systems, report writers, project control systems, CASE systems and other development productivity aids.

Exhibit A-3

Systems Software Products
Market Structure

Systems Software

Systems Control

- Access Control
- Communications Monitors
- Micro-Mainframe Links
- Network Control
- Operating Systems
- Security Systems
- System Library Control
- Windowing Systems
- Other

Data Center Management

- Capacity Management
- Computer Operations Scheduling
- Data Center Management
- Disk Management
- Downtime/Repair Monitoring Management
- Job Accounting
- Performance Monitors
- Tape Management
- Utilities
- Other

Applications Development Tools

Program Development and Production Tools

- Applications Generators
- Assemblers
- Automatic Documentation
- Configuration Management
- Debugging Aids
- Languages (All Generations)
- Systems Development Control
- Retrieval Systems
- Translators
- 4GL
- I-CASE
- Other

Database Management Systems

- Database Management Systems
- Data Dictionaries
- Other

INPUT also forecasts the systems software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

b. Applications Software Products

Applications software products enable a user or group of users to support an operational or administrative process within an organization. Examples include accounts payable, order entry, project management and office systems. INPUT categorizes applications software products into two groups of market sectors. (See Exhibit A-4.)

- *Industry Applications Software Products* - Software products that perform functions related to fulfilling business or organizational needs unique to a specific industry (vertical) market and sold to that market only. Examples include demand deposit accounting, MRPII, medical record keeping, automobile dealer parts inventory, etc.

- *Cross-Industry Applications Software Products* - Software products that perform a specific function that is applicable to a wide range of industry sectors. Examples include payroll and human resource systems, accounting systems, word processing and graphics systems, spreadsheets, etc.

INPUT also forecasts the applications software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

2. Turnkey Systems

A turnkey system is an integration of equipment (CPU, peripherals, etc.), systems software, and packaged applications software into a single product developed to meet a specific set of user requirements. Value added by the turnkey system vendor is primarily in the software and professional services provided. INPUT categorizes turnkey systems into two groups of market sectors as it does for applications software products.
(See Exhibit A-4.)

Most CAD/CAM systems and many small business systems are turnkey systems. Turnkey systems utilize standard computers and do not include specialized hardware such as word processors, cash registers, process control systems or embedded computer systems for military applications.

Exhibit A-4

Applications Products and Turnkey Systems

```
                    ┌─────────────────┐      ┌─────────────────┐
                    │  Applications   │      │     Turnkey     │
                    │Software Products│      │     Systems     │
                    └─────────────────┘      └─────────────────┘
```

Cross-Industry

Office Systems
- Integrated Office Systems
- Word Processing
- Desktop Publishing
- Image Systems
- Electronic Publishing
- Document Imaging Software

Accounting
- General Ledger
- Accounts Payable
- Accounts Receivable
- Billing/Invoicing
- Costing
- Fixed Assets
- International Accounting
- Purchasing
- Taxation

Human Resources
- Human Resources Management
- Payroll
- Benefits

Education & Training
- Computer-Based Training
- Authoring Languages

Planning & Analysis
- Executive Information Systems
- Financial Modeling and Planning
- Spreadsheets
- Project Management

Engineering & Scientific
- Computer-Aided Design and Engineering
- Structural Analysis
- Statistics/ Mathematics/ Operations Research
- Mapping

Other Cross-Industry
- Marketing Management
- Sales Analysis

Industry-Specific
- Discrete Manufacturing
- Process Manufacturing
- Transportation Services
- Utilities
- Telecommunications
- Retail Distribution
- Wholesale Distribution
- Banking and Finance
- Insurance
- Health Services
- Education
- Business and Technical Services
- Federal Government
- State and Local Government
- Miscellaneous Industries

Computer manufacturers (e.g., IBM or DEC) that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included in the appropriate software category.

Most turnkey systems are sold through channels known as value-added resellers.

• *Value-Added Reseller (VAR):* A VAR adds value to computer hardware and/or software and then resells it to an end user. The major value added is usually applications software for a vertical or cross-industry market; but also includes many of the other components of a turnkey systems solution, such as professional services, software support, and applications upgrades.

Turnkey systems have three components:

• Equipment - computer hardware supplied as part of the turnkey system

• Software products - prepackaged systems and applications software products

• Professional services - services to install or customize the system or train the user, provided as part of the turnkey system sale

Exhibit A-5 contrasts turnkey systems with systems integration. Turnkey systems are based on available software products that a vendor may modify to a modest degree.

