

EDI SERVICES
CUSTOMER SATISFACTION
EUROPE 1992

INPUT

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Abstract

This report defines the current state of the European EDI market, and provides estimates of current (1992) and future (through 1997) user expenditures on EDI products and services. Specific industry trends are identified, and usage characteristics and patterns are described and analysed.

The results of an extensive European user interview programme are presented. The main issues addressed are:

- The reasons for implementing EDI within the organisation
- Obstacles in EDI implementation
- Reasons for dissatisfaction with the service.

The report finally analyses the most significant issues now facing the EDI industry, and offers a series of recommendations for EDI users and vendors.

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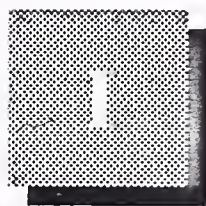
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Introduction

This report examines the EDI market and the major issues facing EDI users in Europe.

A

Scope of the Report

INPUT defines EDI as the application-to-application exchange of inter-company business data in structured, standard data formats. Business data typically include invoices, purchase orders, shipping documents and other information that companies exchange with each other during the course of commercial transactions.

This report focuses on third-party EDI service and software markets in Europe and excludes consumer applications such as electronic shopping, electronic banking, automatic teller networks (ATMs), point-of-sale (POS) data/funds transfers, airline reservation systems, credit authorisation systems and other captive networks that are used for transactions between two parties. Although these systems do use structured data formats to transfer information, the applications generally use specialised terminal devices to communicate with dedicated computers, are not computer-to-computer, application-to-application implementations, and use proprietary data formats rather than public standards.

This report reviews the state of EDI use within the economies of Europe, how it is being applied in selected industrial/commercial sectors, the concerns and practices of EDI users today, how much users are spending on EDI products and services and how much the market for these products and services will grow through 1996.

B

Data Collection

INPUT prepared this report using data gathered from surveys and interviews of EDI users, and vendors of EDI products and services. In addition, a variety of published material was used, including vendor annual reports and articles drawn from a broad spectrum of print media.

1. Surveyed EDI Users

Using a structured questionnaire, INPUT surveyed a total of 81 user companies. Respondents at these companies were directly involved in the company's EDI programme and were typically EDI project directors, EDI systems analysts or functional managers (e.g., in purchasing).

A copy of the questionnaire is contained in Appendix A.

Exhibit I-1 lists the kinds of companies interviewed for this report.

EXHIBIT I-1

Company Types Interviewed	
Industry Type	Response Frequency
Health Services	1
Banking	2
Communications	3
Retail Distribution	4
Transportation	11
Business Services	6
Insurance	5
Wholesale Distribution	11
Process Manufacturing	18
Discrete Manufacturing	20
Total	81

Exhibit I-2 lists the size of companies by the number of employees.

EXHIBIT I-2

Size of Companies Interviewed	
Number of Employees	Response Frequency
<100	15
100-499	28
500-999	11
1,000+	27

Of the 81 companies interviewed, INPUT could determine the revenues of only 36. The revenues of these 36 are broken out in Exhibit I-3.

EXHIBIT I-3

Revenues of Companies Interviewed	
Revenues (\$ Millions)	Response Frequency
<19	11
20-49	4
50-99	4
100-499	8
500-999	3
1,000+	6

Total respondents = 30

Exhibit I-4 shows the breakdown of companies interviewed by the location of the interviewee.

EXHIBIT I-4

Country	Response Frequency
Netherlands	15
France	11
Italy	10
Norway	10
Spain	10
Sweden	10
U.K.	10
Denmark	5

2. Product, Service and Industry Analysis

INPUT collected and analysed information on EDI services and vendors, and reviewed secondary research sources. Additionally, INPUT monitored industry publications, attended trade shows and secured other relevant research data in the process of preparing this study.

3. Related Programme and Custom Research

INPUT has been engaged in several consulting projects concerning EDI and has published a variety of other publicly available research reports on EDI. Although no proprietary information from the custom research is revealed, the general industry knowledge gained is presented in this report.

C

Report Structure

The report is structured in the manner noted and addresses the following topics:

Chapter II is an Executive Overview of the entire study.

Chapter III contains market forecasts and user expenditure estimates for EDI services and software, and presents an overall market forecast.

Chapter IV reviews the trends in vendor software, network and professional services offerings, and examines significant issues defined during dialogues with EDI users.

Chapter V presents conclusions and recommendations for EDI users and vendors.

Appendix A contains the survey questionnaire completed by EDI users.

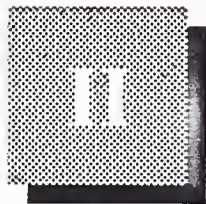
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Related INPUT Reports

This study is one of a continuing series focused on EDI. Other reports (with their respective publication years) in the series include:

- *EDI in Japan* (1992)
- *Electronic Commerce in the Media Industry* (1992)
- *Electronic Commerce in Travel and Tourism* (1992)
- *Electronic Commerce in U.S. Health Care* (1991)
- *Electronic Commerce in Trade and Transportation* (1991)
- *Electronic Commerce in Grocery Production and Distribution* (1991)
- *Electronic Commerce in Apparel Production and Distribution* (1991)
- *Electronic Commerce in the U.S. Federal Government* (1991)
- *Electronic Commerce in The New Foundation for Trade* (1991)
- *Developments in Corporate Electronic Trade Payments* (1991)
- *North American EDI Service and Software Provider Profiles* (1991)
- *The U.S. EDI Market, 1991-1996* (1991)
- *The EDI Market, 1990-1995* (1990)
- *EDI: Business Integration Issues* (1990)
- *The Western European EDI Market, 1991-1996* (1991)
- *Western European Electronic Information Services - 1990* (1990)
- *Financial Network Services in Western Europe - 1990* (1990)
- *Advanced EDI Services* (1989)
- *EDI Implementation Case Studies* (Volumes I and II) (1988, 1989)
- *EDI and X.400* (1988).

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Executive Overview

A

Internal Organisation—The Greatest Barrier to EDI

The majority of EDI users in Europe are satisfied with the technology and the benefits which it brings. It is widely recognised, however, that EDI is not being utilised to its full potential.

The problem is not predominantly technical, or one of standardisation. EDI users are finding that a lack of commitment to and understanding of EDI internally is the main barrier to the development of its use.

INPUT recently questioned 81 EDI managers and planners in eight European countries on the usage and implementation of EDI within their respective organisations. The survey highlighted four main recommendations which apply to both users intending to implement the technology, and vendors attempting to provide it, summarised in Exhibit II-1.

EXHIBIT II-1

Recommendations for EDI Initiators

- Be prepared for internal reorganisation
- Expect and plan for an increase in workload in the short term
- Enlist and encourage full management support
- Provide/organise comprehensive training programmes

Implementing these recommendations will help to encourage the use of EDI to its greatest advantage, and thereby enhance its image as a solution to business communication needs.

Many of the users questioned had not been fully prepared for the changes which using EDI would entail.

One of the main problems was that of introducing a new system which must initially be run in parallel to the old. Essentially this produces problems of a lack of interorganisational communication and understanding. In order to counter this, organisations should be prepared through centralising EDI activities. Ideally this would be through the foundation of a department, or through the engagement of specific personnel dedicated to EDI internally.

Often this essential focussing of activities is absent, leaving EDI as a further technical problem or complication for systems managers in what is already a highly complex environment.

Many users were not prepared for the increase in workload which using EDI initially entails. During implementation and changeover from the original system, both systems must run in parallel, with greater use of EDI gradually being introduced.

An increase in workload is often not accurately planned for. This in turn creates problems of inefficiency in the short term, thereby holding back the process of implementation.

One of the biggest obstacles to the efficient use of EDI expressed by users was a lack of enough management-level support. Although the final authority on the decision to implement EDI was predominantly executive-level within organisations, actual continuing support from this level was found to be lacking.

Many respondents expressed a strong need for greater involvement of executive-level management in order to enable a stronger corporate, or overall organisational, support for its use. Additionally it was felt that higher-level involvement would help to coordinate EDI activities and prevent the situation where different departments or divisions were involved in autonomous and inconsistent EDI projects. Higher-level support, it was felt, would also facilitate the easier release of funds in order to supplement the project within the organisation, given that executive level management has greater control and decision-making responsibilities in this area.

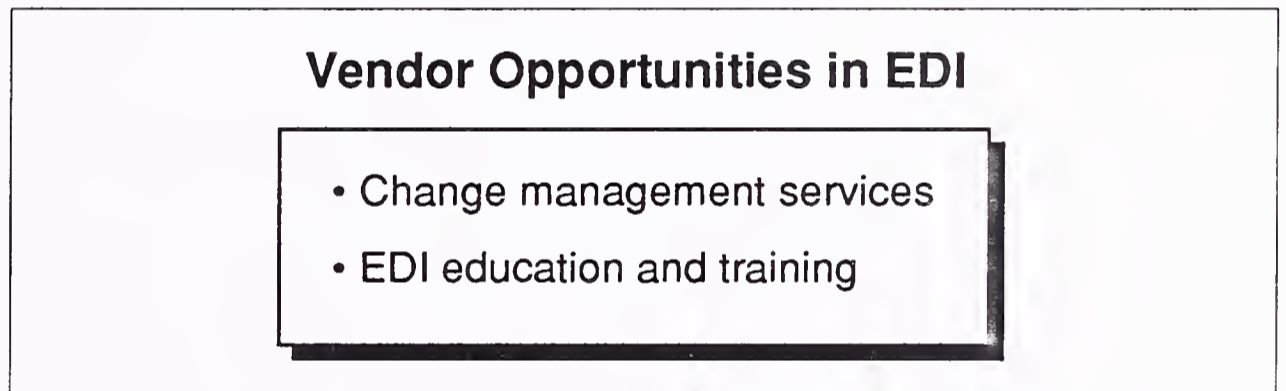
Of particular importance also was the need to train personnel more, about EDI and its use. Not only are users finding EDI-trained technicians in short supply on the employment market, but internally EDI was being underutilised through lack of real understanding. Training is of a particular importance at implementation. However, continued support from vendors or through internally generated training is equally essential.

In essence, users are failing to take, or are not in a position to take, a proactive enough stance regarding EDI within their organisations. Many have been strongly encouraged, or in some cases given little choice in whether or not to use EDI, particularly in order to satisfy customers. As a result many are taking a reactive position.

This means that EDI is sometimes being regarded as a further complication or expense to the organisation, rather than as a solution to trading requirements. Of the 81 users questioned, only a very small percentage were able to assess the quantifiable benefits which using EDI had allowed. It is seen more as a cost than a savings, particularly as for most, EDI had only been in use for one or two years. Despite this, there was obviously a distinct lack of attempts by users to assess the impact of EDI in financial terms, whether predicted or actual.

INPUT has identified two major requirements of EDI users as illustrated in Exhibit II-2.

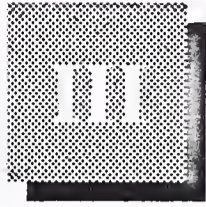
EXHIBIT II-2



In the absence of user internal organisational resources to cover these shortcomings, vendors are left with an important service opportunity. Vendors of EDI software and services should be prepared to provide a full service level from implementation through to future ongoing maintenance and support. This should include:

- Targeting high-level management, in order to educate at this level and engender full support for the technology.
- Emphasising and managing the business process change benefits of EDI rather than the technical aspects.
- Providing change management services throughout the process of EDI implementation.
- Providing education and training in EDI throughout the organisation, not just at the technical level.

