THE BENELUX COMPUTER SERVICES INDUSTRY

1980

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THE BENELUX COMPUTER SERVICES INDUSTRY
1980

ABSTRACT

The Benelux computer services markets have continued buoyant during the 1979-1980 period. There has, however, been a noted slowing down in the growth rates in both Belgium and the Netherlands. User site hardware services and turnkey systems (in the two countries respectively) remain the two subsectors with most growth potential.

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INPUT

THE BENELUX COMPUTER SERVICES INDUSTRY
1980

DECEMBER 1980

THE BENELUX COMPUTER SERVICES INDUSTRY
1980

TABLE OF CONTENTS

THE BENELUX COMPUTER SERVICES INDUSTRY
1980

LIST OF EXHIBITS

1 INTRODUCTION

I INTRODUCTION

A. THE MAS/EUROPE 1980 PROGRAMME

This report forms part of the Market Analysis Service for Europe (MAS/Europe) subscription programme for 1980.

- It is written to be read both as a self-contained report on the Benelux countries' computing services markets and as a member of the complete set of reports issued under the programme.

1. PROGRAMME STRUCTURE

- The structure of the complete programme for the year is illustrated diagrammatically in Exhibit I-1. The exhibit also emphasises INPUT's intention to draw comparisons at a continental level between the European market and the market in the U.S.A. in the European Summary Report.

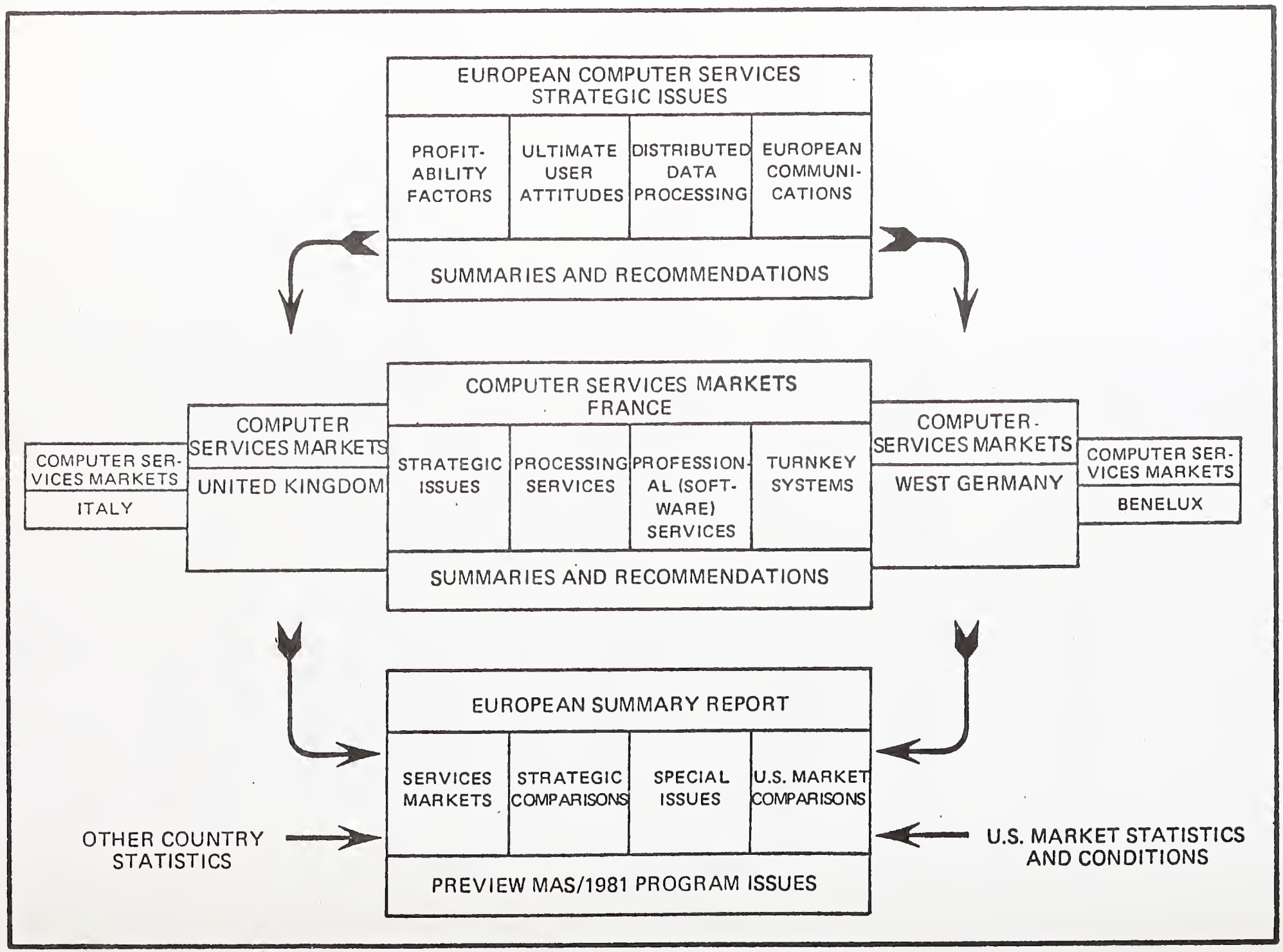
- The MAS/Europe Programme for 1980 has retained those traditional client-orientated elements which have done so much to ensure benefits to subscribers:

  - Enquiry consulting service.

  - In-house presentation.

EXHIBIT I-1

MAS/EUROPE 1980: REPORTING STRUCTURE AND PHILOSOPHY



- Joint client conference (added this year).

2. RESEARCH APPROACH

- The service is underpinned in Europe by two programmes of research:
  - User research, aimed at a variety of organisations chosen by reasons of their size and structure rather than for their industry affiliation.
  - Vendor research aimed at a smaller target sample, but one chosen again principally by size and national coverage criteria.
- Three levels of user interviews were conducted:
  - Multinational corporations, both those with headquarters in Europe and those based in the U.S.A.
  - Major national companies and major subsidiaries of the multinationals.
  - Smaller national independent and subsidiary companies.
- Vendors were interviewed at two levels:
  - Worldwide and European multinationals, including:
    - Computer manufacturers.
    - Processing services suppliers with European networking capability.
    - Software product suppliers.
    - Professional services companies - system and software houses, consultancies and turnkey systems suppliers.

- National companies offering:

  . Processing bureau services.

  . Systems and software.

- The interview is INPUT's main methodology for obtaining up-to-date information in this field. INPUT supplements this by drawing on past data in the company's database and by using additional data derived from concurrent custom research projects. For the Benelux countries' research in 1980, three questionnaires were used, one for users and two for vendors. The two vendor questionnaires address the two types of data being handled:

  - Market size and company product data.

  - Issue data, consisting of supplier company attitudes: either taken from the companies' own policies, or their attitudes to the market as a whole.

- The user questionnaire is directed at:

  - EDP management.

- The objective behind choosing research participation from companies according to their size and national coverage characteristics is:

  - To assess the impact of the trend towards dispersed or distributed data processing as it affects organisations of varying size and geographic spread.

- A broad classification by industry type divides all companies into three major classifications:

  - Discrete manufacturing.

- Process manufacturing.

- Service industries and others.

- This sector spread is not intended to disclose significant variations by industry, but to ensure a comprehensive and unbiased choice of user samples.

- Exhibits I-2 and I-3 illustrate diagrammatically the user and supplier interview sample hierarchies, and show the sample constituents and targetted numbers.

- Exhibits I-4 and I-5 give the actual numbers of users and vendors interviewed and analysed for the production of this report on the Benelux countries.

- The numbers in the body of Exhibit I-4 for the Benelux countries are presented in threes. The significance of the positioning is as follows:

  - The left-hand number is the number of companies interviewed at the level indicated to the right of the diagram.

  - The central number is the number of completed EDP user questionnaires at that level.

  - The right-hand number is the number of completed management questionnaires at that level.

3. TERMINOLOGY

- For 1980, INPUT has enhanced the set of market sector definitions in the MAS/Europe programme, at the same time retaining comparability with results from MAS/U.S. and other INPUT programmes in the U.S.A.

- This has been effected by:

  - Introducing one new major sector - turnkey systems.