Exhibit A-5

The Customization Spectrum		
Systems Integration	Custom Turnkey	Turnkey
Degree of Customization		

100%   50%   25%   0%
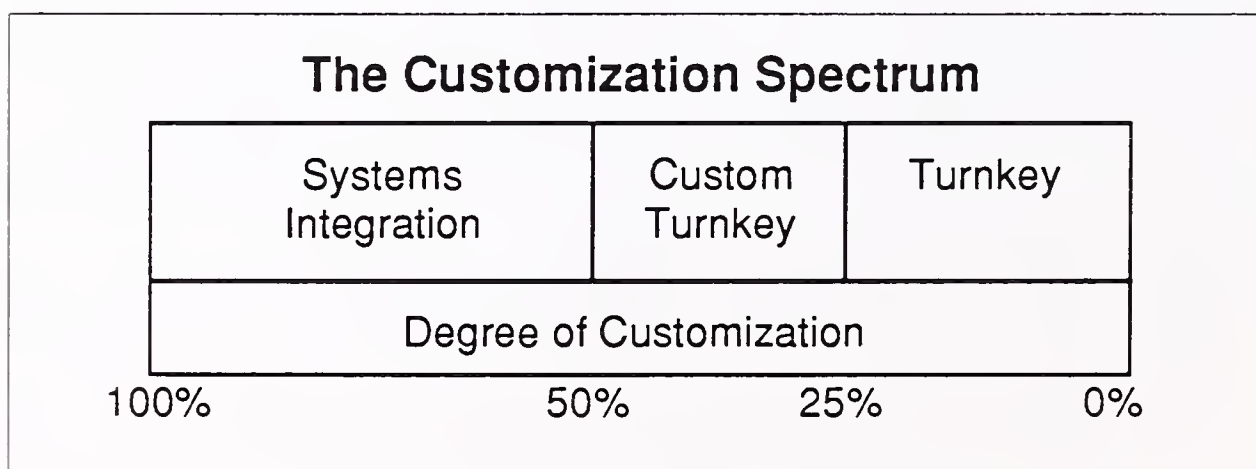
3. Processing Services

This delivery mode includes three submodes: transaction processing, utility processing, and "other" processing services. See Exhibit A-6.

Processing Services Market Structure

Processing Services

├── Transaction Processing

├── Utility Processing

└── Other Processing Services
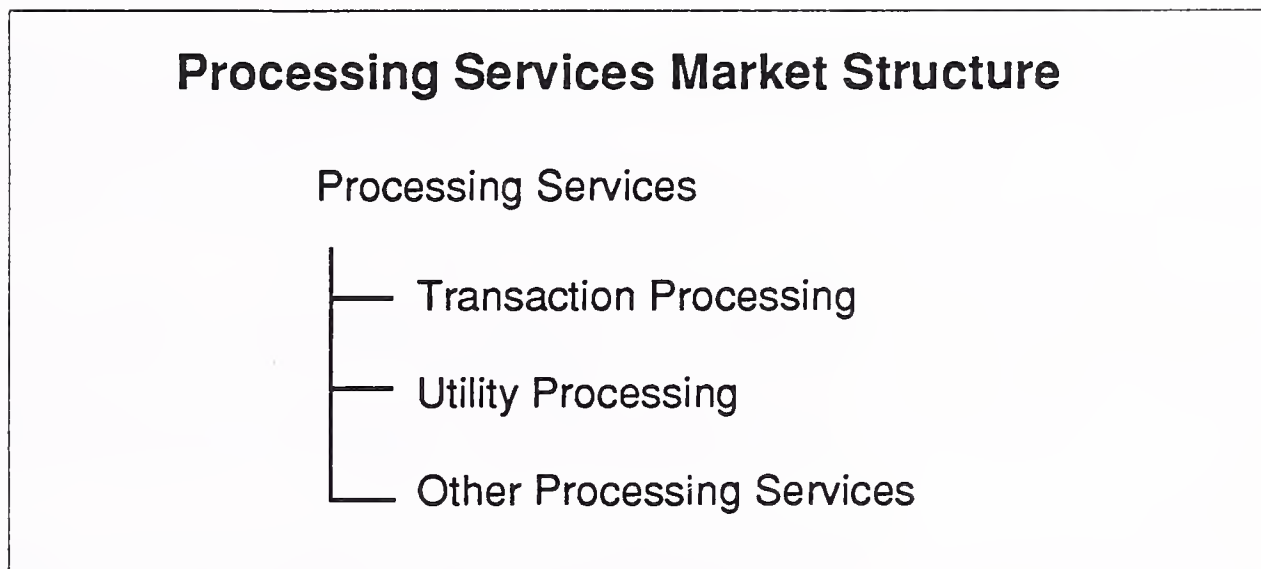
- *Transaction Processing* - Client uses vendor-provided information systems—including hardware, software and/or data networks—at the vendor site or customer site to process specific applications and update client databases. The application software is typically provided by the vendor.

- *Utility Processing* - Vendor provides basic software tools (language compilers, assemblers, DBMSs, graphics packages, mathematical models, scientific library routines, etc.), enabling clients to develop and/or operate their own programs or process data on the vendor's system.

- *Other Processing Services* - Vendor provides service—usually at the vendor site—such as scanning and other data entry services, laser printing, computer output microfilm (COM), CD preparation and other data output services, backup and disaster recovery, etc.

4. Systems Operations

Systems operations as a delivery mode was introduced in the 1990 Market Analysis and Systems Operations programs. Previously called Facilities Management, this delivery mode was created by taking the Systems Operations submode out of both Processing Services and Professional Services. For 1992 the submodes have been defined as follows.

Systems operations involves the operation and management of all or a significant part of the client's information systems functions under a long-term contract. These services can be provided in either of four distinct submodes where the difference is whether the support of applications, as well as data center operations, is included.

- *Platform systems operations* - The vendor manages and operates the computer systems, to perform the client's business functions, without taking responsibility for the client's application systems.