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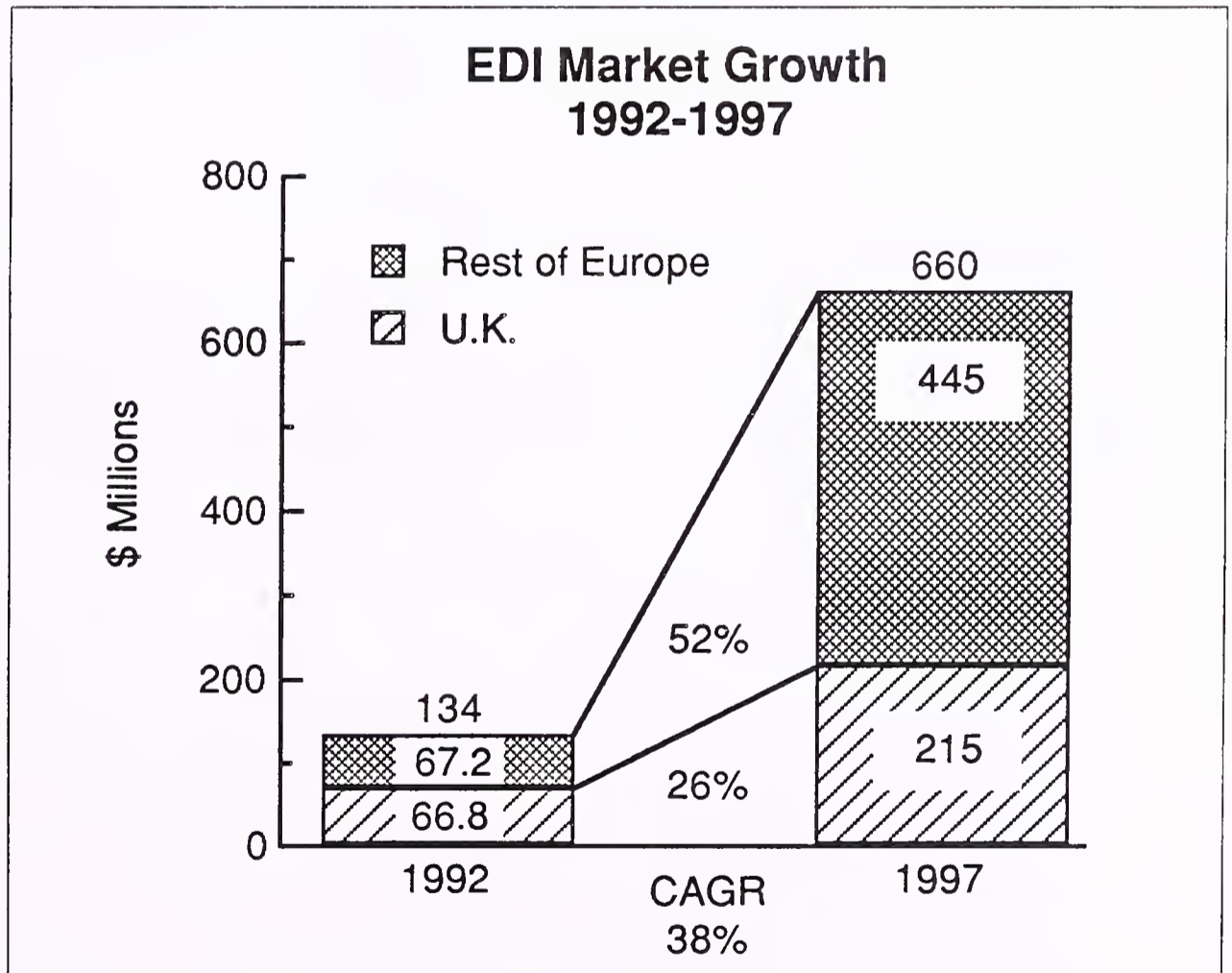


The EDI Market and Forecast

A Embryonic EDI Markets—Opportunities for Leadership

EDI is one of the fastest growth sectors of the telecommunications market in Europe. Exhibit III-1 illustrates INPUT's predicted EDI market growth to 1997.

EXHIBIT III-1



The market cannot be usefully strategically targeted as a coherent whole. A strong indicator of this is the comparison of the weaker growth and market size in the U.K. to the rest of Europe (ROE).

In view of this, INPUT examines the market at three levels:

- The country level where the highest number of restrictions and characteristics are in play to influence the market. This can be through PTT monopoly, regulations, economic restrictions, or government intervention.
- Changes in EDI expenditure in terms of network services, professional services and software. Trends in expenditure are largely influenced by the maturity of these individual country markets.
- The industry-specific level. Despite the strong vertical orientation of EDI, individual countries and the restrictions on or promoters of the technology are influential largely on a country level.

Vendors of EDI products and services need to be aware of the differences at these levels in order to focus their marketing strategies. Country market developments and the resultant level of maturity are the most important determinant of strategy.

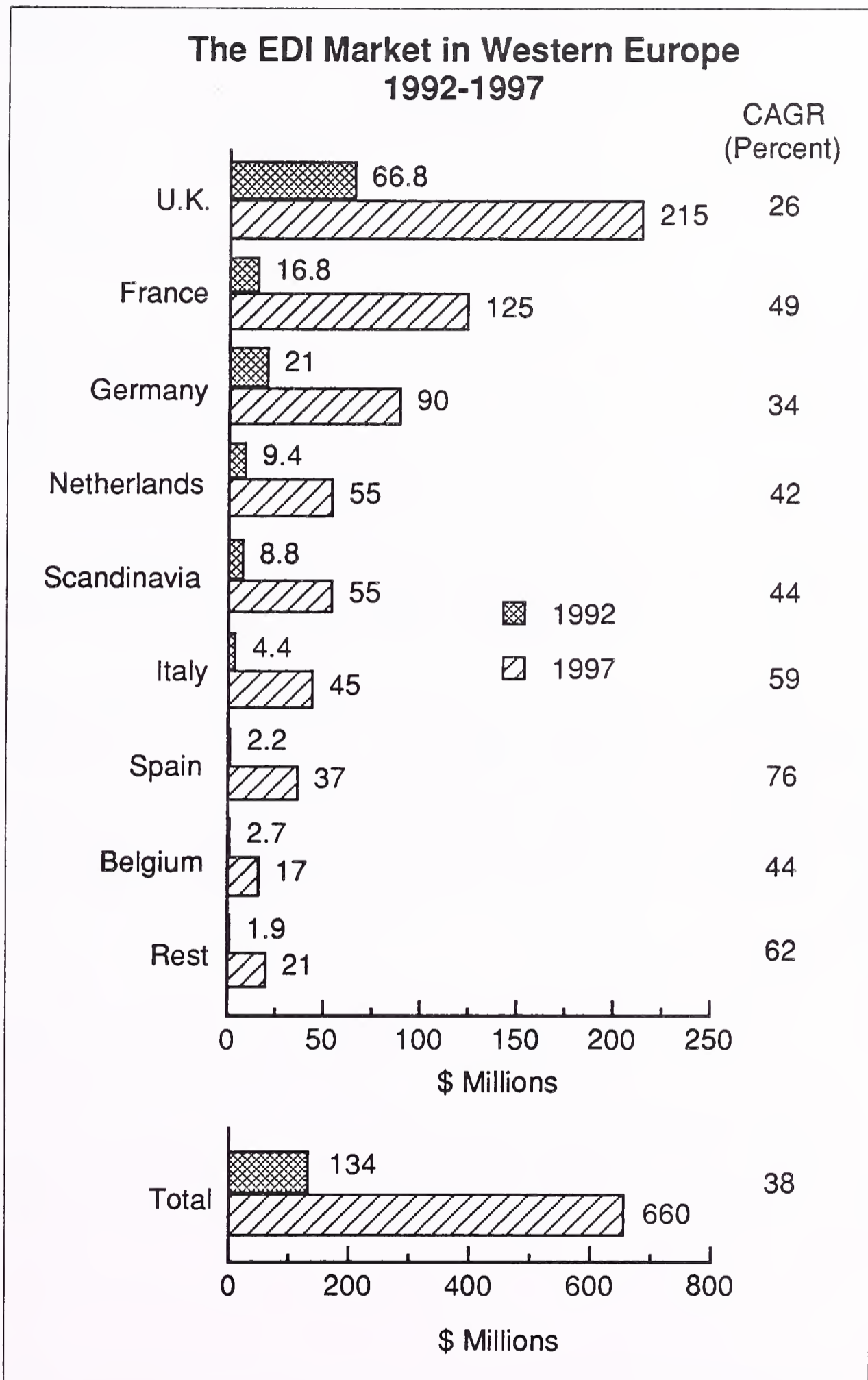
(All of the forecasts given are for the third-party EDI software and service markets, which use public standard, rather than proprietary, data formats.)

B

Country Growth Rates Vary by Up to 50%

The high level of disparity in Europe means that individual countries are having very individual experiences with the technology. The relative growth and size of the country markets in Europe are illustrated in Exhibit III-2.

EXHIBIT III-2



The disparities between the size of country markets is a direct result of a number of influences:

- The economic climate
- The PTT monopoly status and regulatory environment
- Government intervention, subsidies and promotion
- Telecommunications infrastructure development

The U.K., which has been positively influenced by most of these factors, accounts for half of the total market value in Europe in 1992. However, the relative maturity of the market and poor state of the economy has resulted in a growth of just 20% between 1991 and 1992. Excluding the U.K. from the total European figure shows a much healthier picture.

Over the five-year forecast time period those countries showing the greatest growth, i.e., CAGRs of around 65%, are starting from the lowest levels of installations. Consequently, despite the high growth they will not be of comparatively great value by 1997.

These countries include Spain, Italy and the rest-of-Europe category, which includes Austria, Switzerland, Portugal, Greece and Ireland. There are a number of factors which have held back the development of EDI within these markets. Spain, Portugal and Greece have suffered from poor telecommunications infrastructures, which detracts from these countries' attraction as investment for VAN (value-added network) service providers. Without a strong supporting network infrastructure, EDI activity is limited.

Telefonica is increasingly investing in Spain's digital infrastructure, which is resulting in the Spanish market's becoming of key interest to both telecommunications equipment and services suppliers. This is reflected in high growth in the Spanish market over and above the rest of Europe.

Portugal and Greece, however, are still lagging behind the majority of countries in Europe with respect to network infrastructure development. Partially as a result of this, the relative values of these markets will remain low up to 1997.

Switzerland and Ireland have far superior digital infrastructures but are small markets purely due to their sizes. Both countries will experience a high level of growth over the forecast period, although within this constraint, which will force the markets to remain comparatively small. One of the main influencing factors on the development of the Swiss market is the banking community, which is waiting to implement EDI through SWIFT. The Swiss banks have not opted to take the individualistic approaches characteristic in particular of the U.K. market.

The Dutch, Italian and French markets will experience a high level of growth. This is partially a result of the support that EDI is receiving from the governments within those countries; the government sponsorship of EDI through the Department of Trade and Industry in the U.K. was one of the initial catalysts to growth. This contrasts with the slower growth and indifferent government activity in Belgium.

The French market will experience very healthy growth in particular, owing to a number of factors. The telecommunications infrastructure is easily accessible to potential VAN providers. The regulations in this area are currently very open with a simple declaration of the network size and service provided being needed to enter the market.

Additional advantages are the government involvement in the form of EDIFRANCE, which is responsible for promoting EDI, and the proactive role of Transpac in the development of EDI products and services. As has been seen with packet-switching networks in Europe, a high level of exposure to network service types through a reliable public offering, rather than detracting too heavily from the private market, will often help to promote the technology as a whole.