EXHIBIT I-2

MAS/EUROPE 1980: USER ATTITUDE RESEARCH, TARGETTED SAMPLES

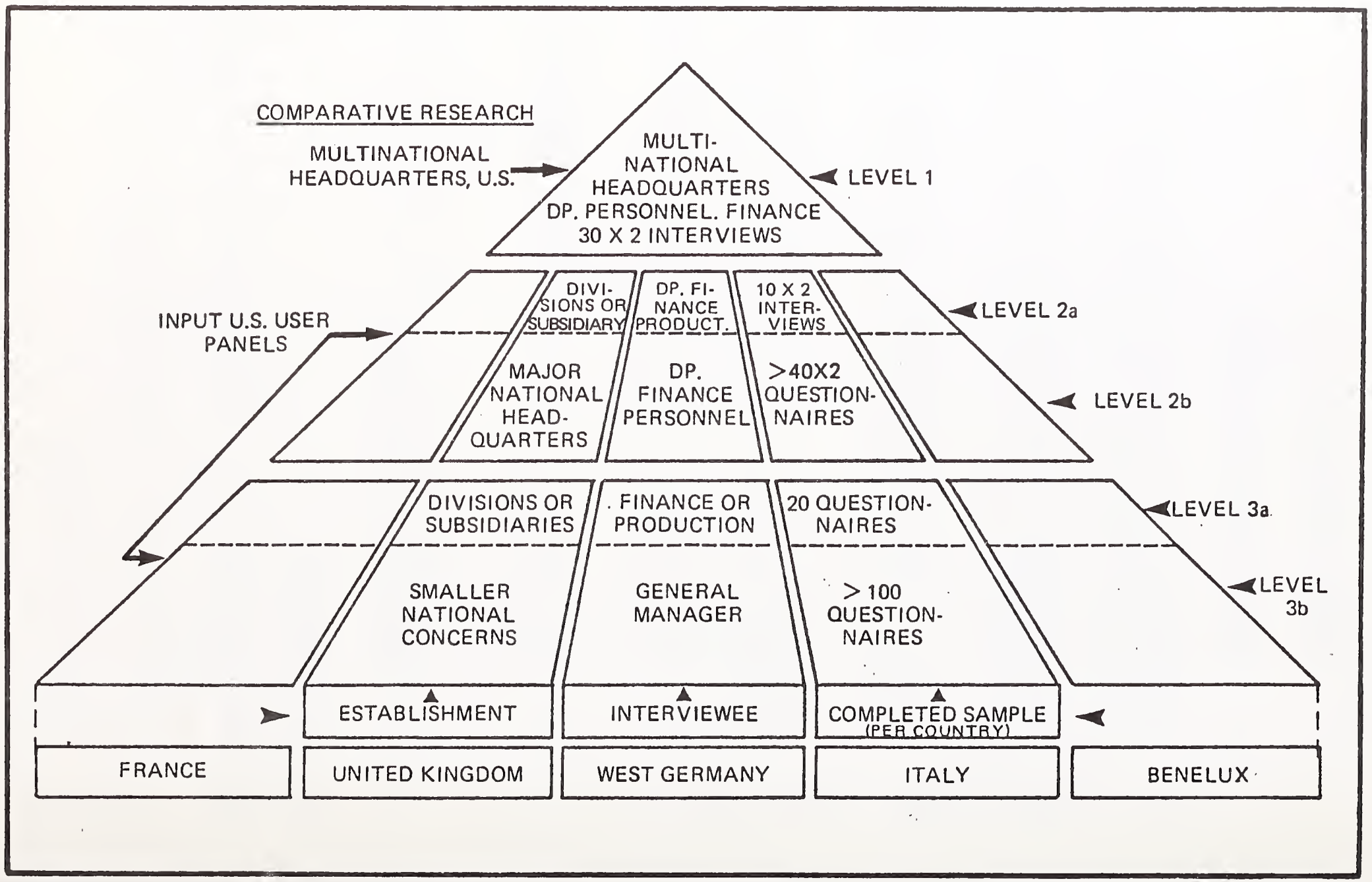


EXHIBIT I-3

MAS/EUROPE 1980:
VENDOR RESEARCH ON PROFITABILITY AND OTHER ISSUES -
TARGETTED SAMPLES

TYPE OF VENDOR	NUMBER OF INTERVIEWS BY COUNTRY/MARKET					
	MULTI-NATIONAL	BENELUX	FRANCE	ITALY	UNITED KINGDOM	WEST GERMANY
COMPUTER MANUFACTURER	15	-	-	-	-	-
PROCESSING SERVICES	10	5	5	5	5	5
SOFTWARE PRODUCTS	5	5	5	5	5	5
PROFESSIONAL (SOFTWARE) SERVICES	5	5	5	5	5	5
TURNKEY SYSTEMS	5	5	5	5	5	5

BASE REFERENCE: INPUT'S CAMP DIRECTORIES AND DATA ON OVER 4,000 COMPANIES

EXHIBIT I-4

MAS/EUROPE 1980: USER ATTITUDE RESEARCH, ACTUAL INTERVIEWS - BENELUX

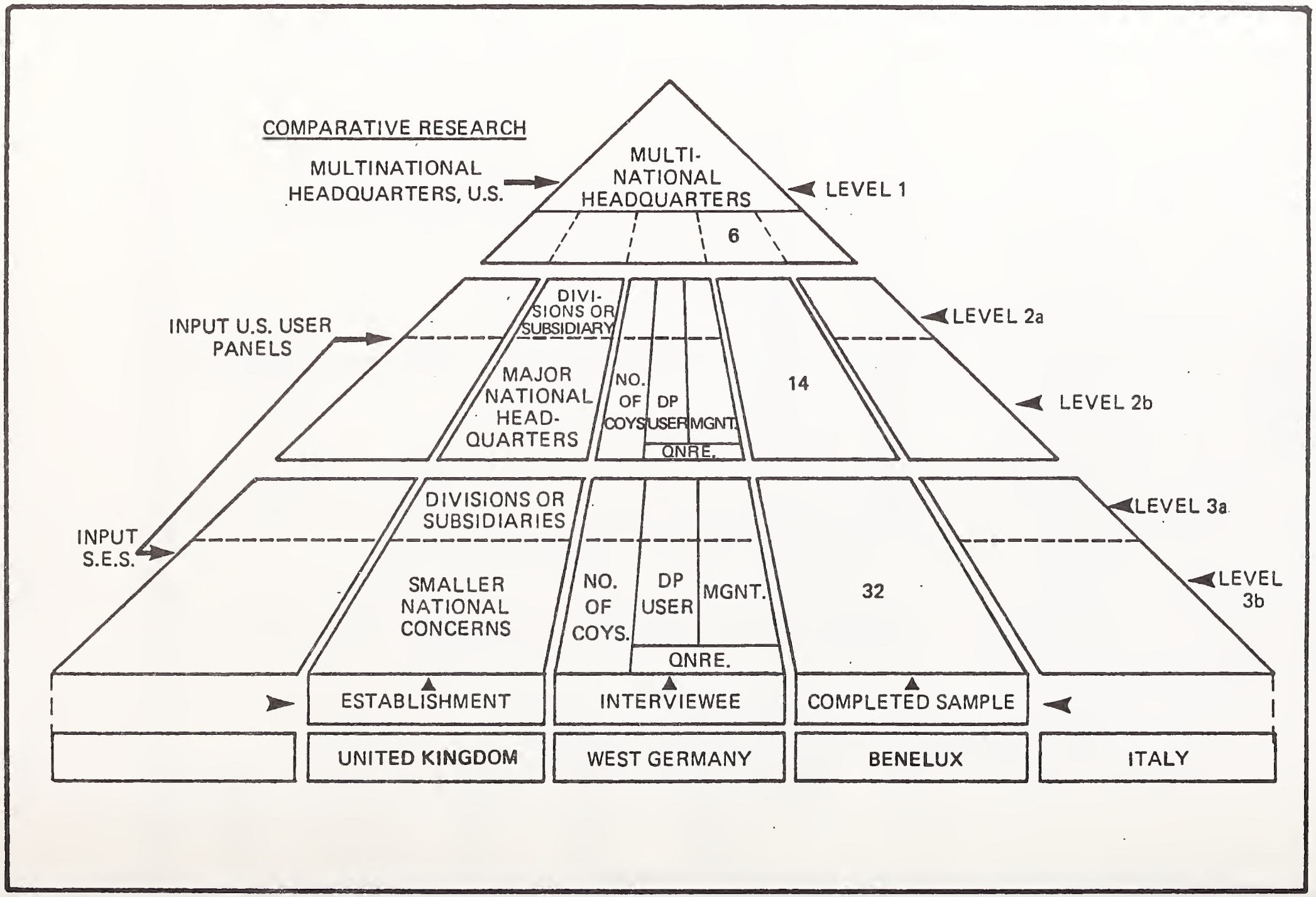


EXHIBIT I-5

MAS/EUROPE 1980:
VENDOR RESEARCH ON PROFITABILITY AND OTHER ISSUES,
ACTUAL INTERVIEWS - BELGIUM AND THE NETHERLANDS

TYPE OF VENDOR	ACTUAL NUMBERS OF INTERVIEWS BY COUNTRY/MARKET					
	MULTI-NATIONAL	BENELUX	FRANCE	ITALY	UNITED KINGDOM	WEST GERMANY
COMPUTER MANUFACTURER	13	-	-	-	-	-
PROCESSING SERVICES	13	10	8	13	11	6
SOFTWARE PRODUCTS	5	6	-	5	4	9
PROFESSIONAL (SOFTWARE) SERVICES	8	11	6	7	2	13
TURNKEY SYSTEMS	3	6	4	4	4	4

BASE REFERENCE: INPUT'S CAMP DIRECTORIES AND DATA ON OVER 4,000 COMPANIES

- Bringing new services definitions (e.g., User Site Hardware Services - USHS) into the traditional sectors to reflect their latest trends.