- *Applications systems operations* - The vendor manages and operates the computer systems to perform the client's business functions, and is also responsible for maintaining, or developing and maintaining, the client's application systems.

- *Network Management* - The vendor assumes responsibility for operating and managing the client's data communications systems. This may also include the voice communications of the client. A network management outsourcing contract may include only the management services or the full costs of the communications services and equipment plus the management services.

- *Desktop Services* - The vendor assumes responsibility for the deployment, maintenance, and connectivity among the personal computers and/or workstations in the client organization. The services may also include performing the help-desk function. Equipment as well as services can be part of a desktop services outsourcing contract.

  Note: This type of client service can also be provided through traditional professional services where the contractual criteria of outsourcing are not present.

Systems operations vendors now provide a wide variety of services in support of existing information systems. The vendor can plan, control, provide, operate, maintain and manage any or all components of the client's information systems environment (equipment, networks, applications systems), either at the client's site or the vendor's site.

Note: In the federal government market, systems operation services are also defined by equipment ownership with the terms "COCO" (Contractor-Owned, Contractor-Operated), and "GOCO" (Government-Owned, Contractor-Operated).

5. Systems Integration (SI)

Systems integration is a vendor service that provides a complete solution to an information system, networking or automation development requirement through the custom selection and implementation of a variety of information system products and services. A systems integrator is responsible for the overall management of a systems integration contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price. (Refer to Exhibit A-7.)

The components of a systems integration project are the following:

- *Equipment* - information processing and communications equipment required to build the systems solution. This component may include custom as well as off-the-shelf equipment to meet the unique needs of the project. The systems integration equipment category excludes turnkey systems by definition.

- *Software products* - prepackaged applications and systems software products.

- *Professional services* - the value-added component that adapts the equipment and develops, assembles, or modifies the software and hardware to meet the system's requirements. It includes all of the professional services activities required to develop, implement, and if included in the contract, operate an information system, including consulting, program/project management, design and integration, software development, education and training, documentation, and systems operations and maintenance.

- *Other services* - most systems integration contracts include other services and product expenditures that are not classified elsewhere. This category includes miscellaneous items such as engineering services, automation equipment, computer supplies, business support services and supplies, and other items required for a smooth development effort.

Exhibit A-7

Products/Services in
Systems Integration Projects

Equipment
- Information systems
- Communications

Software Products
- Systems software
- Applications software

Professional Services
- Consulting
  - Feasibility and trade-off studies
  - Selection of equipment, network and software
- Program/project management
- Design/integration
  - Systems design
  - Installation of equipment, network, and software
  - Demonstration and testing
- Software development
  - Modification of software packages
  - Modification of existing software
  - Custom development of software
- Education/training and documentation
- Systems operations/maintenance

Other Miscellaneous Products/Services
- Site preparation
- Data processing supplies
- Processing/network services
- Data/voice communication services

6. Professional Services

This category includes four submodes: consulting, education and training, software development, and applications management. Exhibit A-8 provides additional detail.

- *Consulting:* Services include management consulting (related to information systems), information systems re-engineering, information systems consulting, feasibility analysis and cost-effectiveness studies, and project management assistance. Services may be related to any aspect of the information system, including equipment, software, networks and systems operations.

- *Education and Training:* Services that provide training and education or the development of training materials related to information systems and services for the information systems professional and the user, including computer-aided instruction, computer-based education, and vendor instruction of user personnel in operations, design, programming, and documentation. Education and training provided by school systems is not included. General education and training products are included as a cross-industry market sector.

- *Software Development:* Services include user requirements definition, systems design, contract programming, documentation, and implementation of software performed on a custom basis. Conversion and maintenance services are also included.

- *Applications Management*: The vendor has full responsibility for maintaining and upgrading some or all of the application systems that a client uses to support business operations and may develop and implement new application systems for the client.

An applications management contract differs from traditional software development in the form of the client/vendor relationship. Under traditional software development services the relationship is project based. Under applications management it is time and function based.

These services may be provided in combination or separately from platform systems operations.

Exhibit A-8

Professional Services Market Structure

Professional Services

Applications Management**

- Applications Maintenance
- Application Development
- Application Support

Software Development/ Maintenance

- User Requirements Definition
- Systems Design
- System Conversion
- Data Base Design
- Programming
- Testing
- System Modification
- Documentation/ Technical Writing
- Network Development
- Other

Consulting*

- Installation Planning
- Network Planning and Design
- Information Systems Audit
- IS Planning
- IS Security/Audit
- System Evaluation
- IS Personnel Planning
- Systems Analysis
- IS Policies and Procedures Development
- Project Management
- Other

Education & Training*

- Computer Operations Training
- IS Management Training
- Analyst/ Programmer Training
- Systems Use Training
- Video Instruction
- Other

*Related to computer systems, topics, or issues

**Vendor assumes full responsibility on contracted longer term basis

7. Network Services

Network services are a variety of telecommunications-based functions and operations. Network service includes two sub-modes, as shown in Exhibit A-9.