C

Finance and Government Sectors to Show Greatest Growth

EDI is the most vertically oriented market in telecommunications. This is fuelling the fast development of standards in comparison to other areas of the market. It is such a strongly user-driven market that it is one of the few areas in telecommunications which is most likely to succeed in the widespread use of an agreed industry standard, i.e., UN/EDIFACT. This will be within a relatively short timeframe in comparison to the standards-making process, for example, for ISDN.

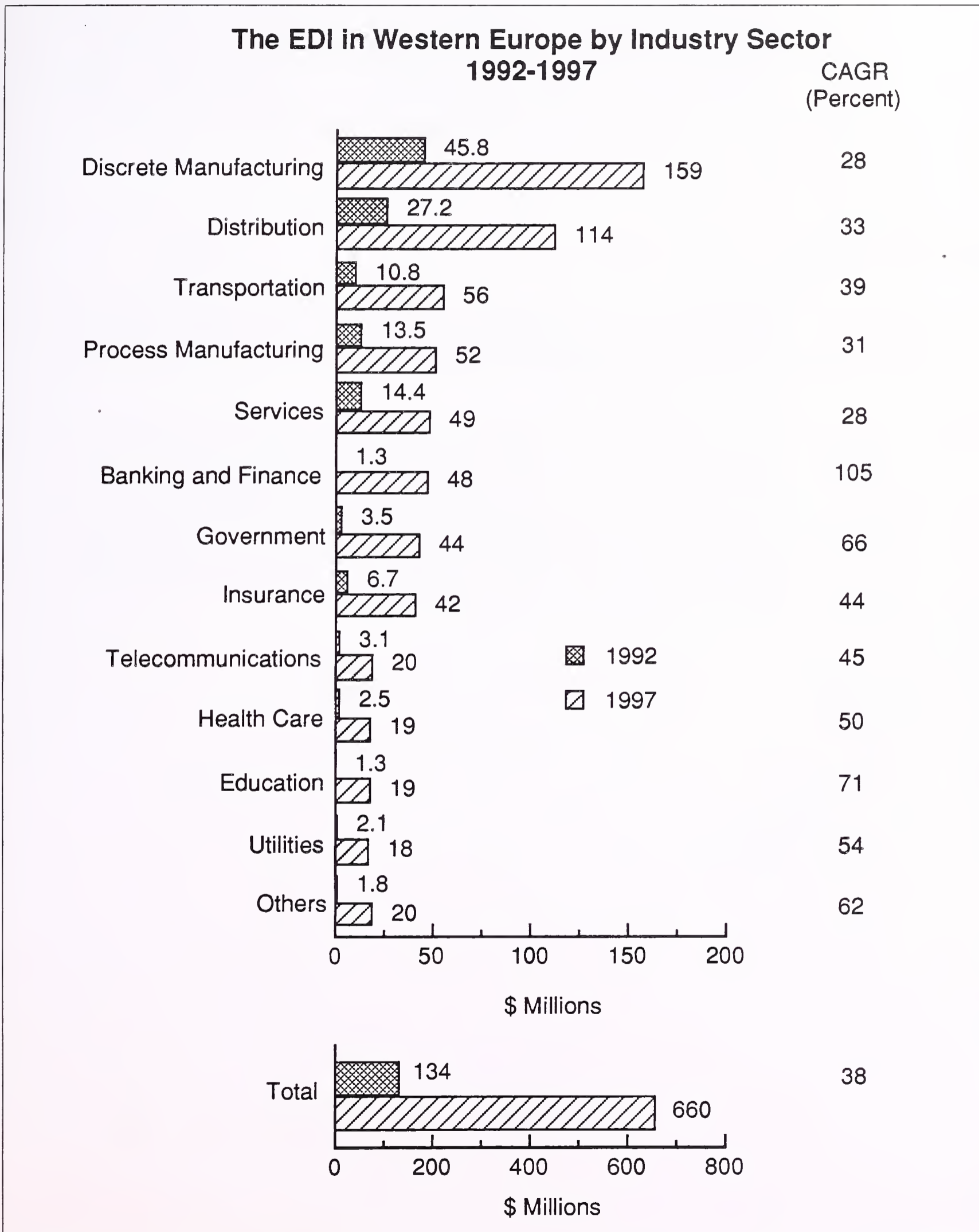
Particular vertical markets are more suited to using EDI in terms of their business and production activities. They are therefore at very disparate stages of development in terms of EDI use.

The initial and most readily recognisable benefits of EDI are in the reduction of administration costs and improvements in stock control and customer service. It is in these areas where benefits are most easily quantifiable in terms of reduction in costs and time associated with transactions with external trading partners. This has been realised in the pattern of vertical market uptake of the technology.

The largest vertical market is currently in the manufacturing sector which accounts for 46% for the total market value in 1992, with discrete manufacturing accounting for 35%.

In view of the trend towards improvement in pan-European communications and the increasing facility to achieve this through transborder network services, the retail and distribution sector, transport sector and the business services sector reflect a high level of EDI activity. The relative size and growth of a number of vertical sectors is illustrated in Exhibit III-3.

EXHIBIT III-3



The markets that are going to experience the most growth over the forecast period are banking and finance, and government. There is currently a low penetration in these markets, and the progression down the supply chain to include electronic payments and progression of the SWIFT EDI project will serve to encourage the banking market in the medium term. Additionally the outsourcing and cost-cutting policies of governments will aid the development of the market in terms of administrative cost cutting.

D

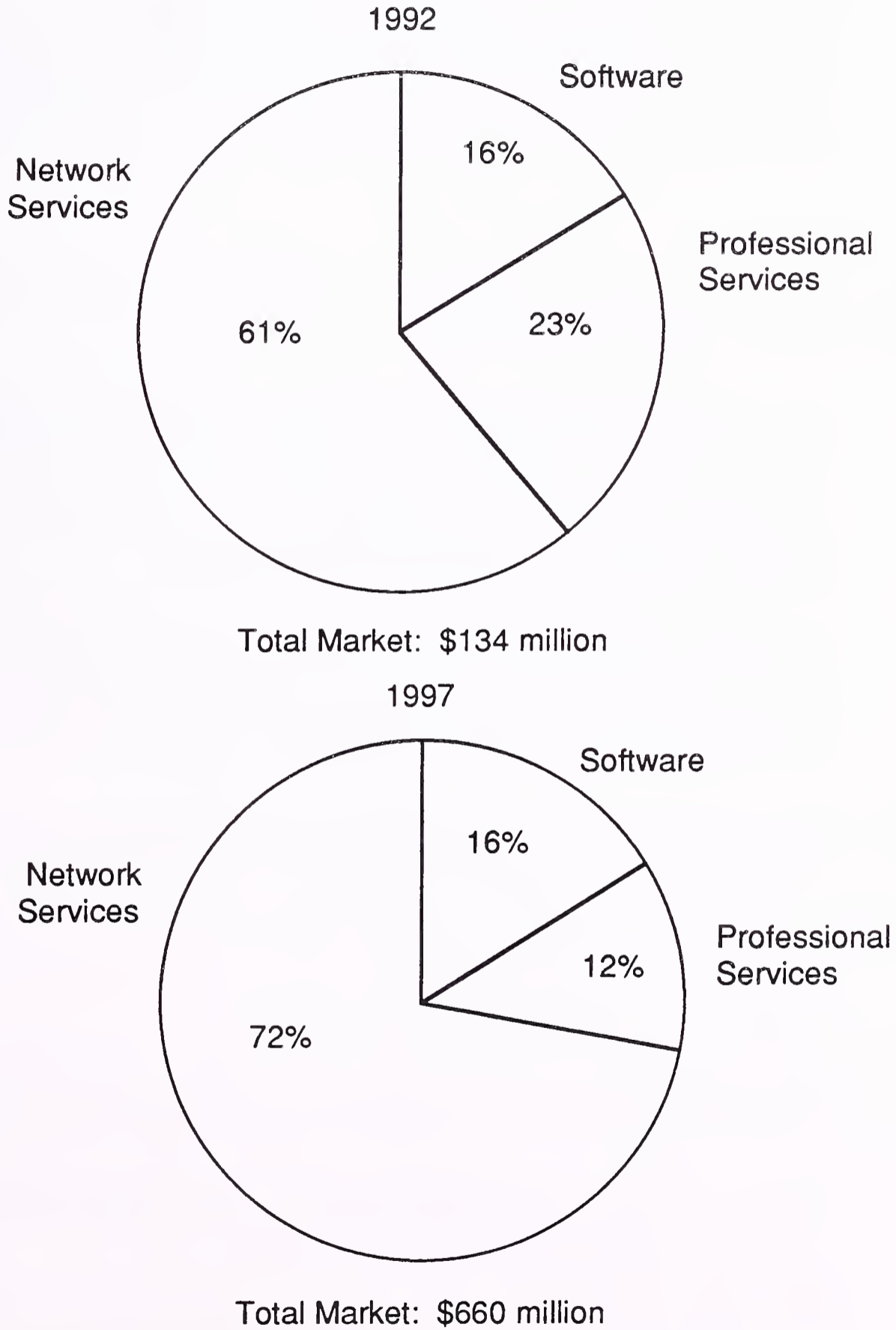
Expenditure Mirrors Market Maturity

The relative proportions of the market value in terms of components will remain stable over the forecast period for Europe as a whole. Levels of maturity of individual country markets will, however, influence expenditure in these categories.

The proportion of expenditure by EDI market component is illustrated in Exhibit III-4. Currently the majority of EDI expenditure is on network services. This will remain the case to the end of the forecast period. The increasing level of competition in the market as network services become more open will predictably, however, result in a decrease in the cost of these services. This will in turn reduce actual spending, although usage and network numbers will continue to increase.

EXHIBIT III-4

EDI Market Components 1992 and 1997



Professional services expenditure is currently in its greatest period of growth. This reflects the early stages of development of EDI in the majority of European countries and the resultant high requirement for outside support in the implementation of systems and restructure of information flow within organisations.

As markets mature the software will retain its proportion of the EDI expenditure despite inevitable price decreases. This will be due to software replacement when companies reach a critical mass of trading partners and enhanced software that will increasingly be required to accommodate increased throughput requirements.

E

Hub Users Lead to Strong Market Penetration

Given that the EDI market is still in the very early stages of development in the majority of European countries, there are a great deal of market opportunities open to vendors. The success of a particular vendor will be determined by its approach to the market. The two main factors that should determine this approach are vendor size and the stage that a given country market has reached in the cycle of maturity.

The smaller vendors are restricted in their approach to software and professional services. The limits for these companies on offering international network services are obvious. The nature of the EDI market and the push to standardisation, however, facilitates competition for software on an international basis.

In the longer term, in order to survive in country markets that are maturing, the smaller vendors will be forced to

- Establish partnerships with network providers
- Specialise in vertical niche market offerings

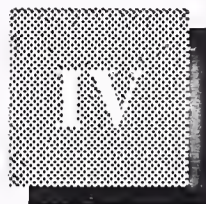
These approaches will become more crucial to the survival of the smaller companies as competition increases across Europe alongside deregulation.

Additionally, the network providers will benefit from the ability to offer in-house software expertise alongside their services. This will serve as a market distinguisher as competition increases.

The more mature the EDI market becomes the less penetrable it will be. The market entrants which are successful at the 'hub' stage of market development will be the ones which will become the market leaders in the long term. The success and high market share of INS and the widespread use of Tradanet in the U.K. illustrates this.