- The full set of major and sub-major sectors is shown in Exhibit I-6. In addition, processing services are analysed under the application (functional) headings:

  - General business.

  - Scientific and engineering.

  - Industry specialty.

  - Utility.

- A glossary containing INPUT's definitions for these terms is found in Appendix A.

B. SCOPE OF THE REPORT

- The aims of this report are twofold:

  - To describe and review the state of the computing services market in the Benelux countries during 1980, and to present forward forecasts through 1984.

  - To highlight and discuss the strategic issues for vendors operating in Belgium and The Netherlands. These issues will be a subset of those dealt with in the INPUT report, Strategies for the Computer Services Industry in Western Europe, 1980-1989, produced at the start of the MAS/Europe 1980 programme.

EXHIBIT I-6

MAS/EUROPE 1980 COMPUTER SERVICES MARKET SECTORS

COUNTRY MARKET ANALYSIS AND FORECASTS			
PROCESSING SERVICES	PROFESSIONAL (SOFTWARE) SERVICES	SOFTWARE PRODUCTS	TURNKEY SYSTEMS
• BATCH • REMOTE COMPUTING - INTERACTIVE - REMOTE BATCH • F.M. • USHS • 1980-1984	• CONSULTING • PROGRAMMING AND SYSTEMS DESIGN • EDUCATION • 1980-1984	• SYSTEMS • APPLICATIONS - INDUSTRY-SPECIFIC - CROSS-INDUSTRY • 1980-1984	• CROSS-INDUSTRY • INDUSTRY-SPECIFIC • 1980-1984
KEY COMPETITION	KEY COMPETITION	KEY COMPETITION	KEY COMPETITION
▼			
EUROPEAN MARKET SUMMARY			
EUROPE		U.S.A.	
MARKET SIZES GROWTH FORECASTS COUNTRY COMPARISONS	◄	►	MARKET SIZES GROWTH FORECASTS COMPARATIVE ISSUES
KEY COMPETITION			KEY COMPETITION

- The structure of the report is such as partly to separate and partly to intermingle these two aims in its treatment of the subject matter:

  - Chapter III gives an overview analysis of the whole market.

  - Chapter IV analyses the aspects of this year's research findings that are common to all types of computing services vendor, or are common across all users.

  - Chapter V presents INPUT's views on the strategic issues researched.

  - Chapters VI through IX deal with the details of the market for each of the four major types of service:

    . Processing services.

    . Software products.

    . Professional services.

    . Turnkey systems.

  - The detail in Chapters VI through IX includes:

    . Development of the market sector during the last calendar year (1979) for which published results exist in the main.

    . Sector forward forecasts for the five-year period 1980-1984.

    . Impact of strategic issues on vendors operating principally in the sector.

    . Competitive analysis.

- Chapter II is an Executive Summary consisting of:

  . Treatment of the key issues.

  . Conclusions and recommendations.

- Appendix A contains a set of definitions for the terms used in this report.

- Appendices B and C contain the vendor questionnaires used, while Appendix D gives similar data on the user research.

II EXECUTIVE SUMMARY

II EXECUTIVE SUMMARY

A. INTRODUCTION

- The Dutch and Belgian computer services markets have been calculated by excluding:

  - Turnkey systems, which are treated as a separate submarket.

  - Revenues exported to overseas clients from operating companies based in the Netherlands and Belgium.

  - Revenues earned overseas by the foreign subsidiaries of Dutch and Belgian companies.

  - Captive revenues.

B. THE DUTCH COMPUTER SERVICES MARKET SIZE AND GROWTH

- The Dutch computer services market is probably the most internationally open market in Europe which has led to the growth of a range of vendors offering the most diverse set of services in Europe.

- The Dutch market is ranked sixth in size among Western European countries, reaching FL 988 million in 1979 and will exceed FL 1,234 million in 1980.

- With an average annual growth rate of 21% in the five-year forward period, the Dutch market is forecast to reach FL 2,528 million in 1984 in current Dutch guilders. This figure includes INPUT's estimation of price rises in the intervening period.

- During the period 1978-1980 there was a relative slowdown in growth of processing and professional services in favour of software products and turnkey systems. Exhibit II-1 shows the size growth of the major sectors in 1980 and 1984, emphasizing the rapid growth of software products and turnkey systems relative to the other two major sectors.

- The Netherlands has been the traditional 'first step' for many American and British companies on the European mainland. As a result, the leadership in the marketplace is shared between U.S., local and, to a smaller extent, British companies. In 1979, however, the leading British company, CME, slipped out of the top ten ratings and the French CAP/GEMINI/SOGETI came in, demonstrating the increasing stature of the French software companies internationally.

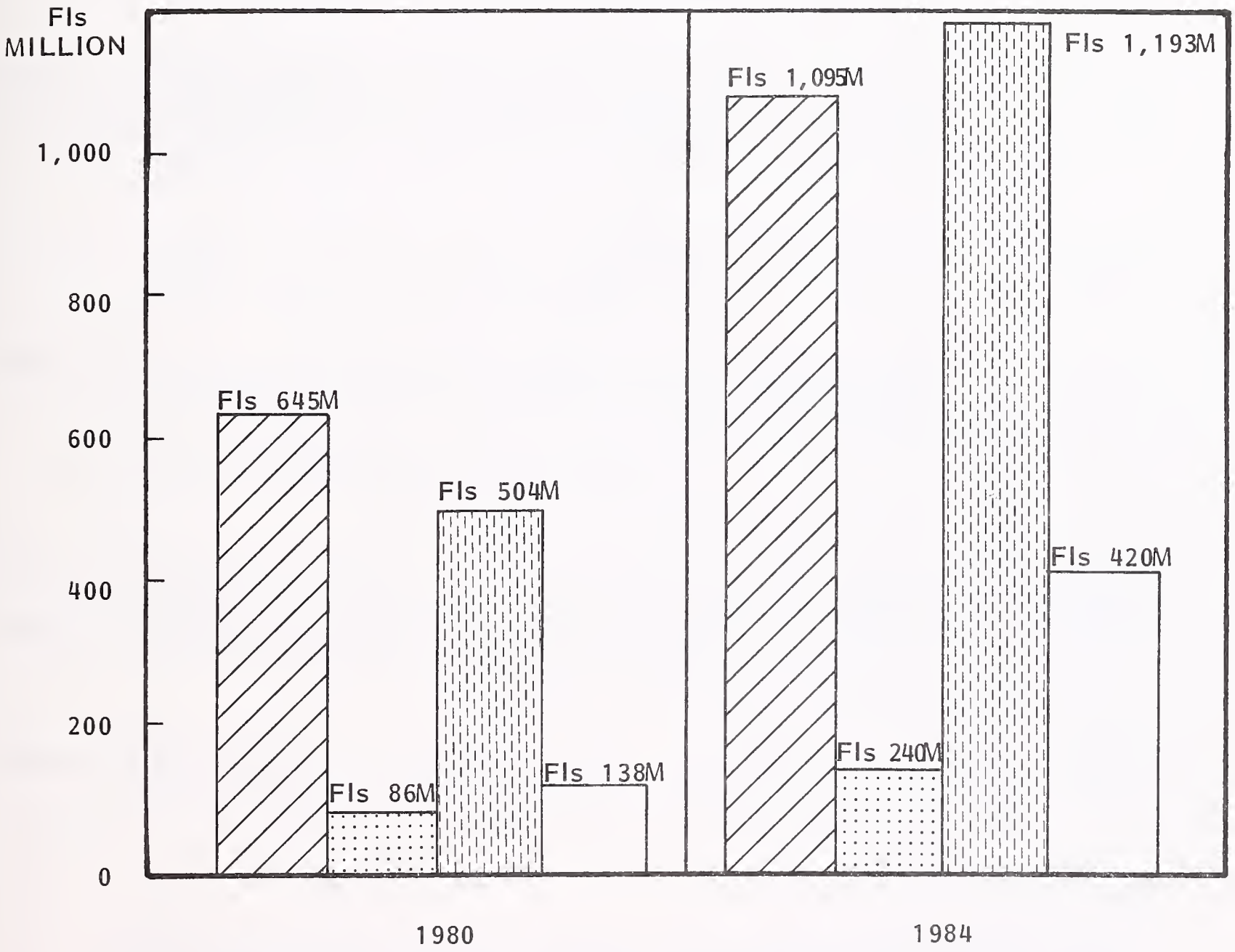
- There is a marked swing towards productisation among both processing and professional services companies, with software products and turnkey services showing the highest growth.