Exhibit A-9

Network Services Market Structure

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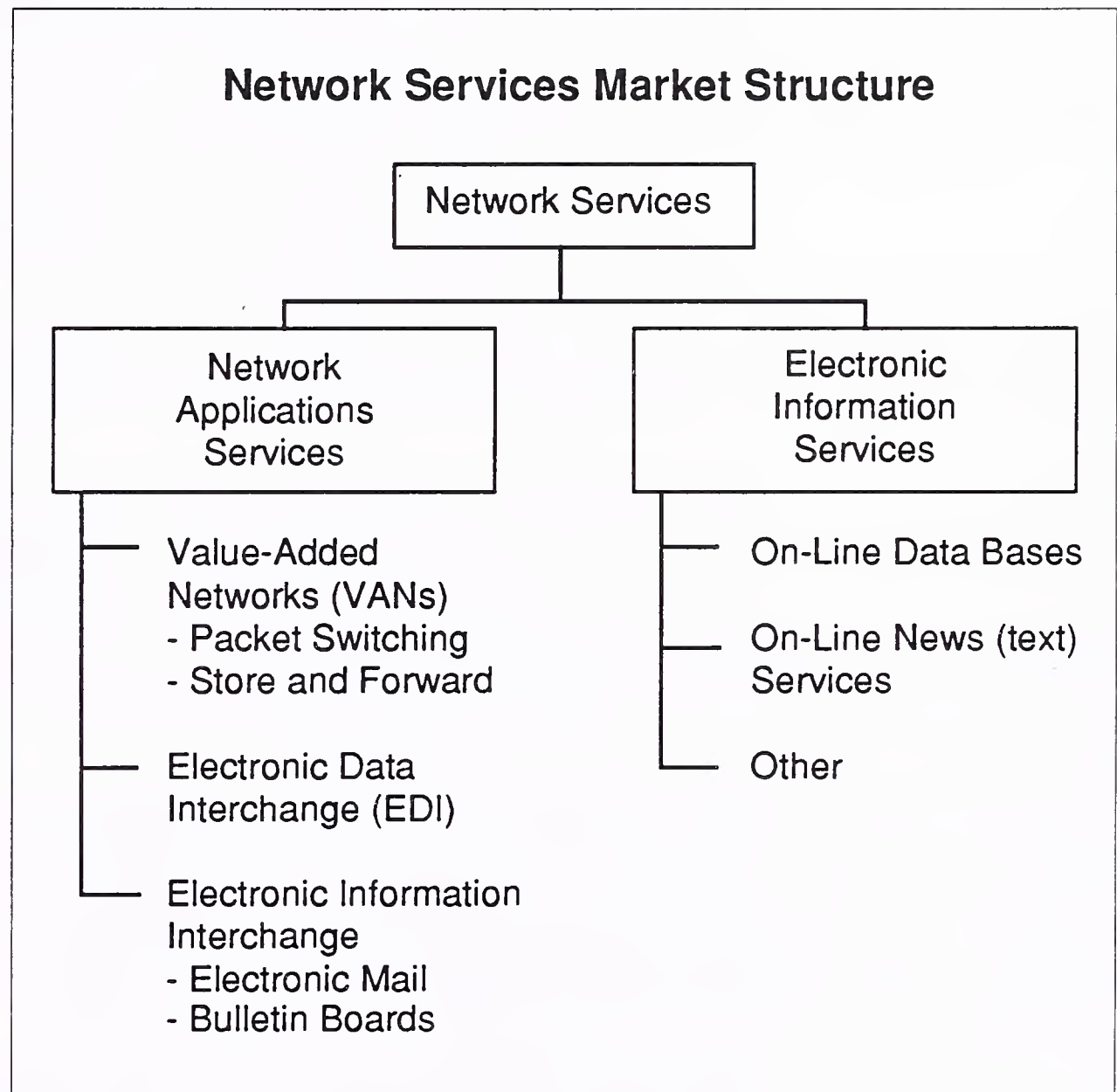
a. Electronic Information Services

Electronic information services are databases that provide specific information via terminal- or computer-based inquiry, including items such as stock prices, legal precedents, economic indicators, periodical literature, medical diagnosis, airline schedules, automobile valuations, etc. The terminals used may be computers themselves, such as communications servers or personal computers.

Users inquire into and extract information from the databases. They may load extracted data into their own computer systems; the vendor does not provide data processing or manipulation capability as part of the electronic information service and users cannot update the vendor's databases. However, the vendor may offer other services (network applications or processing services) that do offer processing or manipulation capability.

The two kinds of electronic information services are:

- *On-line Databases* - Structured, primarily numerical data on economic and demographic trends, financial instruments, companies, products, materials, etc.

- Unstructured, primarily textual information on people, companies, events, etc. These are often news services.

While electronic information services have traditionally been delivered via networks, there is a growing trend toward the use of CD ROM optical disks to support or supplant on-line services, and these optical disk-based systems are included in the definition of this delivery mode.

b. Network Applications

Value-Added Network Services (VAN Services) - VAN services are enhanced transport services which involve adding such functions as automatic error detection and correction, protocol conversion, and store-and-forward message switching to the provision of basic network circuits.

While VAN services were originally provided only by specialized VAN carriers (Tymnet, Telenet, etc.), today these services are also offered by traditional common carriers (AT&T, Sprint, etc.). Meanwhile, the VAN carriers have also branched into the traditional common carriers' markets and are offering unenhanced basic network circuits as well.