The user-driven nature of the EDI market is such that at the initial stages of vertical market development the 'hub' EDI users, through the encouragement of trading partners to use the technology, are predominantly responsible for market development and growth. Vertical sectors are set to become more horizontal through increased use of EDI further down the supply chain. In the majority of countries in Europe, however, vertical markets are at such embryonic stages that the opportunities are still open for vendors to lead selected markets.

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EDI Market Trends and Issues

As European markets expand internationally, it is useful to examine the true role of EDI today, and how organisations are trying to use EDI to improve their operations. This chapter examines user experience with EDI, influences and objectives for implementing EDI, and obstacles, reasons for any dissatisfaction, and changes which they felt would improve the utilisation of EDI within the organisation.

A

How and Why Organisations are Implementing EDI

1. Influences and Goals for Implementing EDI

An open-ended question asked users their major influences and goals in implementing EDI. The responses offer an interesting insight into the background of EDI development.

While many responses are clearly interrelated, the focus tends to be on factors external to the company such as trading-partner relationships and competitive forces, rather than internal organisation and infrastructure issues.

Responses tended to show a slight variation by industry type and country, which have varying levels of maturity of EDI development within them.

The main responses cited, although not mutually exclusive, can be broadly categorised as shown in Exhibit IV-1.

EXHIBIT IV-1

Major Influence/Goal	Response Frequency
Business partner requirement	42
Business partner satisfaction	29
Speed of operations	28
Enhanced communication	19
Reducing cost	17
Competition	12
Business expansion	12
Rationalisation	9

The following sections give a more detailed explanation of the responses received:

a. Business Partner Requirement

Just over half of the respondents were primarily required to implement EDI by their business partners. In such cases the company considered implementing EDI to be essential in order to maintain the particular business relationship. The business partners referred to most frequently were customers or clients. However banks, general trading partners and suppliers were also mentioned.

An example of this influence is an Italian component distributor which was persuaded to implement EDI. The company did so only because its supplier had stated that orders transmitted via EDI would be privileged. Apart from this, the company had no other internal or external goals for implementing EDI.

Additionally, within the Dutch insurance industry, almost the only way of making claims now is through the use of the Brokernet EDI service.

INPUT found that a tendency to implement EDI in order to satisfy customer requirements was strongest in the process manufacturing and business services industries. In contrast, those industries least likely to implement EDI to satisfy customer requirements were the wholesale distribution and discrete manufacturing industries.

While satisfying a business partner requirement was the primary influence for implementing EDI, INPUT found that it was not always the case that the business partner used EDI to the extent expected. In particular, a U.K.-based aero-supply company found that the suppliers which had pressed for EDI implementation were not now using it. Consequently, the EDI momentum has been lost in this particular company and the programme under-utilised.

b. Business Partner Satisfaction

Over a third of the respondents classified the satisfaction of their business partners as a major influence in implementing EDI. In these cases, the trading relationship did not depend on the implementation of EDI as it did in many cases, however, it was felt that the relationship would be enhanced by a stronger alliance through EDI.

c. Speed of Operations

This category covers all of the responses given which were associated with saving time. The main areas of concern expressed included the elimination of order request delays and faster and more accurate data delivery. For example, a Swedish clothing importer noted that since the implementation of EDI, shipping information that was previously 24-48 hours old was now current for each day.

Many of the companies interviewed stated that they had in fact achieved improvements in these areas and had enhanced their trading relationships since the implementation of EDI.

d. Enhanced Communications

In an increasingly complex business environment, improving communication was often viewed as a major goal in implementing EDI. Enhancing trading relationships, client liaison and information exchange were all perceivable benefits from improved communication.

Companies trading internationally were more likely to cite enhanced communications as an influence due to:

- The need to minimise risk of inaccurate transmission, and
- Simplified business practices through the standardisation of documents.

e. Reduced Costs

Reducing costs of transfers was cited as a goal of implementing EDI by 20% of interviewees. Many respondents reported that the implementation of EDI had in fact resulted in a reduction in both fixed and running costs. One Italian automotive manufacturer had calculated a fixed savings of \$1.5 million through obsolescence of paper invoices, and a monthly saving of \$175,000 through a reduction in data entry requirements.

f. Competition

Competitive factors for implementing EDI are varied but are generally closely linked with customer and supplier satisfaction. It was perceived to be of prime importance throughout most industries to update technology to competitive standards.

g. Business Expansion

Many respondents viewed EDI as a means of directly expanding their businesses through access to a wider base of customers and suppliers.

The maturity of EDI within each industry, however, affects the penetration of EDI amongst trading partners. In industries of lower EDI penetration, there was perceived to exist a greater potential to expand the actual customer base through wider implementation of EDI than amongst those industries with greater exposure to the technology.

h. Rationalisation

Included in this category of influences is the standard rationalisation and consolidation of operations within the company. While this is primarily an internal concern, the benefits can clearly reach externally to increase competitiveness and greater efficiency of transactions.

2. Obstacles Encountered in Implementing EDI

An open-ended question asked users their biggest obstacles in implementing EDI. It should be noted that here the obstacles refer to hindrances and restrictions during the implementation of EDI and do not imply project failure.

While the main influences and goals for implementing EDI were mostly externally focused, it is interesting to note that the major obstacles were encountered within the individual companies.

The extent to which management, education and internal organisation issues were raised shows the strategic context in which EDI plays a part. EDI has to do with changing work patterns and routine behaviours. Working with people and getting them to see new ways of working is the real challenge of EDI.

The main responses cited, although not mutually exclusive, can be broadly categorised as shown in Exhibit IV-2.

EXHIBIT IV-2

Obstacles in EDI Implementation	
Obstacle	Response Frequency
Limited Funding	25
Lack of Management Support	16
Lack of Education	15
Differing Standards	15
Lack of Business Partner Co-operation	9
Inflexible Internal Organisation	9
Slow Implementation Time	7
Low Availability of Trained Personnel	7
Uncertainty of Future Direction	7
Overall Complexity of EDI	6

The following is a more detailed explanation of the main responses:

a. Limited Funding

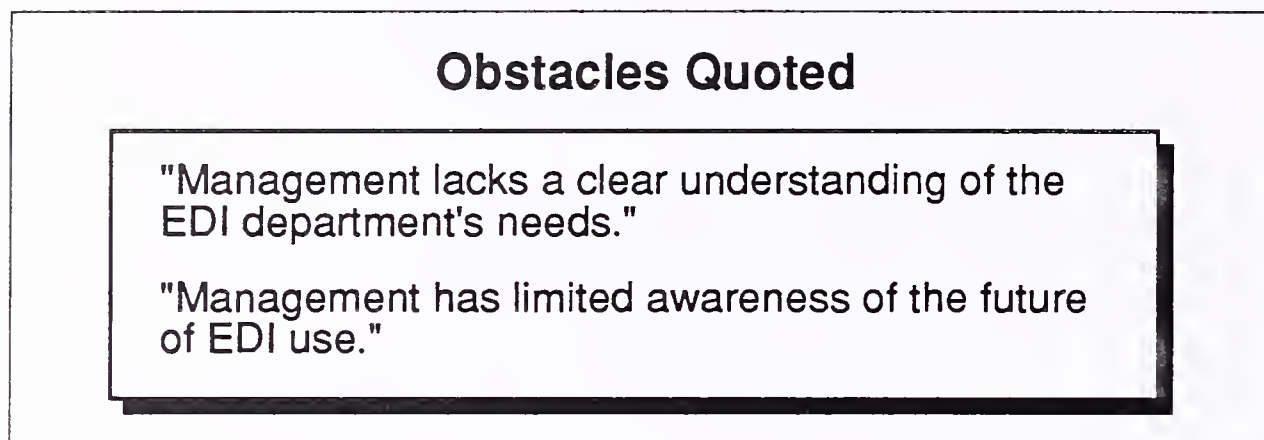
Limited funding or budget restrictions were most commonly cited as obstacles to implementing EDI.

Specifically, respondents referred to the difficulty in convincing trading partners to invest in EDI—especially where a change of standards was required. Also, where an EDI user’s supply partner was a small company, initial investment could often not be justified.

b. Lack of Management Support

The quotes shown in Exhibit IV-3 typify many of the responses concerning lack of management support. The level to which management fully understood the potential company benefits of EDI seemed often lower than initially expected.

EXHIBIT IV-3



It was generally found that middle and senior management failure to motivate and support fully the use of EDI often resulted in:

- The under-utilisation of EDI
- Restricted expansion of EDI to further departments within the same company.
- A lack of future vision and direction concerning the role of EDI

c. Lack of Education

Under-trained personnel frequently appeared as an obstacle to the implementation of EDI. In particular it was noted that management's failure to fully understand the role of EDI resulted in a subsequent failure to understand the need for and implementation of appropriate training programmes. Additionally, a lack of suitably trained personnel available for employment was expressed.

A lack of industry-specific EDI education was also quoted from a few respondents—particularly within the insurance industry.

Greater government involvement was seen as one potential channel for further guidance and direction for the development of EDI, and subsequent awareness of the technology.

d. Differing Standards

As expected, the proliferation of different message standards was perceived as an obstacle to implementing EDI. Gaining the acceptance of business partners was frequently hindered by the need to agree on standards.

Standards were particularly an issue among the Scandinavian countries. Here the use of EDI is more wide-spread compared to many other European countries and consequently a relatively high number of message standards exist.

For the major hub EDI users, this is a very pertinent issue given the frequently high number of companies, from differing industries, with which they need to communicate.

In addition, many respondents commented on the slowness of business partners to come to an agreement on standards use, and the difficulties this placed on their working relationship.

3. User Satisfaction with EDI

a. The Majority of EDI Users are Satisfied

Despite the many obstacles encountered in implementing EDI, most of the 81 companies surveyed were fairly satisfied with their EDI programme to date. In total, 60% of the respondents reported satisfaction with EDI.