- Services companies are attempting a strong move towards specialisation to consolidate their positions in the market.

- None of the top Dutch national companies has any serious international pretensions. Their strength lies in their technical, managerial and marketing expertise. However, given these abilities, it is somewhat surprising that they

EXHIBIT II-1

GROWTH OF THE DUTCH COMPUTER SERVICES
MARKET SECTORS BETWEEN 1980 AND 1984



PROCESSING SERVICES

SOFTWARE PRODUCTS

PROFESSIONAL SERVICES

TURNKEY SYSTEMS

have made little or no effort to develop international markets, with the exception of Centraal-Beheer (CEA-CSR) which has already completed some significant acquisitions.

- Centraal-Beheer has a high concentration in the banking and general financial markets and has recently placed emphasis and effort on becoming a total systems company with increasing involvement in integration and hardware services.

- There is cause for concern among many Dutch companies, which are becoming increasingly aware that entrepreneurial flair and marketing skill are no permanent substitute for products.

- Two likely solutions are available:

  - Dutch companies can establish close relationships with original equipment manufacturers.

  - Acquisition by wealthier, stronger companies.

- It is foreseen that acquisition activity is likely to increase significantly in the coming months, with American, British and French companies as contenders trying to increase their share of the Dutch market.

- It is also interesting to note that two American companies, IBM and GEIS, have chosen the Netherlands as the base for their European network centres.

C. THE BELGIAN COMPUTER SERVICES MARKET SIZE AND GROWTH

- The Belgian computer services market, although dense in terms of machines, is conservative and has a slower average growth rate than the Western European countries.

- With an average growth rate of 19% in the five-year forward period, the Belgian market is forecast to reach BF 19,917 million in 1984 in current Belgian francs. This figure includes INPUT's estimate of price rises in the intervening period.

- The total services market was BF 8,451 million in 1979 and is expected to reach BF 10,224 million in 1980.

- Exhibit II-2 shows the forecast size of the major sectors in 1980 and 1984 and highlights the growth of software products relative to the other two major sectors.

- In 1980, the market experienced a deceleration in growth rates in certain sectors, notably processing services.

- An analysis of the top computer services companies shows the increasing domination by French companies and is a reflection of the aggression of French-based companies within Europe.

- The role of Brussels as an international capital, hosting some significant corporate headquarters, has contributed to the strength of some American timesharing and software products companies.

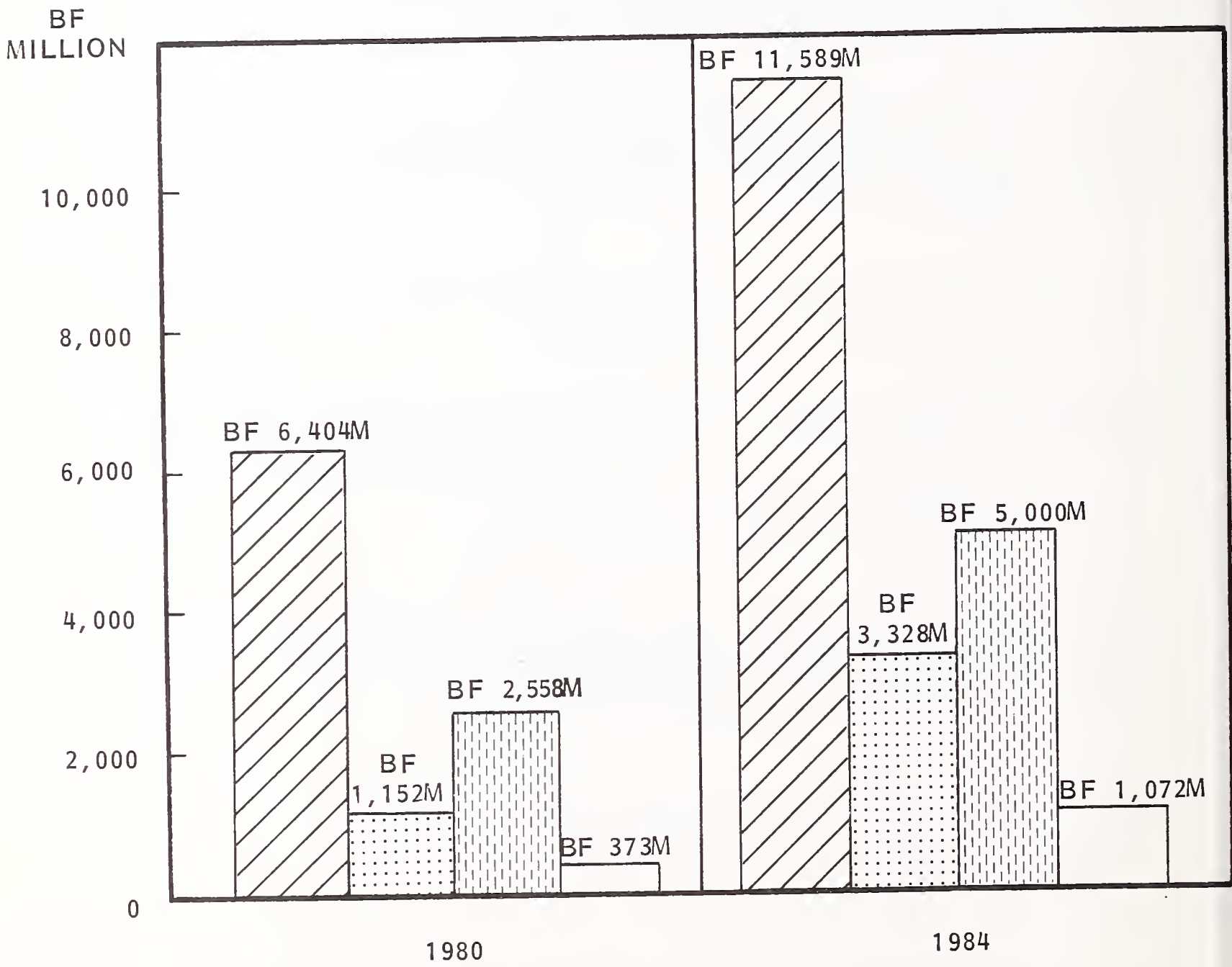
- National Belgian companies, excluding multinational headquarters and the major merchant groups, are not large.

- Laws on the employment of part-time staff, which cover the whole operation of temporary staff agencies in Belgium, are particularly fierce and tend to depress the professional services sector.

- Following the general trend in Europe, the importance of database software should not be ignored by the minicomputer suppliers seeking a stake in the growing business sector in Belgium. This applies both to the simple small business user and to larger companies requiring distributed processing capabilities.

EXHIBIT II-2

GROWTH OF THE BELGIAN COMPUTER SERVICES
MARKET SECTORS BETWEEN 1980 AND 1984



- Application areas for minicomputers in Belgium will follow the overall European trend, in which the automation and control sector continues to be one of the strongest application areas.

- The large systems support and communications area will also continue to show steady growth up to 1983, when it peaks.

D. USER ATTITUDES AND KEY MARKET TRENDS IN THE BENELUX COUNTRIES

- At present the most important activity for Dutch and Belgian users is installing on-line systems. This phase is expected to be followed by:

  - Implementation of DBMS.
  - Decentralisation of EDP control.

- The Dutch user market is active and well developed, particularly in the matter of systems development.

- User expenditures between DP managers and end users are split in favour of DP managers.

  - Financial applications remain the chief area of expenditure and development for both sources.

- The problem facing some Belgian DP managers is that they cannot deliver systems to their end users on time.

- To counter this, they are reluctantly adopting the tactics of decentralisation. This reluctance is caused by their instinctive desire to install systems which have been developed in-house.

- Outside purchase of software is largely restricted to operating systems and utilities.