Electronic Data Interchange (EDI) - Application-to-application electronic exchange of business data between trade partners or facilitators using a telecommunications network.

Electronic Information Interchange- The transmission of messages across an electronic network managed by a services vendor, including electronic mail, voice mail, voice messaging, and access to Telex, TWX, and other messaging services. This also includes bulletin board services.

8. Equipment Services

- The equipment services delivery mode includes two submodes. Both deal with the support and maintenance of computer equipment.

- *Equipment Maintenance* - Services provided to repair, diagnose problems and provide preventive maintenance both on-site and off-site for computer equipment. The costs of parts, media and other supplies are excluded. These services are typically provided on a contract basis.

- *Environmental Services* - Composed of equipment and data center related special services such as cabling, air conditioning and power supply, equipment relocation and similar services.

D

Computer Equipment

These definitions have been included to provide the basis for market segmentation in the software products markets.

- *Computer Equipment* - Includes all computer and telecommunications equipment that can be separately acquired with or without installation by the vendor and not acquired as part of an integrated system. Unless otherwise noted in an INPUT forecast, computer equipment is only included where it is part of the purchase of services or software products (e.g., turnkey systems and systems integration).

- *Peripherals* - Includes all input, output, communications, and storage devices (other than main memory) that can be channel connected to a processor, and generally cannot be included in other categories such as terminals.

- *Input Devices* - Includes keyboards, numeric pads, card readers, light pens and track balls, tape readers, position and motion sensors, and analog-to-digital converters.

- *Output Devices* - Includes printers, CRTs, projection television screens, micrographics processors, digital graphics, and plotters

- *Communication Devices* - Includes modem, encryption equipment, special interfaces, and error control

- *Storage Devices* - Includes magnetic tape (reel, cartridge, and cassette), floppy and hard disks, solid state (integrated circuits), and bubble and optical memories

- *Computer Systems* - Includes all processors from personal computers to supercomputers. Computer systems may require type- or model-unique operating software to be functional, but this category excludes applications software and peripheral devices and processors or CPUs not provided as part of an integrated (turnkey) system.

- *Personal computers* - Smaller computers using 8-, 16-, or 32-bit computer technology. Generally designed to sit on a desktop and are portable for individual use. Price generally less than $5,000.

- *Workstations* - High-performance, desktop, single-user computers often employing Reduced Instruction Set Computing (RISC). Workstations provide integrated, high-speed, local network-based services such as database access, file storage and back-up, remote communications, and peripheral support. These products usually cost from $5,000 to $15,000.

- *Minicomputer or midsize computers* - Minicomputers are generally priced from $15,000 to $350,000. Many of the emerging client/server computers are in this category.

- *Mainframe or large computers* - Traditional mainframe and supercomputers costing more than $350,000.

- *Client/server computing* - Client/server is an architecture that assembles applications software and databases, systems software, and computer and networking equipment into a usable form for the purpose of leveraging information technology investments.

Broadly defined, it can include any kind of server, such as file servers and network servers, that are accessed by any kind of client, including a nonintelligent terminal. INPUT has elected to use the narrower and newer definition, by which application and data processing is shared between a client and a server. It is through the act of sharing that the greatest benefit is derived in terms of leveraging information technology investments. It is also the cause of the greatest change for vendors and users.

E
Sector Definitions

1. Industry Sector Definitions

INPUT structures the information services market into industry sectors such as process manufacturing, insurance, transportation, etc. The definitions of these sectors are based on the 1987 revision of the Standard Industrial Classification (SIC) code system. The specific industries (and their SIC codes) included under these industry sectors are detailed in Exhibit A-10.

INPUT includes all delivery modes except systems software products and equipment services in industry market sectors. See Exhibit A-9 and section E-3 (Delivery Mode Reporting by Sector).

Note: SIC code 88 is Personal Households. INPUT does not currently analyze or forecast information services in this market sector.

2. Cross-Industry Sector Definitions

INPUT has identified seven cross-industry market sectors. These sectors or markets involve multi-industry applications such as human resource systems, accounting systems, etc.

• In order to be included in an industry sector, the service or product delivered must be specific to that sector only. If a service or product is used in more than one industry sector, it is counted as cross-industry.

• INPUT only includes the turnkey systems, applications software products, and transaction processing services in the cross-industry sectors.

Exhibit A-10

Industry Sector Definitions

Industry Sector	SIC Code	Description
Discrete Manufacturing	23xx	Apparel and other finished products
	25xx	Furniture and fixtures
	27xx	Printing, publishing and allied industries
	31xx	Leather and leather products
	34xx	Fabricated metal products, except machinery and transportation equipment
	35xx	Industrial and commercial machinery and computer equipment
	36xx	Electronic and other electrical equipment and components, except computer equipment
	37xx	Transportation equipment
	38xx	Instruments; photo/med/optical goods; watches/clocks
	39xx	Miscellaneous manufacturing industry
Process Manufacturing	10xx	Metal mining
	12xx	Coal mining
	13xx	Oil and gas extraction
	14xx	Mining/quarrying nonmetalic minerals
	20xx	Food and kindred products
	21xx	Tobacco products
	22xx	Textile mill products
	24xx	Lumber and wood products, except furniture
	26xx	Paper and allied products
	28xx	Chemicals and allied products
	29xx	Petroleum refining and related industries
	30xx	Rubber and miscellaneous plastic products
	32xx	Stone, clay, glass and concrete products
	33xx	Primary metal industries
Transportation Services	40xx	Railroad transport
	41xx	Public transit/transport
	42xx	Motor freight transport/warehousing
	43xx	U.S. Postal Service
	44xx	Water transportation
	45xx	Air transportation (including airline reservation services in 4512)
	46xx	Pipelines, except natural gas
	47xx	Transportation services (including 472x, arrangement of passenger transportation)