Exhibit IV-4 lists the frequency distribution of users and their respective levels of satisfaction:

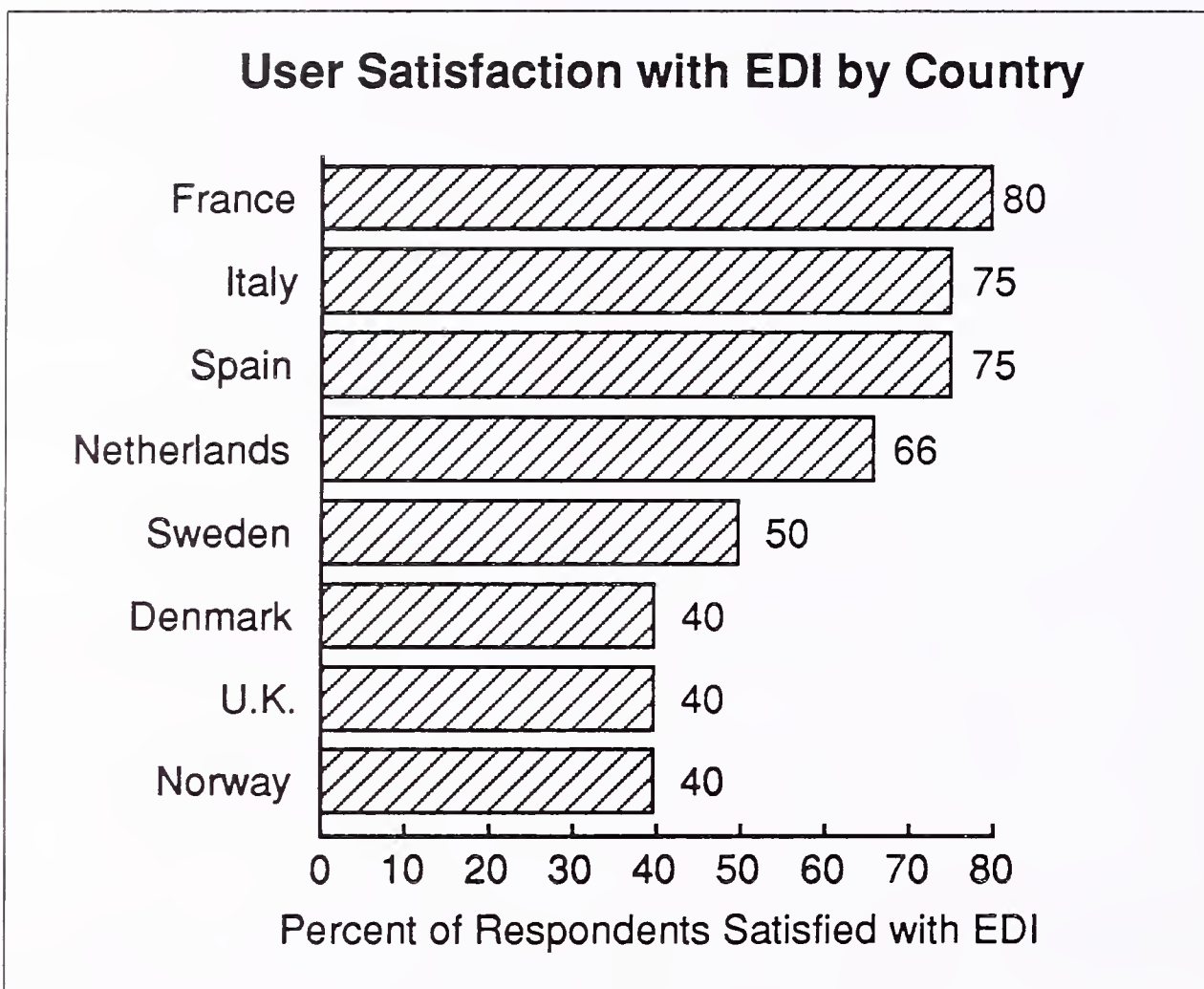
EXHIBIT IV-4

Overall User Satisfaction	
Satisfaction Level	Response Frequency
Dissatisfied	1
Somewhat Dissatisfied	3
Neither	28
Somewhat Satisfied	39
Satisfied	10

Variations in degrees of satisfaction differed according to country, industry type and company size as shown in the following exhibits. For the purposes of the following analysis, 'Percent Satisfied' includes all of the respondents which indicated both 'Somewhat Satisfied' and 'Satisfied'.

As shown in Exhibit IV-5, a significantly higher percentage of companies within France, Italy and Spain expressed satisfaction with EDI than within the other countries surveyed.

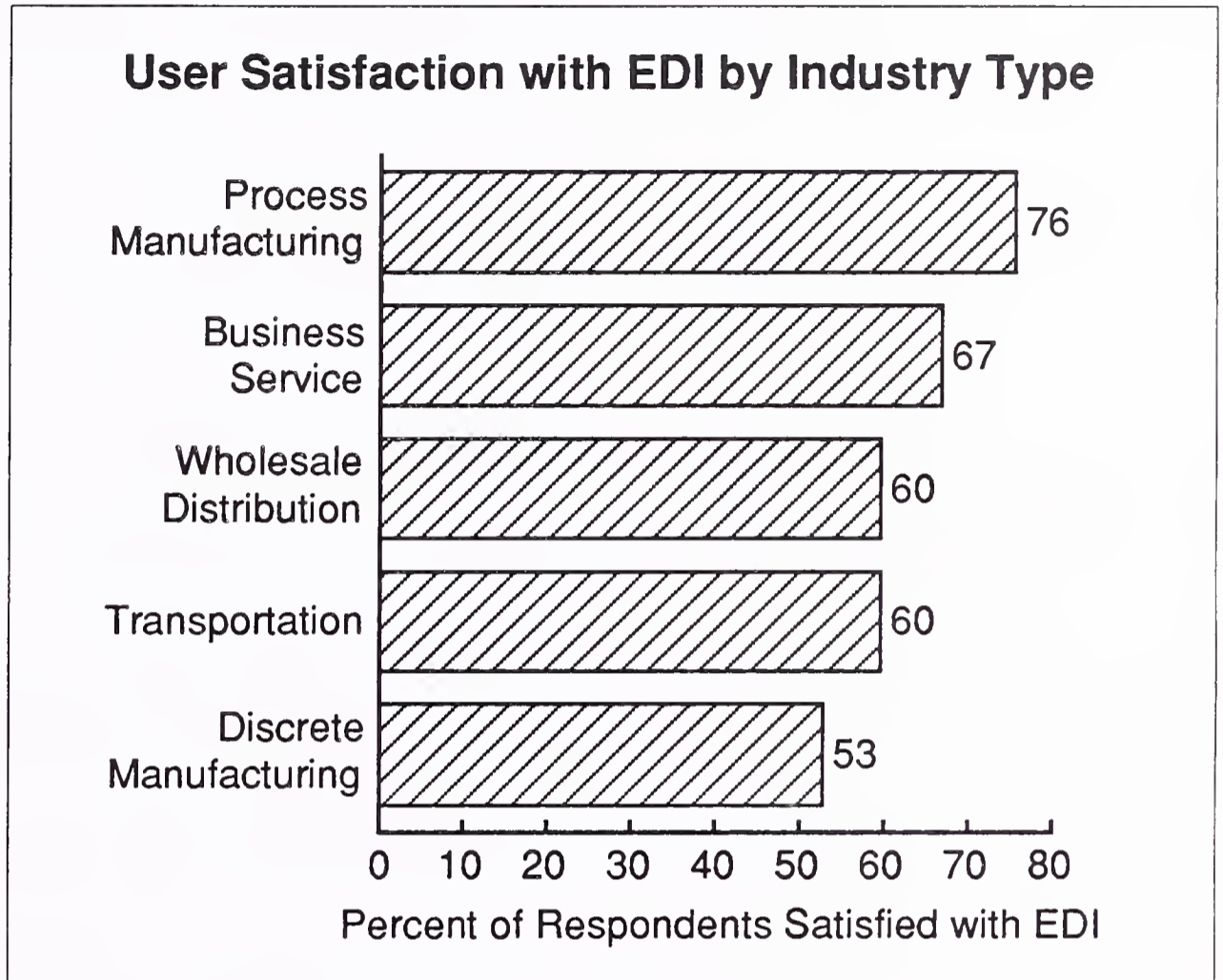
EXHIBIT IV-5



This can partly be explained by a lower expectation placed on EDI in those countries as EDI development is less mature. Because of this, these respondents are less likely to be in a position to identify any necessary improvements. It can also be concluded that the positive impact of EDI is more substantial where it has recently replaced traditional, less efficient communication systems.

Exhibit IV-6 shows the percentage of satisfied respondents within each industry category.

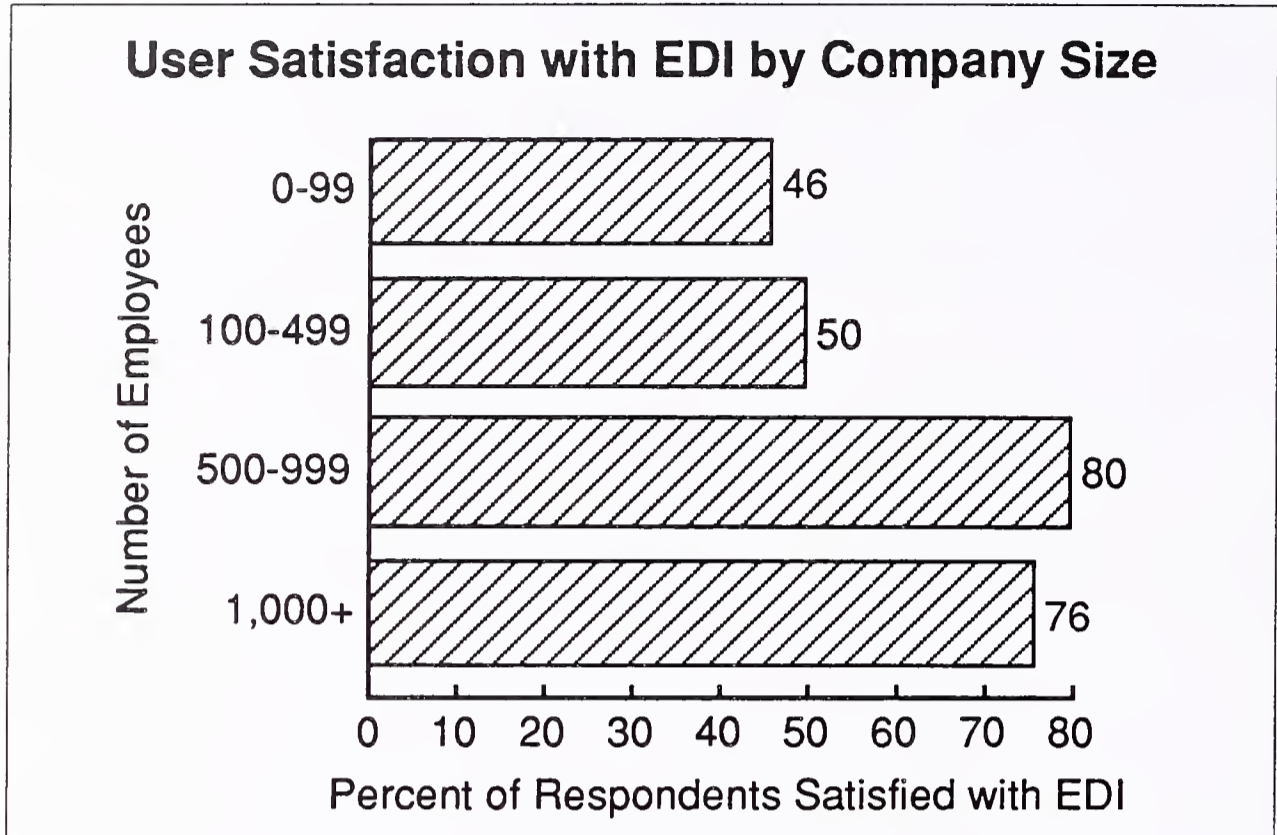
EXHIBIT IV-6



The process manufacturing and business services industries reported higher than average satisfaction with EDI, while discrete manufacturing satisfaction was slightly below average.

Exhibit IV-7 shows how satisfaction varied by size of company.

EXHIBIT IV-7



Overall satisfaction with EDI was significantly higher in larger-sized companies.

In general, it was the larger companies that encouraged trading partners to implement EDI, and the smaller companies which were mostly required to implement EDI by trading partners or the industry.

The differing satisfaction levels reflect the vested interest of the respective companies which initiate EDI. Hub companies, therefore, were generally more satisfied with EDI than spoke companies.