- Exhibits II-3 and II-4 show the breakdown of user expenditures in 1980 and 1981.

- Future trends in communications-based services in the Benelux countries favour:

  - Electronic mail, dial-up, word processing and CRT graphics for the short term.

  - Steadier, longer-term growth in on-line database retrieval usage both in-house and from external proprietary sources.

E. PROCESSING SERVICES

1. CONCLUSIONS

- Processing services in Belgium are beginning to experience the impact of recession, which has cut their growth rate from 18% in 1979 to 17% in 1980.

- In the Netherlands the impact of recession is much lighter than in neighbouring Belgium.

- There is a relative slowdown in growth of the Belgian processing services market in favour of software products and turnkey systems. Growth in this sector has declined from 25% in 1979 to 19% in 1980.

- The two major trends affecting remote computing services (RCS) are:

  - Provision of on-line database services.

EXHIBIT II-3

GROWTH OF EXPENDITURES FOR INFORMATION PROCESSING AS ANTICIPATED BY DATA PROCESSING MANAGEMENT FOR 1980-1981 IN THE NETHERLANDS

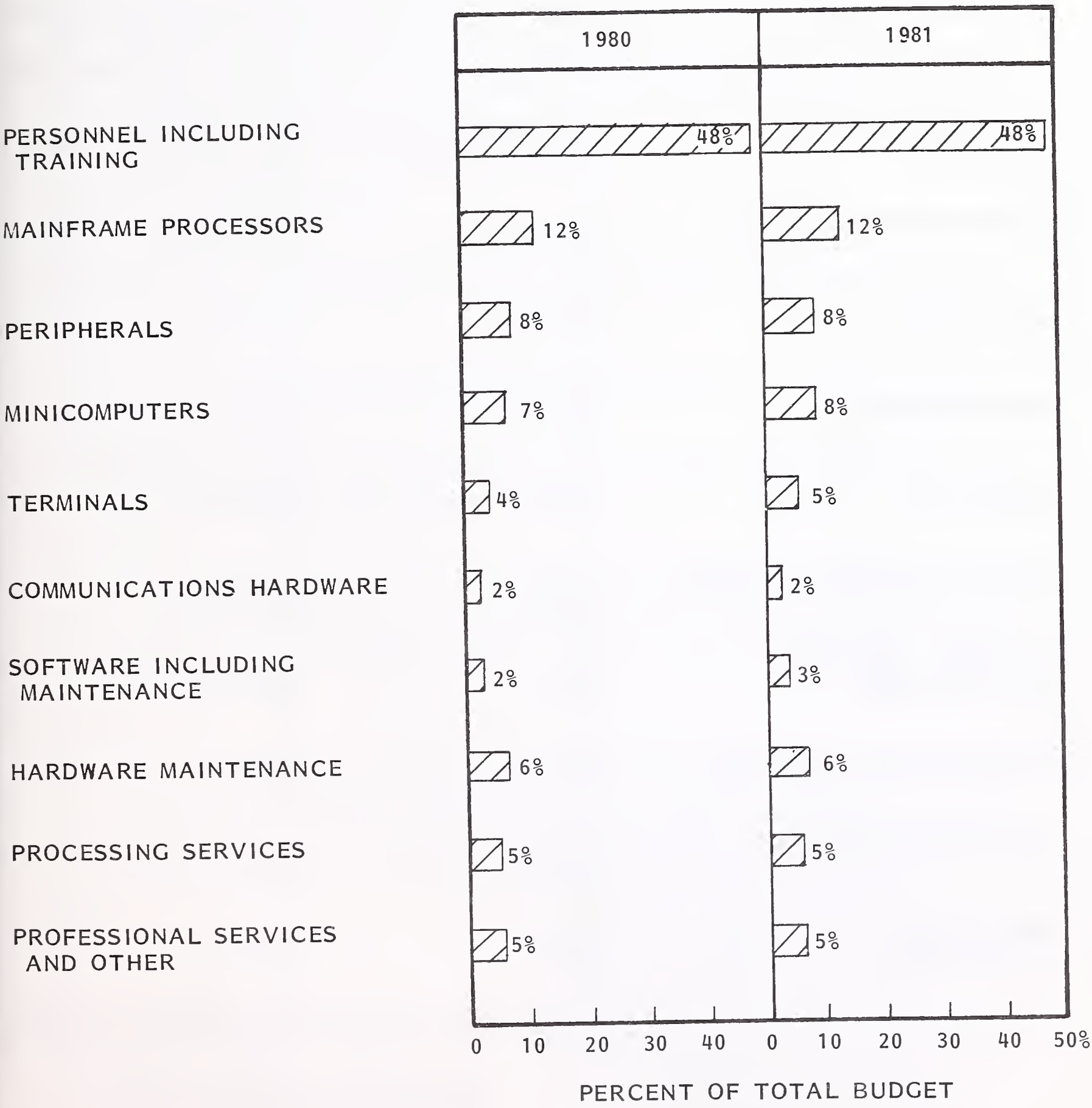
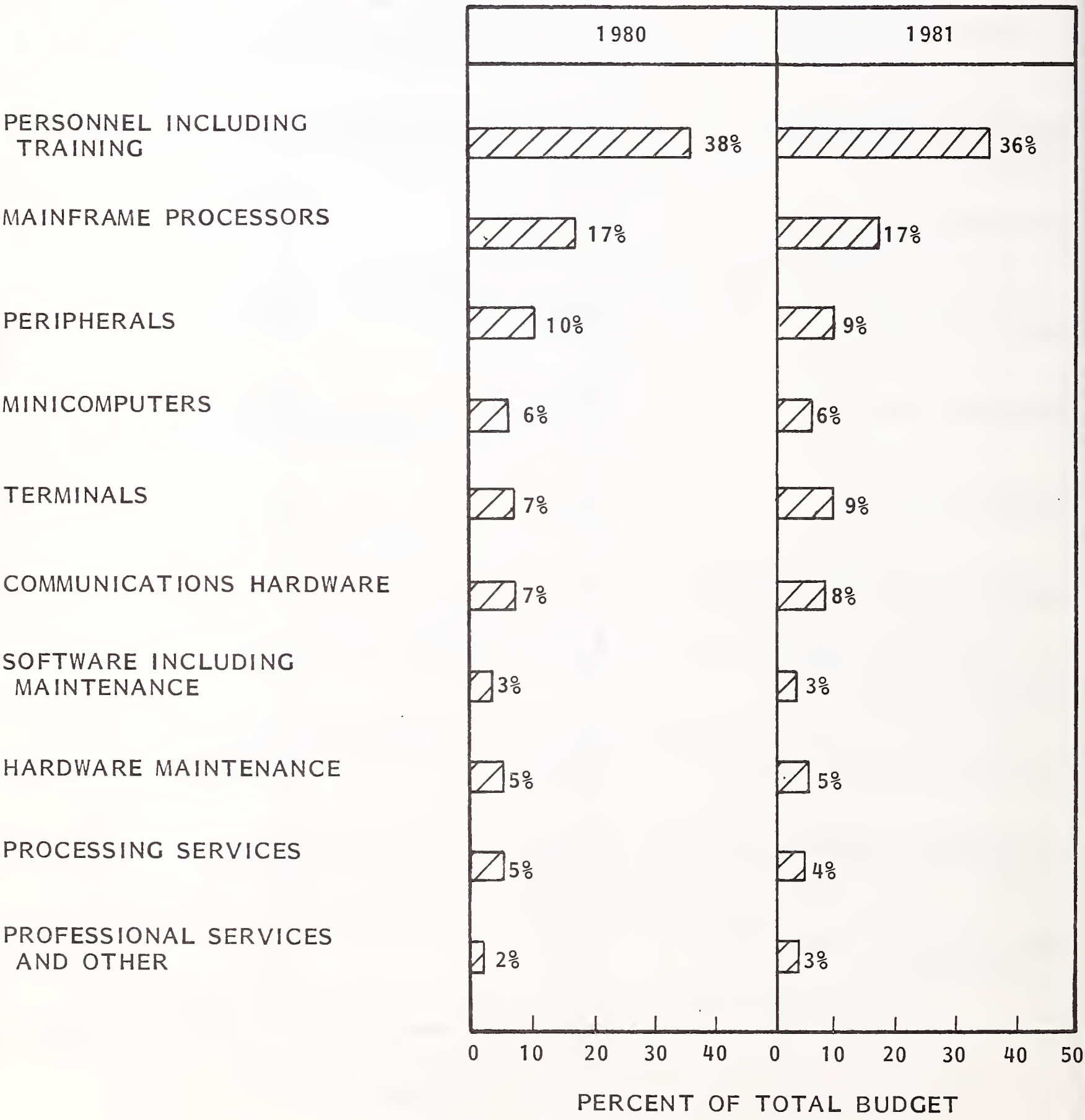


EXHIBIT II-4

GROWTH OF EXPENDITURES FOR INFORMATION PROCESSING AS ANTICIPATED BY DATA PROCESSING MANAGEMENT FOR 1980-1981 IN BELGIUM/LUXEMBOURG



- Migration of services to a user site hardware services (USHS) delivery method.