Exhibit A-10 (cont.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Telecommunications	48xx	Communications
Utilities	49xx	Electric, gas and sanitary services
Retail Distribution	52xx 53xx 54xx 55xx 56xx 57xx 58xx 59xx	Building materials General merchandise stores Food stores Automotive dealers, gas stations Apparel and accessory stores Home furniture, furnishings and accessory stores Eating and drinking places Miscellaneous retail
Wholesale Distribution	50xx 51xx	Wholesale trade - durable goods Wholesale trade - nondurable goods
Banking and Finance	60xx 61xx 62xx 67xx	Depository institutions Nondepository credit institutions Security and commodity brokers, dealers, exchanges and services Holding and other investment offices
Insurance	63xx 64xx	Insurance carriers Insurance agents, brokers and services
Health Services	80xx	Health services
Education	82xx	Educational services

Exhibit A-10 (cont.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Business Services	65xx	Real estate
	70xx	Hotels, rooming houses, camps, and other lodging places
	72xx	Personal services
	73xx	Business services (except hotel reservation services in 7389)
	7389x	Hotel reservation services
	75xx	Automotive repair, services and parking
	76xx	Miscellaneous repair services
	78xx	Motion pictures
	79xx	Amusement and recreation services
	81xx	Legal services
	83xx	Social services
	84xx	Museums, art galleries, and botanical/zoological gardens
	86xx	Membership organizations
	87xx	Engineering, accounting, research, management, and related services
	89xx	Miscellaneous services
Federal Government	9xxx	
State and Local Government	9xxx	
Miscellaneous Industries	01xx	Agricultural production - crops
	02xx	Agricultural production - livestock/animals
	07xx	Agricultural services
	08xx	Forestry
	09xx	Fishing, hunting and trapping
	15xx	Building construction - general contractors, operative builders
	16xx	Heavy construction - contractors
	17xx	Construction - special trade contractors

The seven cross-industry markets are:

Accounting - consists of applications software products and information services that serve such functions as:

- General ledger
- Financial management
- Accounts payable
- Accounts receivable
- Billing/invoicing
- Fixed assets
- International accounting
- Purchasing
- Taxation
- Financial consolidation

- Excluded are accounting products and services directed to a specific industry, such as tax processing services for CPAs and accountants within the business services industry sector.

Human Resources - consists of application solutions purchased by multiple industry sectors to serve the functions of human resources management and payroll. Examples of specific applications within these two major functions are:

- Employee relations
- Benefits administration
- Government compliance
- Manpower planning
- Compensation administration
- Applicant tracking
- Position control
- Payroll processing

Education and Training - consists of education and training for information systems professionals and users of information systems delivered as a software product, turnkey system or through processing services. The market for computer-based training tools for the training of any employee on any subject is also included.

Office Systems consists of the following six categories:

Integrated Office Systems (IOSs) - IOSs integrate the applications that perform common office tasks. Typically these tasks include the following core applications, all of which are accessed from the same terminal, microcomputer or workstation:

- Electronic mail
- Decision support systems
- Time management
- Filing systems

IOSs enable office workers to utilize applications that are resident on a number of hosts or servers, thus creating a corporate communication environment through integrating line-of-business software with personal software productivity tools. IOSs capitalize on the cross-platform architectures of major vendors. Major hardware vendors such as IBM, Data General, Digital, Hewlett-Packard and NCR all offer IOSs.

Work flow and groupware products are also included within the IOS definition.

Word Processing - Word processing is the most common microcomputer application and is a basic application within the office systems sector. Word processing addresses several levels of functionality, from the production of simple correspondence to large document generation where many people within different departments have input.

Desktop Publishing (DTP) - Desktop publishing refers to the page-design software programs that allow small and mid-sized organizations to publish printed documents (brochures, catalogs, newsletters, reports, etc.) from the desktop. The primary functions of DPT software include the manipulation of the following functions:

- Layout and design of columns.
- Text manipulation (font type).
- Graphic manipulation.
- Print Control (color type, paper type)

Electronic Publishing - Electronic publishing includes composition, printing, and editing software for documents containing multiple typefaces and graphics including charts, diagrams, computer-aided design (CAD) drawings, line art, and photographs. Electronic publishing products may also have different data formats such as text, graphs, images, voice and video.

The fundamental difference between electronic publishing and desktop publishing is that electronic publishing encompasses a method of document management and control from a single point regardless of how many authors/locations work on a document. Desktop publishing (DTP) on the other hand, is considered a personal productivity tool and is generally a lower-end product residing on a personal computer.