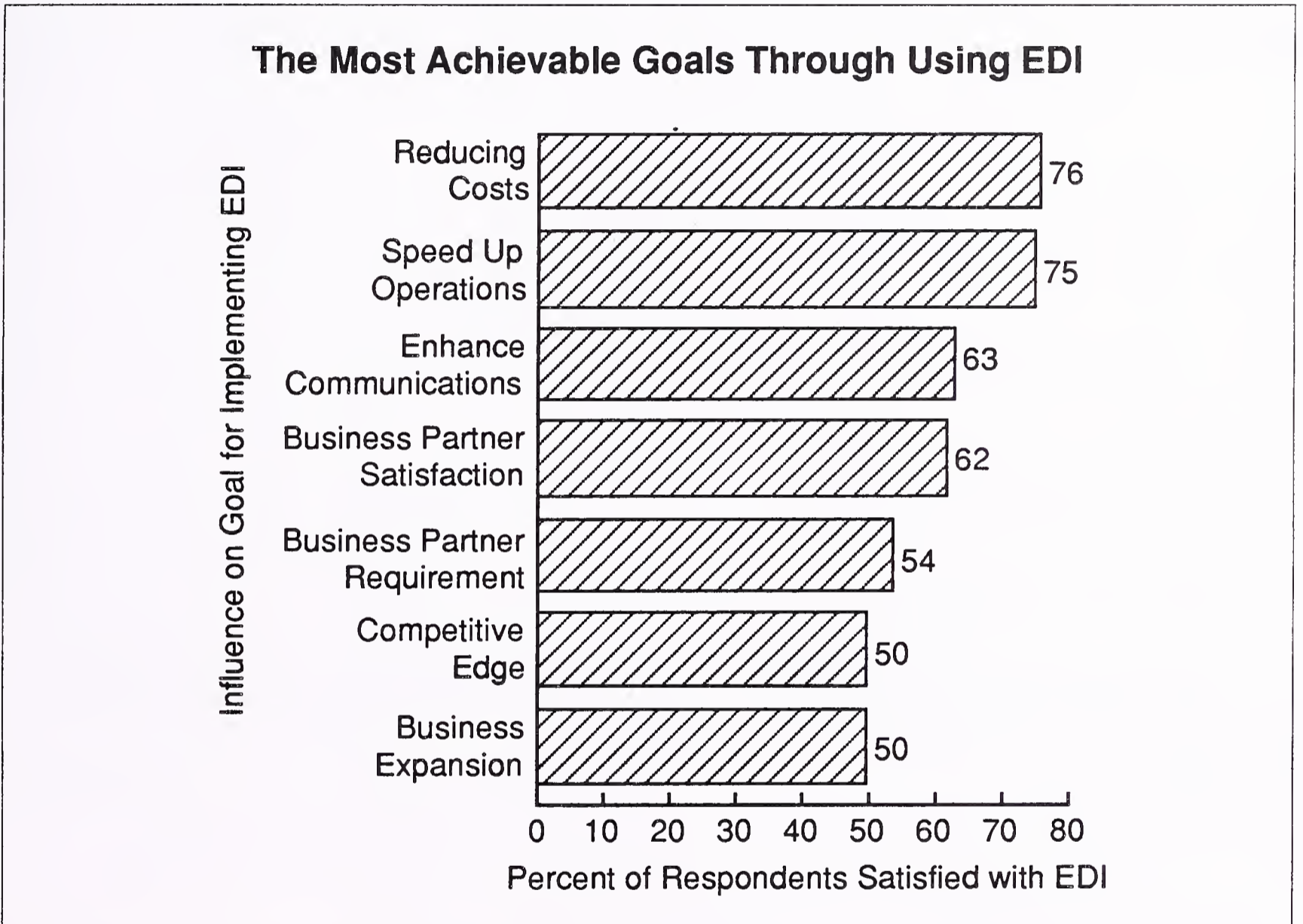
b. Does EDI Satisfy its Original Goals?

As the level of satisfaction reflects actual performance against initial expectations, it is interesting to look at the satisfaction levels against users' stated goals or influences for implementing EDI.

In comparison with the satisfaction level of the total sample, i.e., 60% or 49 respondents, it can be seen which goals are most effectively achieved by EDI in Europe.

For example, as shown in Exhibit IV-8, 76% of the respondents which mentioned reducing costs as a main factor in the original decision to implement EDI were in fact satisfied with their EDI programmes. This suggests that this is one goal which is in fact achievable through EDI, as is a significant increase in the speed of operations.

EXHIBIT IV-8



To a slightly lesser extent, enhancing communication and satisfying business partners was also achieved.

The least satisfied group of companies was those whose main influence in the original uptake of EDI was business partner requirement, competition or business expansion, reflecting a reactive rather than pro-active stance.

c. Reasons for Dissatisfaction with EDI

Respondents were requested in an open-ended question to explain reasons for any dissatisfaction with EDI.

Many of the obstacles already raised were again brought to the fore as shown in Exhibit IV-9.

EXHIBIT IV-9

Dissatisfaction	Response Frequency
Slow implementation time	9
Lack of management involvement	7
Continually changing standards	5
Lack of EDI education	3
Additional workload	2
Price	2

Of most prominence was dissatisfaction with the time taken to implement EDI. Many companies were not prepared for the delays and complications involved, particularly where a change in standards was necessary.

This was further supported by a strong dissatisfaction with the low level of management involvement. This resulted in a lack of motivation for implementing EDI and an under-utilisation of the programme in many cases.

Finally, users are finding it difficult to comply with standards which are being changed or upgraded periodically.

Interestingly, price or cost was not a major area of dissatisfaction despite registering as the primary obstacle. It appears users found the price acceptable for the service EDI provided, but it became an obstacle in gaining management approval for investing funds and convincing trading partners to also implement EDI.

4. User-Recommended Changes to EDI

When prompted for recommended changes to more effectively implement EDI, most respondents focused internally on organisational issues as shown in Exhibit IV-10.

EXHIBIT IV-10

Recommended Change	Response Frequency
Increase EDI Education	16
Increase Management Control	9
Internal Re-Organisation	7
Increase Customers on EDI	5

The call for EDI education and training was quite strong for all levels of personnel.

Training for both correct operation and understanding of additional requirements was valued highly by many respondents.

Increasing the level of management control, particularly at the time of introduction, was also considered important for gaining effective use of EDI. The development of future EDI strategy was a further perceived benefit from higher management involvement. The focus on improved management was particularly valued amongst the less satisfied companies.

Closely linked with management control is the need for internal re-organisation. Many respondents expressed the need for the creation of a separate EDI department, suggesting that their current organisational structure was not flexible enough to adequately operate EDI. These respondents were mostly found among the more satisfied companies, suggesting a higher expectation for future growth.

5. Management of the EDI Programme

EDI requires the integration of many functions within a company, for example, accounts receivable and payable, shipping, and sales. Because of this, high-level planning and authorisation is required.

INPUT found that 72% of the companies interviewed had executive-level approval or sanction of the EDI programme.

Exhibit IV-11 shows the different levels of management authorisation for EDI programmes.

EXHIBIT IV-11

Authorisation Levels of EDI	
Level	Response Frequency
Executive	58
Middle Management	16
Operations	7

The role of the respective management levels in controlling EDI was not always clear.

In some cases, it was felt that although senior management frequently had the final decision on the initiation of the EDI programme, control of the implementation should be the responsibility of system managers, owing to their higher level of practical knowledge.

B

Usage Trends

1. Usage of EDI in Business Transactions

All respondents were asked to estimate the extent to which EDI is used as a proportion of total business transactions, which also included facsimile, telephone and showroom orders.

Exhibit IV-12 shows that the majority of companies surveyed currently use EDI for less than 10% of their total business transactions. This is indicative of the low level of maturity of EDI throughout Europe.

EXHIBIT IV-12

EDI Usage as Percent of Total Transactions	Response Frequency
0 - 5	34
6 - 10	14
11 - 25	17
26 - 50	9
51 - 100	9

The level of satisfaction with EDI did not vary significantly with the level of EDI usage until those companies which were using EDI for over 50% of transactions. In this case, satisfaction significantly increased, as these were all 'hub' companies which had initiated the use of EDI rather than responding to a customer's request.

While current usage of EDI is low in Europe, the outlook for the next five years is for considerable growth. Exhibit IV-13 shows the trend of usage of EDI as a percentage of total transactions from the surveyed respondents and their predicted increase over a five year time-scale.

EXHIBIT IV-13

Growth of EDI Usage Predicted		
EDI Usage as a Percentage of Total Transactions	Response Frequency	
	1992	1997
0 - 19	49	9
20 - 39	20	26
40 - 59	4	19
60 - 79	6	19
80 - 100	2	8

The median EDI usage figure for the entire sample was 10% currently, and forecast to be 40% in five years time.

The following three exhibits break down the EDI usage trend data by country, industry and company size. Exhibit IV-14 examines EDI usage by country.

EXHIBIT IV-14

Growth of EDI Usage by Country		
Country	Average EDI Usage as a Percentage of Total Transactions	
	1992	1997
Netherlands	20	38
U.K.	20	34
Sweden	10	45
Spain	8	25
Norway	5	45
Denmark	2	40

EDI is currently most developed in the Netherlands and the U.K. Owing to the relative maturity of these markets, however, their respective growth forecasts are the lowest of the countries surveyed.

Exhibit IV-15 breaks down EDI usage by industry type.

EXHIBIT IV-15

Industry Type	EDI Usage as a Percentage of Total Transactions	
	1992	1997
Discrete Manufacturing	20	30
Transportation	13	40
Insurance	12	30
Wholesale Distribution	10	60
Process Manufacturing	10	40
Business Services	8	15

As shown above, the level of EDI usage from the sample surveyed in the discrete manufacturing industry is currently about double that of most other industries.

Despite this, users in this industry did not predict significant growth in the use of EDI over the next five years.

The most significant growth was forecast by EDI users in the wholesale distribution, transportation and process manufacturing industries.

Exhibit IV-16 shows EDI usage by company size.

EXHIBIT IV-16

Growth in EDI Usage by Company Size		
Company Size	EDI Usage as a Percentage of Total Transactions	
	1992	1997
Employees		
0 - 99	10	40
100 - 499	10	45
500 - 999	20	45
1,000 +	7	27

Currently EDI usage is highest in medium to large companies of around 500-1000 employees. Only the largest companies (i.e., 1000+ employees) forecasted EDI usage as a percentage of total transactions in five years to be below that of the sample average of 40%.

2. Who is Using EDI?

To examine further the actual usage of EDI in Europe, INPUT asked users to quantify which trading partners were linked with EDI.

Exhibit IV-17 shows the break-down of EDI usage between customer and supplier for the sample surveyed.

EXHIBIT IV-17

Trading Partners Using EDI	
Trading Partners Using EDI	Response Frequency
Customer & Supplier	45
Customer only	23
Supplier only	13

As shown in Exhibit IV-18, the majority of companies which are linked to customers with EDI have less than twenty such connections.

The trend for the forthcoming twelve months is for a significant increase in the number of customers linked to EDI.

EXHIBIT IV-18

Number of Customers Linked to EDI	Response Frequency	
	1992	1993
0	14	10
1 - 5	26	22
6 - 20	17	16
21 - 100	11	17
101 - 1,000	9	12
1,000 +	4	4

Similarly with suppliers, Exhibit IV-19 shows the concentration of companies linked to less than twenty suppliers. Again the trend is for an increasing number of suppliers linked to EDI in the next twelve months.

EXHIBIT IV-19

Growth in Suppliers Linked to EDI		
Number of Suppliers Linked to EDI	Response Frequency	
	1992	1993
0	23	18
1 - 5	18	19
6 - 20	25	24
21 - 100	8	13
101 - 1,000	5	5
1,000 +	2	2

3. Use of EDI Internationally

As shown in Exhibit IV-20, over half of the respondents are already using EDI for international transactions.

Of the remainder, excluding those that have no need for international EDI use, over 75% intend to expand EDI internationally in the next year.