- Batch services are still buoyant in the Netherlands and Belgium, but they are not predicted to retain their present status. As in other Western European markets, batch services show a slower growth in real terms than other market segments and are declining as a percentage of the total processing services market. Pressure to transfer batch to some other offering, either in-house or from an external source, is increasing.

2. RECOMMENDATIONS

- The Dutch and Belgian processing services vendors ought to take the opportunity to:

  - Re-examine their market position and strategy.

  - Revamp the product catalogue to match more closely the post-recession environment.

- In Belgium, in particular, the public sector market, when compared, for example, to the French one, is relatively unprotected by governmental support programmes and hence could provide a hunting ground for foreign multinationals.

- Processing services vendors in both the Netherlands and Belgium should start developing acquisition programmes, for it is foreseen that acquisition activity is likely to increase significantly in the coming months, with U.S., British and French companies as contenders trying to increase their market shares.

F. SOFTWARE PRODUCTS

1. CONCLUSIONS

- The software products market in the Netherlands achieved a growth of 44% in 1979 over that of 1978, and the growth rate for 1980 is expected to reach 37%. The Dutch sector, although not fully developed, is certainly more advanced than in Belgium, where the software products market is expected to grow by 32% in 1980.

- This growth comes from three directions simultaneously:

  - Hardware vendors' unbundling.

  - Independent software products companies' natural growth.

  - Software houses, particularly in the Netherlands, productising their project offerings in order to achieve repeat business potential.

2. RECOMMENDATIONS

- Concerns operating in the Dutch market should develop pricing strategies which take into account:

  - Increasing personnel costs.

  - Supporting services.

  - Maintenance of their installed product base.

- As regards Belgian-based companies, it is recommended that they:

  - Invest in comprehensive support, training and servicing facilities.

- Be selective as to the quality of staff used for installation and support.

- Build user-programmable products even if the programmability is at the level of parameter-setting.

- To Dutch and Belgian vendors alike, it is recommended that they:

  - Sell advanced system products to DP managers.

  - Sell application products jointly to end users and DP managers.

  - Take care not to take on situations unsuitable for treatment by a packaged product solution. Credibility with the growing client base must not be lost.

G. PROFESSIONAL SERVICES

I. CONCLUSIONS

- Professional services, the second largest services sector in the Netherlands, stands presently at FL 384 million.

- The Belgian professional services sector presently represents BF 2,114 million. The growth rates for the 1978-1979 period for the Dutch and Belgian sectors were 47% and 24% respectively. However, growth of the professional services sector in both countries is forecast to drop in real growth during 1981 and 1982.

- Consulting activities will weather the impact of the recession in Belgium, as will the education and training segment in the Netherlands, due to the fact that they are becoming more product-orientated and due to the dispersal of small computers, which is fuelling demand.

- Office automation applications will be implemented during 1982-1984.

2. RECOMMENDATIONS

- In the Netherlands, the leading suppliers must seek revenue growth in export markets because their home market could become highly price-sensitive.

- Smaller companies, especially in Belgium, should productise their past project experience and software and seek product opportunities in highly specific application and industry sectors.

- Both large and small concerns must strive to overcome the chronic shortage of professionals by recourse to advanced software development systems.

- Contract programmers should attempt to exploit the more stable economies of Western European countries where demand for skilled personnel is very high.

H. TURNKEY SYSTEMS

1. CONCLUSIONS

- The turnkey systems sector, though excluded from inclusion in the total computer services market, is being treated as a subsector in order to ensure continuity within INPUT's standard programme framework.

- Both the Dutch and Belgian turnkey sectors are split into two segments:

  - Major one-off systems for large organisations.

  - Small systems usually sold as a standard product, often for small businesses.

- The characteristics of the two segments require different sets of technical and commercial skills, and different types of companies are found working on them.

2. RECOMMENDATIONS

- Ensure that skills are appropriate to the market sector chosen.

- Develop strong commercial and financial management skills, particularly in the second type of market.

- Expect contention from similar systems companies when operating in the large system sector.

- In the second sector for small business systems, expect intense competition from the hardware vendors as they strive to retain market share in the face of new entrants. This is particularly true in the Belgian/Luxembourg markets.

III MARKET ANALYSIS, 1979-1984

III MARKET ANALYSIS, 1979-1984

A. INTRODUCTION

- The Dutch and Belgian computer services markets were analysed, compared to the findings of prior INPUT research and then forecast for the five-year period 1980-1984.

- The Dutch and Belgian market developments for the year 1979-1980 were evaluated from the results of INPUT's database for 1980, which included all of the 'top ten' service companies by Belgian and Dutch market shares as well as other leading computer manufacturers with substantial services revenues. The market forecasts were built from the user and vendor expenditure revenues and cross-checked against each other.

- The forecasts carried out during the year 1979 were developed by using a 'bottom-up' philosophy. Wherever possible, two breakdowns of individual sectors were derived independently and used to cross-check each other. Remote computing services (RCS) were forecast by the following modes of delivery: interactive, remote batch, user site hardware services (USHS) and database enquiry.

- Software products were forecast by system and application packages, both independent suppliers and hardware vendors.

- Professional services were forecast by categories for:
  - Consultancy.
  - Software development.
  - Education and training.
  - Contract programming and other.

B. MARKET DEVELOPMENT IN THE NETHERLANDS

- The incremental revenue growth forecast by service sector over the five-year forward period is presented in Exhibit III-1.

- A growth rate in revenues of 34% was calculated for the year 1979 over the 1978 revenues. This growth rate has been adjusted to be more accurately in line with INPUT's U.S. procedures and definitions, in which hardware manufacturers' software products revenues have been incorporated.

- An overall growth rate of 25% was forecast for 1980 as shown in Exhibit III-2.

- The rates between individual years do not necessarily show a straight line-graph characteristic since the figures were built up from the more detailed forecasts which follow, and which take into account growths (and declines) in certain types and modes of service.

- All figures are in current guilders. They include price increase factors which have been calculated according to the way in which individual sectors will be affected by inflation. These price increases have been estimated from INPUT's knowledge of the quantity and timing of typical increases by leading vendors in the industry.

EXHIBIT III-1

INCREMENTAL REVENUE GROWTH
BY MODE AND TYPE OF SERVICE, 1979-1984

COMPUTER SERVICE BY MODE AND TYPE	AAGR 1979-1984 (PERCENT)	INCREMENTAL REVENUE GROWTH IN CURRENT GUILDERS (FL MILLION)
BATCH	8%	FL 133
RCS	22	FL 401
FACILITIES MANAGEMENT	26	FL 20
TOTAL PROCESSING	15	FL 554
SYSTEMS SOFTWARE	27	FL 75
APPLICATIONS SOFTWARE	34	FL 102
TOTAL SOFTWARE	31	FL 177
PROFESSIONAL SERVICES	25	FL 809
TURNKEY SYSTEMS	35	FL 327