Graphics - Graphics packages that are used for presentations or freehand drawings and/or are ancillary to desktop publishing are part of office systems. Thus, the graphics component of office systems sector includes the following elements:

Presentation graphics represent the bulk of office systems graphics. Most presentations involve a combination of graphs and text. They are used to communicate a series of messages to an audience rather than to analyze data.

Paint and line art drawing programs are used for illustrations while page layout programs are used to integrate text and graphics.

Electronic form programs allow users to create and print forms in-house. Some applications work with OCR scanners allowing users to scan pictures and logos directly on the forms.

Document Imaging Software - The software that allows users to manipulate (store, retrieve, print) images that have been scanned from paper documents. The applications that imaging software generates include: full text retrieval, document management, and database management. Document imaging software is a component of an imaging system. Hardware components of imaging systems include: scanners, image servers, workstations, optical drives, printers, and storage devices.

Engineering and Scientific encompasses the following applications:

- Computer-aided design and engineering (CAD and CAE)

- Structural analysis

- Statistics/mathematics/operations research

- Mapping/GIS

- Computer-aided manufacturing (CAM) or CAD that is inte-
  grated with CAM is excluded from the cross-industry sector as
  it is specific to the manufacturing industries. CAD or CAE
  that is dedicated to integrated circuit design is also excluded
  because it is specific to the semiconductor industry.

Planning and Analysis consists of software products and infor-
mation services in four application areas:

- Executive Information Systems (EIS)
- Financial modeling or planning systems
- Spreadsheets
- Project management

Other encompasses marketing/sales and electronic publishing
application solutions.

- Sales and marketing includes:

  - Sales analysis
  - Marketing management
  - Demographic market planning models

3. Delivery Mode Reporting by Sector

This section describes how the delivery mode forecasts relate to
the market sector forecasts. Exhibit A-11 summarizes the rela-
tionships.

- *Processing services* - The transaction processing services sub-
  mode is forecasted for each industry and cross-industry market
  sector.   The utility and other processing services submodes are
  forecasted in total market in the general market sector.

Exhibit A-11

Delivery Mode versus Market Sector
Forecast Content

Delivery Mode	Submode	Market Sectors		
		Industry Sectors	Cross-Industry Sectors	General
Processing Services	Transaction Utility Other	X	X	 X X
Turnkey Systems		X	X	
Applications Software Products		X	X	
Systems Operations	Platform Applications	X X		
Systems Integration		X		
Professional Services		X		
Network Services	Network Applications Electronic Information Services	X X		 X
Systems Software Products				X
Equipment Services				X

- *Turnkey systems* - Turnkey systems is forecasted for the 15 industry and 7 cross-industry sectors. Each component of turnkey systems is forecasted in each sector.

- *Applications software products* - The applications software products delivery mode is forecasted for the 15 industry and 7 cross-industry sectors. In addition, each forecast is broken down by platform level: mainframe, minicomputer and work-station/PC.

- *Systems operations* - Each of the systems operations submodes is forecasted for each of the 15 industry sectors.

- *Systems integration* - Systems integration and each of the components of systems integration are forecasted for each of the 15 industry sectors.

- *Professional services* - Professional services and each of the submodes is forecasted for each of the 15 industry sectors.

- *Network services* - The network applications submode of network services forecasted for each of the 15 industry sectors.

  Industry and cross-industry electronic information services are forecast in relevant market sectors. The remainder of electronic information services is forecasted in total for the general market sector.

- *Systems software products* - Systems software products and its submodes are forecasted in total for the general market sector. Each submode forecast is broken down by platform level: mainframe, minicomputer and workstation/PC.

- *Equipment services* - Equipment services and its submodes are forecasted in total in the general market sectors.

F

Vendor Revenue and User Expenditure Conversion

The size of the information services market may be viewed from two perspectives: vendor (producer) revenues and user expenditures. INPUT defines and forecasts the information services market in terms of user expenditures. User expenditures reflect the markup in producer sales when a product such as software is delivered through indirect distribution channels (such as original equipment manufacturers (OEMs), retailers and distributors). The focus on user expenditure also eliminates the double counting of revenues that would occur if sales were tabulated for both producer (e.g., Lotus) and distributor (e.g., ComputerLand).

For most delivery modes, vendor revenues and user expenditures are fairly close. However, there are some areas of significant difference. Many microcomputer software products, for example, are marketed through distribution channels. To capture the valued added through these distribution channels, adjustment factors are used to convert estimated information services vendor revenues to user expenditures.

For some delivery modes, including software products, systems integration and turnkey systems, there is a significant volume of intra-industry sales. For example, systems integrators purchase software and subcontract the services of other professional services vendors. Turnkey vendors incorporate purchased software into the systems they sell to users.

To account for such intra-industry transactions, INPUT uses conversion ratios to derive the estimate of end-user expenditures.

Exhibit A-12 summarizes the net effect of the various ratios used by INPUT to convert vendor revenues to user expenditure (market size) figures for each delivery mode.