EXHIBIT IV-20

International Use of EDI	
Status of International Use	Response Frequency
No requirement	13
Already using	44
Plan to in next 12 months	18
Plan to in next three years	6

While international trading partners included the U.S. and Japan, the major concentration was in Europe.

4. Most Common Applications of EDI

Analysis of the most common EDI applications shows the usage of applications linked with the maturity of the EDI process.

Most companies that are conducting EDI today are spoke suppliers to a large hub company. Having implemented EDI at the request of their important customer(s) they are capable of receiving an electronic purchase order.

Consequently, as shown in Exhibit IV-21 sales/order entry is the most common EDI application with 59% of respondents using it.

EXHIBIT IV-21

Industry	Percent Usage						
	Sales/ Order Entry	Purchasing	Accounts Payable	Accounts Receivable	Funds Transfer	Inventory Control	Other
Discrete Manufacturing	80	55	15	15	5	15	65
Process Manufacturing	67	61	22	22	11	22	44
Transport	45	18	36	36	9	27	64
Wholesale	60	30	10	10	-	10	70

Sending electronic purchase orders from a buying company to its suppliers is the second most frequently used application, mostly by hub companies.

After some period of time, the small spoke company gets used to EDI purchase orders and it moves on to billing its large customer(s) via EDI. Thus the next most common application of EDI is for accounts receivable.

After the hub company develops the ability to send a purchase order electronically, and the spoke company develops the capability of receiving it, the spoke company develops the capability of sending an invoice to the hub. Thus the fourth most common application is for the company to integrate EDI into its accounts payable application.

At this point the basic moves of the commercial transaction are complete except for the payment by the hub company to the spoke. The hub company will, however, integrate an inventory application before moving on to payment. This usually involves the respective banks of the two parties in the transaction.

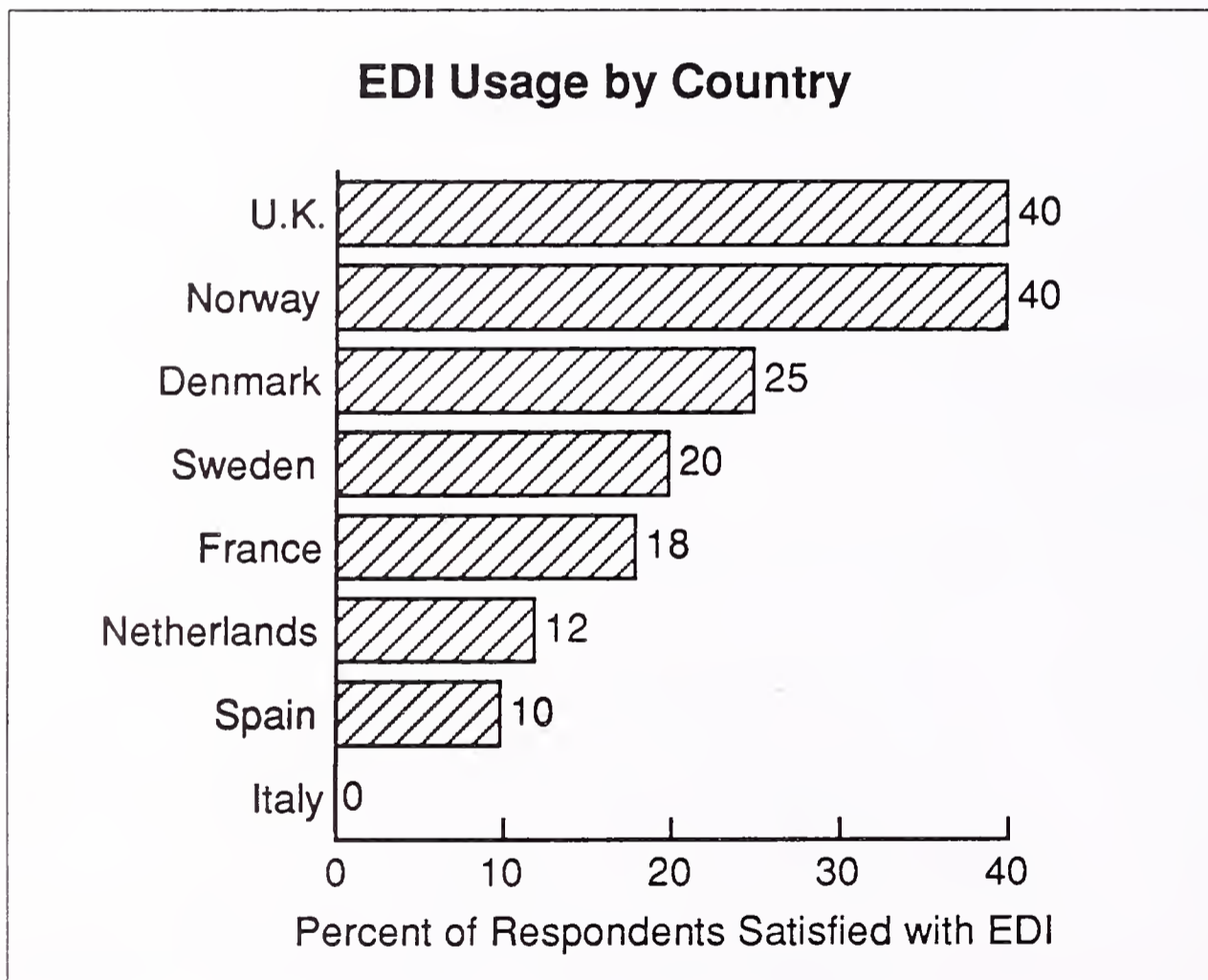
Electronic Funds Transfer (EFT) is especially noteworthy for further development.

5. Electronic Funds Transfer

Just over twenty percent of those interviewed maintained that their company was conducting some form of electronic funds transfer with its trading partners. The percentage using EDI tended to be greater within those countries where the use of EDI is more established.

Exhibit IV-22 shows the variations throughout the countries of Europe.

EXHIBIT IV-22



6. Real-Time EDI Formats

Real-time EDI has become an issue to large EDI users and communities in the past two years. True real-time EDI is when the application at one company is directly interacting with the application at another.

Today's EDI value-added networks, though offering some real-time capabilities, are predominantly offering store-and-forward, batch, mail-box-architecture EDI.

The move to real-time EDI on the part of users reduces the amount of value-added services that a third-party network service can provide. The user merely needs a telecommunications pipeline. Real-time EDI means the end of value-added services as they have been traditionally defined, and the beginning of point-to-point EDI.

As Exhibit IV-23 shows, almost a quarter of the European sample already conduct EDI in a real-time mode.

EXHIBIT IV-23

Country	Response Frequency-- Need for Real-Time EDI		
	No	Already Use	Yes
Denmark	3	2	-
France	4	6	1
Italy	7	1	2
Netherlands	11	2	2
Norway	7	1	2
Spain	4	2	4
Sweden	7	2	1
U.K.	7	3	-

Interestingly, the perceived need for real-time EDI in the future is only significant in countries where EDI development is most recent. For example, in Italy and Spain.

7. Message Standards

Of all the respondents, over half are using only one message standard with EDI. In total, 67 different standards were cited for use with EDI from only 79 companies.

Exhibit IV-24 lists all those standards that were cited more than once.

EXHIBIT IV-24

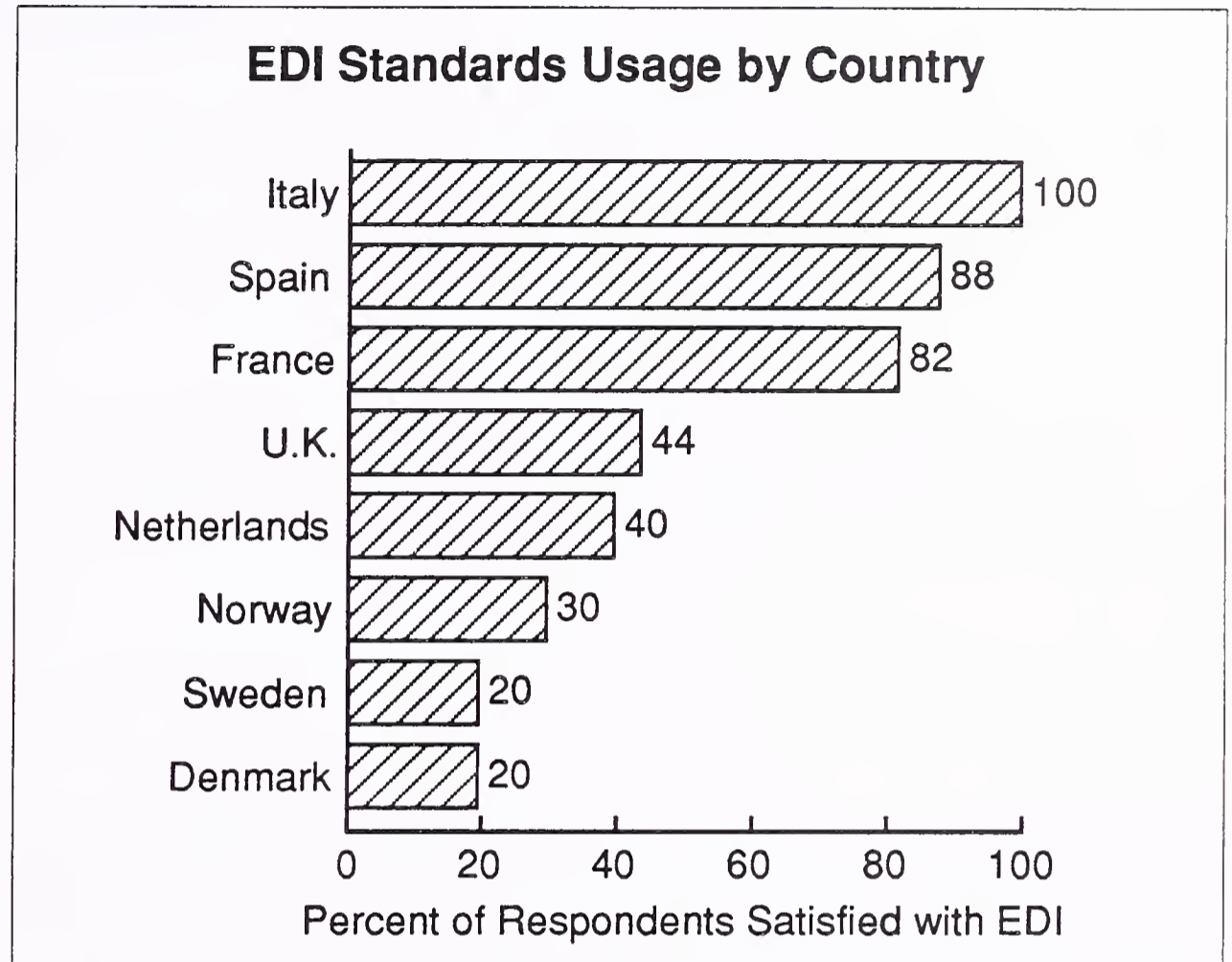
Message Standards	Response Frequency
EDIFACT	49
ODETTE	13
DISH	5
EXPRESS	4
BACS	3
CEFIC	3
DEDIST	3
EDICOM	3
EDICT	3
EDIFICE	3
GALIA	3
LIDIC	2
TRADANET	2

EDIFACT was overwhelmingly the most common, being cited by 60% of the entire sample.

ODETTE, the next highest, was used by only 16%.

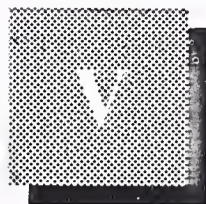
In considering companies which use only one message standard, a major variation was noted by country as detailed in Exhibit IV-25.