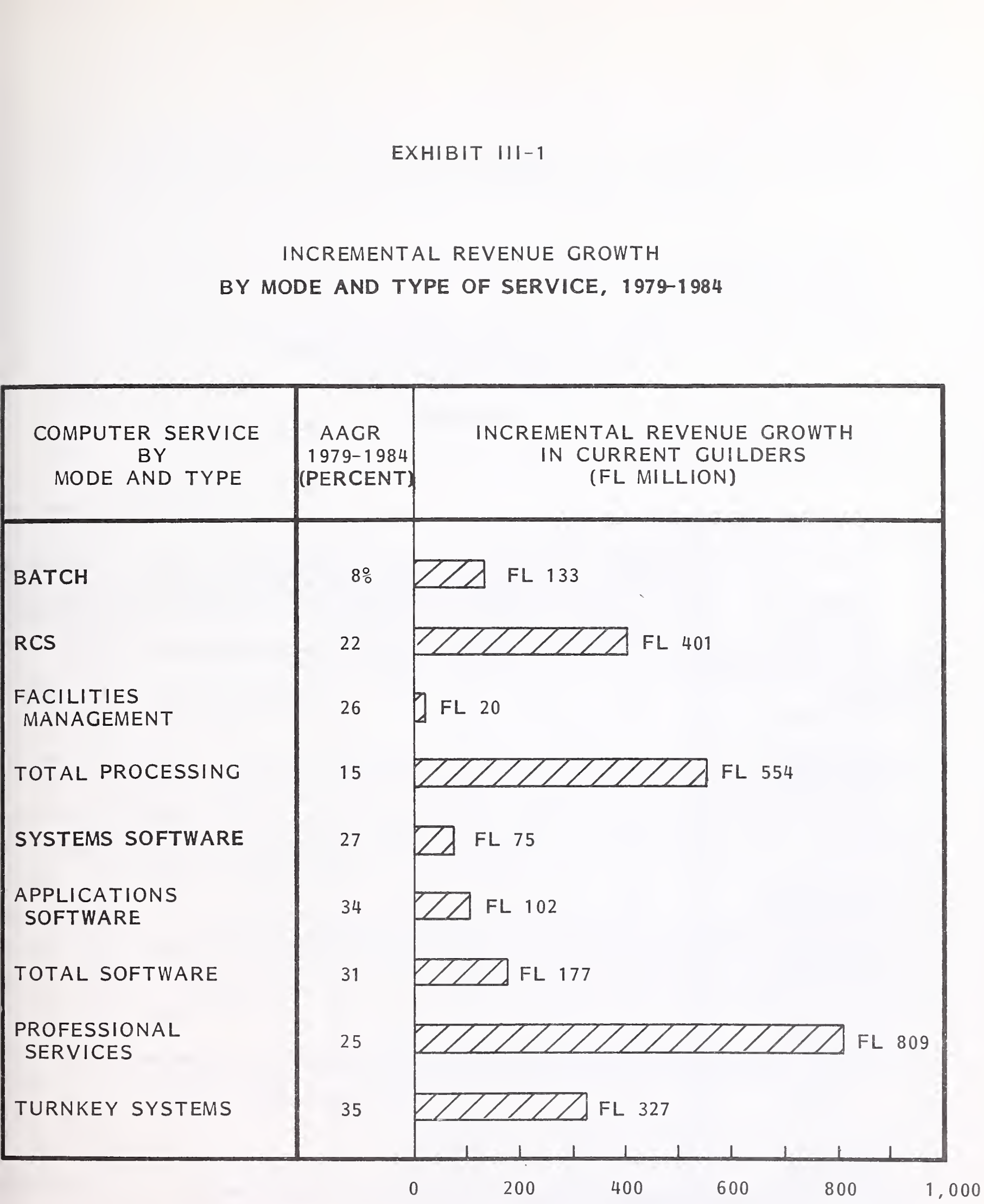


EXHIBIT III-2

THE DUTCH COMPUTER SERVICES
MARKET DEVELOPMENT,
1979-1980

MODE OF DELIVERY	REPORTED 1978 (MILLION GUILDERS)	REVISED* 1978 (MILLION GUILDERS)	1979 (MILLION GUILDERS)	GROWTH 1978-1979 (PERCENT)	1980 (MILLION GUILDERS)	GROWTH 1979-1980 (PERCENT)
REMOTE COMPUTING	182	182	237	30%	301	27%
FACILITIES MANAGEMENT	-	5	9	80	14	50
BATCH	322	247	295	19	330	12
SUBTOTAL-PROCESSING	504	434	541	25%	645	19%
SOFTWARE PRODUCTS	39	44	63	44	86	37
PROFESSIONAL SERVICES	182	262	384	47	503	31
TOTAL	725	740	988	34%	1,234	25%
TURNKEY SYSTEMS	-	65	93	43	138	48

*REVISED TO MATCH MAS/E 1980 CATEGORIES

- As 1980 drew to a close, there were signs that the Dutch economy would start experiencing minor recessionary effects during 1981-1982.

- Professional services are expected to grow faster than processing services, but not as fast as software products. Systems software houses are feeling a shortage of professional software staff and are looking to other European countries to fill a temporary manpower gap.

- Software products are the fastest growing sector in the computer industry and have grown in 1980 to a size of over eighty million guilders. This has been driven by:

  - The increasing rate of software unbundling as large numbers of IBM 4300 installations come on-stream.

  - The introduction of IBM's chargeable software maintenance scheme for on-site service.

- Software products are predicted to take a 7% market share in 1980, having grown by 44% over 1979. Other distortions of the figures as previously measured have now been removed in the revisions of the 1978 market figures contained in Exhibit III-2.

  - Professional services revenues associated with processing services companies have now all been correctly assigned to the professional services category.

  - Facilities management, now separated from batch services, is shown at five million guilders.

  - Turnkey systems revenues have been extracted from professional services and shown outside the services market entirely.

- The overall services market size, including turnkey systems for 1978, has increased by 81 million guilders.

I. FORECASTS FOR COMPUTER SERVICES, 1980-1984

- Computer services markets in the Netherlands are forecast to double from a 1979 base of 988 million guilders to a total of 2,528 million guilders in 1984, a 21% AAGR.

- The outstanding growth sectors are software products and turnkey systems. The size and growth rate of the individual sectors are shown in Exhibit III-3.

- The strength of the software products market derives from many driving forces:

  - Hardware vendors' unbundling their offerings.

  - Turnkey system houses' buying-in more and more software components to improve control of delivery dates.

  - The opening of the personal computer market to both home and business users.

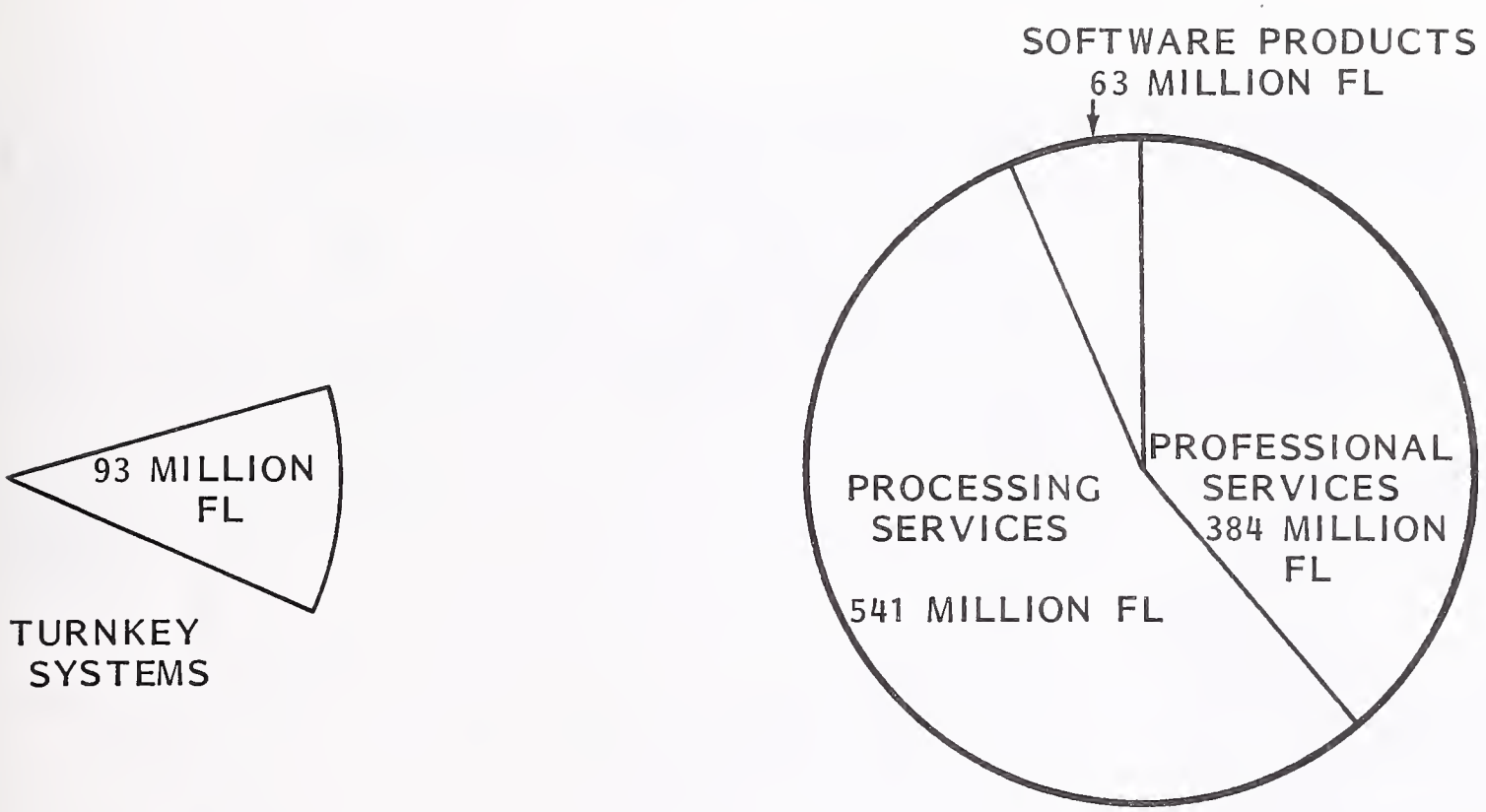
- Exhibit III-4 tabulates the annual growth rates used in forecasting the market growth, as shown in detail in Exhibit III-5. The rates shown are actual forecast growth rates obtained by summing:

  - Anticipated price rises for each type of service.