Exhibit A-12

Vendor Revenue to User Expenditure Conversion

Delivery Mode	Vendor Revenue Multiplier
Applications Software Products	1.18
Systems Software Products	1.10
Systems Operations	0.95
Systems Integration	0.95
Professional Services	0.99
Network Services	0.99
Processing Services	0.99
Turnkey Systems	0.95
Equipment Services	0.99

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B
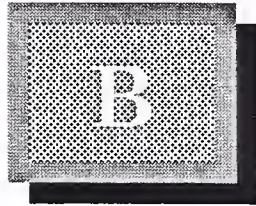
Respondent Profile

Exhibit B-1

Respondent Profile

Number of User Respondents	Market Sector
23	Process Manufacturing
15	Discrete Manufacturing
21	Finance and Banking Organizations
18	Insurance Companies
18	Wholesale Companies
12	Utilities
9	Business Services Firms
9	Telecom
6	Retail Companies
17	Other Firms and Government Organizations
148	Total

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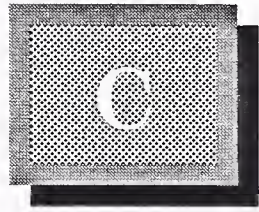
Forecast Database and Reconciliation

EXHIBIT C-1

Canadian Information Services Industry Market Size
by Delivery Mode, 1994-1999

Delivery Modes	1993 ($M)	Growth 93-94 (%)	1994 ($M)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	CAGR 94-99 (%)
Total Sector - Canadian Information Services Mkt.	5,765	10	6,354	7,071	7,869	8,772	9,772	10,959	12
Processing Services	733	7	784	838	897	961	1,031	1,124	7
- Transaction Processing	448	8	483	522	564	609	658	725	8
- Utility Processing	241	3	249	256	264	272	280	289	3
- Other Processing	44	18	52	60	69	80	93	110	16
Network / Electronic	285	17	334	393	460	536	614	705	16
- Electronic Info Services	103	16	119	140	163	187	214	240	15
- Network Applications	182	18	215	253	297	349	400	465	17
Application SW Products	796	11	884	991	1,109	1,253	1,396	1,560	12
- Mainframe	203	6	215	227	238	248	257	265	4
- Minicomputer	233	7	250	266	281	295	307	313	5
- Workstation/PC	360	16	419	498	590	710	832	982	19
System SW Products	723	9	786	854	917	979	1060	1148	8
- Mainframe	328	6	347	360	368	376	384	391	2
- Minicomputer	235	7	251	270	281	283	293	300	4
- Workstation/PC	160	18	188	224	268	320	383	457	19
Turnkey Systems	336	4	348	364	381	399	417	434	5
- Equipment	109	0	109	113	117	121	125	127	3
- Software Products	188	5	197	206	216	226	236	246	5
- Professional Services	39	8	42	45	48	52	56	61	8
Systems Integration	835	9	914	1,005	1,104	1,215	1,341	1,510	11
- Equipment	334	7	358	388	420	456	495	537	8
- Software Products	158	9	172	186	202	220	243	268	9
- Professional Services	303	13	342	385	432	485	546	643	13
- Other	40	5	42	46	50	54	57	62	8
Outsourcing	730	14	830	980	1,164	1,376	1,630	1,933	18
- Platform Operations	180	11	200	224	252	282	316	355	12
- Application Operations	210	10	230	267	311	362	420	489	16
- Desktop Services	180	17	210	256	312	380	463	561	22
- Network Management	160	19	190	233	289	352	431	528	23
Professional Services	1,327	11	1,474	1,646	1,837	2,053	2,283	2,545	12
- IS Consulting	480	13	541	611	690	780	870	975	13
- Custom Software	609	10	667	737	814	900	995	1,100	11
- Education & Training	238	12	266	298	333	373	418	470	12

EXHIBIT C-2

Canadian Information Services Industry
1994 Database Reconciliation

Delivery Modes	1993 Market				1998 Market				93-98 CAGR per data 93 Rpt. (%)	93-98 CAGR per data 94 Rpt. (%)
	1993 Report (Fcst) ($M)	1994 Report (Actual) ($M)	Variance from 1993 Report ($) M	(%)	1993 Report (Fcst) ($M)	1994 Report (Fcst) ($M)	Variance from 1993 Report ($) M	(%)		
Sector Total	5,332	5,765	433	8	8,805	9,772	967	11	11	11
Processing Services	697	733	36	5	752	1,031	279	37	2	7
Turnkey Systems	336	336	0	0	424	417	-7	-2	5	4
Application SW Products	796	796	0	0	1,404	1,396	-1	1	12	12
Outsourcing	354	730	376	106	900	1,630	730	81	21	16
Systems Integration	831	914	83	10	1,367	1,341	-26	-2	10	10
Professional Services	1,309	1,474	165	13	2,209	2,283	74	3	11	11
Network Services	285	334	49	17	587	614	27	5	16	17
Systems SW Products	722	786	64	9	1,162	1,060	-102	-9	10	8

The only significant variances from the 1993 forecast are for processing and outsourcing services. Processing shows an increase due to the movement of large computing jobs to processing centers and increasing use of transaction processing at vendor locations for payroll and securities jobs. Outsourcing was increased through the inclusion of desktop and network services. Non-IT process management outsourcing has not been included in outsourcing totals at this time. This work could add as much as $500 million to outsourcing expenditures in 1994 and over $1 billion by 1998.