EXHIBIT IV-25



Within France, Italy and Spain the companies interviewed were largely only having to cope with one EDI standard. The reduced complexity of operations and implementation which this allows is likely to be the primary factor in the higher level of satisfaction expressed by the users within these countries.

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Conclusions and Recommendations

In this final chapter, INPUT offers some conclusions about the state of EDI implementation today and the problems faced by users. Specific recommendations to users and vendors of EDI systems are also given.

A

The Predicament of EDI

As a technology, EDI is not like typical applications software because it both spans and ties together organisations. Most application software and other information systems are self-contained within a single company and usually within a single functional department. The implementation of a self-contained application, therefore, is much less complicated than implementing EDI.

The difficulty for the user in implementing EDI comes from EDI's inherent necessities to:

- Integrate the diverse business practices, data structures, and information system environments of several corporations (i.e., trading partners). The coordination challenge is to have one's many trading partners buy into and synchronising their EDI programmes, and to do this continually as data formats/elements and other requirements change.
- Integrate the diverse business practices, data structures and information systems platforms of several functional departments within a single corporation (IS applications include order entry, shipping/fulfilment, accounts receivable, accounts payable, etc.). Here, the coordination challenge is to have departments of the company work together to build a unified system.

- Develop and employ a universal communication standard by which functional groups within a company and among companies can communicate business requests, promises and related information. Corporate representatives must work with others in the industry (often competitors) to agree on and maintain standards.
- Integrate and coordinate the products and services of many IS vendors to provide a single EDI solution. This is a variation of the three requirements listed above. The coordination focus, however, is now on the vendors that supply a given EDI user or group of users. Vendors must work together to provide integrated solutions to users. No single vendor can provide all the necessary components of an EDI implementation. Expertise in EDI software, applications software, systems software (such as network systems software), specific hardware-dependent applications (such as bar code scanning, wireless data devices, etc.), professional services, network services, education, and vertical market expertise are all necessary in developing a successful EDI implementation.

Thus, while the idea of EDI is simple, and its technology relatively unsophisticated, it is the vast number of parties and components requiring coordination that makes EDI difficult to implement.

Users don't seek EDI per se, they seek to operate more efficiently and closely with their trading partners and internal departments. EDI is just one tool that helps accomplish this larger business strategy.

There are other tools that compete with EDI, including interactive voice response, proprietary on-line systems, E-mail, and some versions of facsimile. EDI is unable to accomplish some integration objectives, due to standards being insufficiently robust and/or too rigid, a requirement for real-time, a requirement for flexibility, EDI's substantial overhead costs, and other reasons.

For most companies, EDI is a complicated, time-consuming project to implement and yet, for all work involved in this task, it is only a means to a higher end. Furthermore, successfully implementing EDI does not guarantee successfully accomplishing the business strategy.

B

Conclusions and Recommendations

As already stated, EDI markets in Europe are mostly at an embryonic stage of development. There is a strong potential for wider EDI implementation, which will play an important role in closer economic relations between the countries.

In assessing the progress of EDI in Europe, the key variations occurred firstly by country, and secondly by industry-type. Clearly the extent to which EDI is developed in each case is a critical factor.

In this respect, it is important that vendors of EDI products and services look closely at the needs of each potential user in the context of the relevant business environment, and the particular interrelationship between trading partners.

C

Overcoming Obstacles

On the whole, users questioned by INPUT were largely happy with the performance of EDI to date. Particularly in terms of reducing costs and cutting the delays in day-to-day operations, EDI was considered favourably.

Where dissatisfaction was vented it was mostly due to EDI's failure to meet prior expectations....

“Lengthy delays were experienced during the introduction of EDI, this severely increased the company's overall workload “

...or a lack of flexibility on the part of the internal organisation....

“Higher management have shown a lack of understanding of the potential of EDI within the company's overall objectives.”

Clearly, there is a need for more effective marketing and communication of EDI's benefits and shortcomings both internally and externally.

Often this responsibility lies with the hub company which is attempting to encourage trading partners to implement EDI. In other instances this responsibility lies with EDI service and software vendors.

The following points are particularly important for any EDI initiator to emphasise to potential new users:

- EDI is not simply a technical solution, but an important new way of doing business. New users should be prepared for internal reorganisation to cater for EDI, often involving the establishment of a separate EDI department.
- Particularly in the implementation stage, new users should be expecting increased work-load, delays and complexities to arise. Combining two operating systems while maintaining day-to-day business is no simple task.

- The full support of management is required to gain the complete benefit of EDI. While the department head level of management does not need to be familiar with every nut and bolt of EDI, they should have a full understanding of the principles of EDI and its wider capabilities.
- EDI education for the appropriate personnel, both initially and throughout the operation of EDI, should not be under-estimated. EDI is about simplifying many complex interrelationships between trading partners and is designed to function smoothly and efficiently if operated correctly. Clearly, the greater the understanding of the technology itself, the greater the return on the investment involved in implementing EDI.

The critical element in each of the above areas of focus, is the motivation of the new user itself. The importance of the support of the company's own management cannot be over-emphasised in terms of:

- adopting company strategies for the implementation, operation and future development of EDI
- motivating the appropriate personnel to execute these strategies
- assessing the ongoing progress of EDI with a flexible approach for future expansion.

In short, the user should take a pro-active stance rather than reactive, regardless of its spoke/hub status.

It is clearly in the long-term interest of all parties for the EDI initiator to encourage the new user to take control of EDI. While the initial impetus may be to satisfy major customers and suppliers, users need to look deeper into how the full benefits of EDI can be attained. EDI is a major investment into the future and should be perceived as such.

A **European EDI User Questionnaire**

The targeted respondents are the people within a given organisation which have the primary responsibility for the use of EDI within the company. This could be for example EDI project directors, EDI managers, data network managers.

Introduction

My name is _____ and I am with INPUT, an international research and consulting firm specialising in data communications. INPUT is conducting a study examining EDI usage and is interviewing a number of companies across Europe.

We would like your organisation to take part in this study. In return, we will provide you with a summary of our findings at no charge. We are not seeking proprietary information and no information that you supply will be published or publicly linked to your name or your organisation's name.

(1) Are you a user of **third party** EDI software and services?

NB. If not then thank them and end the interview now.

(2) In which specific industry category is your organisation?

- (3) What were the 3 major influences for the implementation of EDI in your organisation?

- (4) What were the 3 main goals for implementing EDI?

- (5) What level of management has final authority in implementing EDI in your company?

_____ Executive _____ Middle Management _____ Operations

- (6) In your opinion, is this management level effectively getting the job done?

_____ Yes _____ No.

- (7) What changes do you think are necessary for your organisation to more effectively implement EDI?

- (8) How many employees work on the EDI project full time in your company?

(9) How many suppliers and in what industries do/will you conduct EDI, now and in 12 months time?

Now _____ Industries _____

12 months from now _____ Industries _____

(10) With how many customers and in what industries do/will you conduct EDI, now and in 12 months time?

Now _____ Industries _____

12 months from now _____ Industries _____

(11) How many message units/transaction sets do you anticipate the software will process per month 12 months from now?

- (12) Of the following applications, please indicate which are integrated into your EDI software. ("Integrated" means that data generated or used in the following system/application are directly transferred into or out of EDI transmissions with trading partners without any human rekeying of data).

sales/order entry
 purchasing
 accounts payable
 accounts receivable
 funds transfer
 manufacturing resource planning
 traffic management/logistics/transportation
 inventory control/receiving
 exchange involving large file transfers
(e.g., telephone bill detail, graphics files, software updates,
etc.)
 Other _____

- (13) Which of the following devices does your organisation use to collect or carry data that is used in the EDI transmission? (Tick all that apply)

bar code scanners
 portable computers
 handheld data collection devices
(excluding bar code scanners and portable computers)
 local-area networks/office environments/E-mail systems
 smart cards or any magnetic stripe card
 image systems
 facsimile machines, fax servers, and/or enhanced fax
services.

(14) Of the following methods for conducting business transactions from your customers, please estimate (as a percentage of the total) how much each one is used.

(prefer both columns of information)

Sales	Percentage of Transactions	Percent of Volume
Field sales representatives		
Walk-in, showroom orders		
Phone conversation		
Mail POs/invoices		
Interactive voice response		
Facsimile		
On-line electronic order entry		
EDI		
Other (_____)		

(15) In five years time, what do you expect the percentage for EDI to be?

(16) Before you began using EDI, how much did you spend on EDI education and consulting services?

(17) Now that you have begun EDI, how much did you spend on each of the following items in 1991 and how much do you plan to spend on each in 1992?

	1991	1992
Third-party EDI software		
Internal EDI software development		
EDI network services		
EDI Consulting/ programming by outside consultants		
EDI conferences, educational materials.		

(18) Which vendors supplied each of the above?

(19) What message standard are you using?

(20) Why did you select this/these vendors in particular?

(21) Have you replaced EDI software since you began using EDI?

_____ Yes _____ No

Why?

(22) How do you see your software needs changing?

(23) Of the following third-party network services, which do you use:

- On-line product catalogues; data bases; directors
 - Converting EDI transmissions to paper or facsimile
 - Graphics file transfers
 - Trading partner implementation programmes
 - Reports on distribution chain activity; marketing/sales activity reporting
 - Interactive voice response services
 - Buy-sell bulletin boards
 - Electronic mail
 - Electronic funds transfer
 - Just basic services (store and forwarding of messages; compliance checking; monthly audit reports)
 - Don't use a VAN at all
 - Other (please explain)
-

(24) Are you planning to decrease, increase, or keep unchanged your reliance on third-party value-added networks in the future?

Decrease

Keep the same

Increase

Don't use a VAN

(25) If increase, what services will you use and from which vendors?

Services _____ Vendors _____

(26) Does your company have a local-area or wide-area network on which EDI software is connected?

- _____ Yes, have network with EDI connected
- _____ No, don't have a network
- _____ No; have network but EDI is not connected
- _____ None of the above

(27) Do you have a current need for conducting EDI in a real-time mode instead of a batch mode or would you have such a need in the future? Would you like to see some EDI transmissions done in a real-time mode in the future?

- _____ No need
- _____ Already doing this
- _____ Would like to have real time

(28) If more than one department in your company is doing EDI, does each department have its own translation software or does it access centralised software on a network?

- _____ Only one department does EDI
- _____ Each has its own
- _____ Centralised (one serves all)
- _____ Other (Specify) _____

(29) What are your plans for international EDI use?

- _____ Already doing it
- _____ Plan to do it in the next 12 months
- _____ Plan to do it in the next three years
- _____ With how many trading partners? _____
- _____ With which countries? _____
- _____
- _____
- _____

(30) Are you using EDI/EFT to pay or receive payments from trading partners?

_____ Yes _____ No

(31) If yes, with how many trading partners? _____ And what standard format are you using?

_____ EDIFACT
 _____ TRADANET
 _____ Other

(32) If no, will you in the next 12 months?

_____ Yes _____ No
 _____ Don't know

(33) On a scale of one to five (five being most satisfied), how satisfied are you with your EDI programme?
 (please circle)

Least satisfied 1 2 3 4 5
 Most satisfied

(34) If you are dissatisfied in any way, please explain why:

(35) What are the three biggest obstacles in implementing EDI?

(36) What quantifiable impact has EDI had on your company?

(37) What is the approximate size (number of employees) of your company?

Under 100 500-999
 100-499 1,000 and over

(38) What is your company's approximate annual turnover?