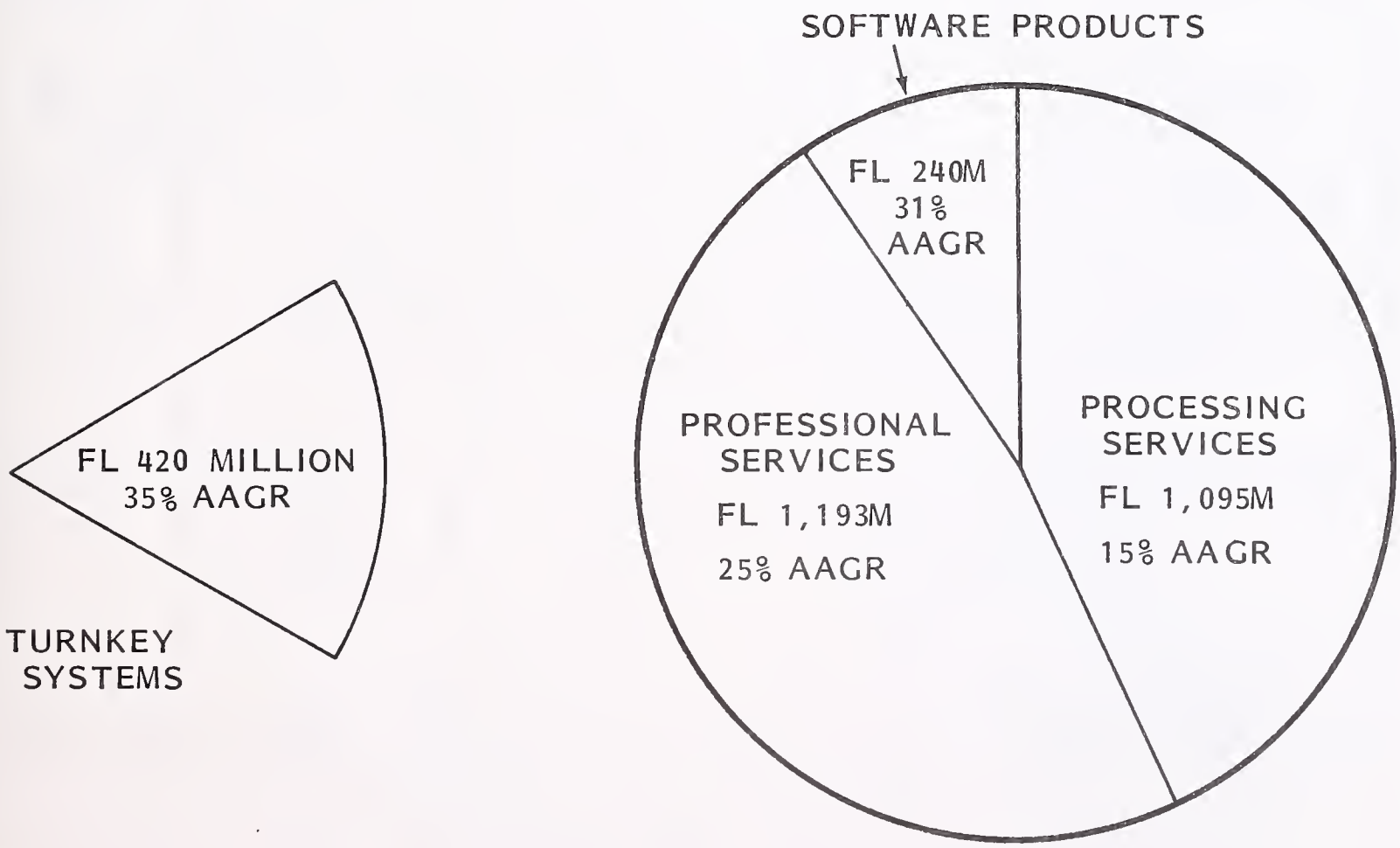
  - Real growth rates forecast in each cell of the matrix formed by type and mode of service and application area (in the case of processing services).

EXHIBIT III-3

DUTCH COMPUTER SERVICES MARKET
(IN CURRENT GUILDERS)



1979-988 MILLION GUILDERS



1984-2,528 MILLION GUILDERS

SOURCE: INPUT FORECAST

EXHIBIT III-4

GROWTH RATES ASSOCIATED WITH
COMPUTER SERVICES MARKET FORECASTS,
NETHERLANDS, 1979-1984

COMPUTER SERVICE		GROWTH RATES (PERCENT)						
MODE	TYPE	1978-1979	1979-1980	1980-1981	1981-1982	1982-1983	1983-1984	AAGR 1979-1984
REMOTE COMPUTING SERVICES (RCS)	INTERACTIVE	42%	34%	30%	28%	25%	28%	29%
	REMOTE BATCH	18	15	12	10	8	4	10
	USHS*	42	40	35	30	25	20	30
	DATA BASE ENQUIRY	117	75	40	38	36	31	43
SUBTOTAL RCS		30%	27%	23%	21%	20%	19%	22%
OTHER PROCESSING SERVICES	BATCH	19	12	10	8	6	3	8
	DATA ENTRY**	-	-	-	-	-	-	-
	FACILITIES MANAGEMENT	80	50	30	10	35	8	26
TOTAL PROCESSING SERVICES		25%	19%	16%	15%	14%	12%	15%
SOFTWARE PRODUCTS	SYSTEMS	41	35	30	27	24	22	27
	APPLICATIONS	47	40	35	34	32	30	34
TOTAL SOFTWARE PRODUCTS		44%	37%	33%	31%	28%	26%	31%
PROFESSIONAL SERVICES	CONSULTING	42	30	22	15	13	16	19
	DEDICATED SOFTWARE	35	22	20	18	20	23	21
	EDUCATION AND TRAINING	86	50	42	35	30	25	36
	OTHER	69	45	35	30	28	25	33
TOTAL PROFESSIONAL SERVICES		47%	31%	27%	23%	23%	23%	25%
TOTAL SERVICES		34%	25%	22%	19%	19%	18%	21%
TOTAL TURNKEY		43%	48%	40%	35%	30%	24%	35%

*USHS = USER SITE HARDWARE SERVICES
**ITALY ONLY, ELSEWHERE INCLUDED IN BATCH

EXHIBIT III-5

COMPUTER SERVICES MARKET FORECAST BY MODE AND TYPE OF SERVICE - TOTAL, 1979-1984
NETHERLANDS

COMPUTER SERVICE		USER EXPENDITURES (MILLIONS OF DUTCH GUILDERS)							
MODE	TYPE	1979 (FL)	GROWTH 1978-1979 (%)	1980 (FL)	1981 (FL)	1982 (FL)	1983 (FL)	1984 (FL)	AAGR 1979-198 (%)
REMOTE COMPUTING SERVICES (RCS)	INTERACTIVE	81	42%	109	142	181	227	290	29%
	REMOTE BATCH	123	18	141	158	174	188	195	10
	USHS*	20	42	28	38	49	61	74	30
	DATA BASE ENQUIRY	13	117	23	32	44	60	79	43
SUBTOTAL RCS		237	30%	301	370	448	536	638	22%
OTHER PROCESSING SERVICES	BATCH	295	19	330	363	392	416	428	8
	DATA ENTRY**	-	-	-	-	-	-	-	-
	FACILITIES MANAGEMENT	9	80	14	18	20	27	29	26
TOTAL PROCESSING SERVICES		541	25%	645	751	860	979	1,095	15%
SOFTWARE PRODUCTS	SYSTEMS	32	41	43	56	71	88	107	27
	APPLICATIONS	31	47	43	58	78	103	133	34
TOTAL SOFTWARE PRODUCTS		63	44%	86	114	149	191	240	31%
PROFESSIONAL SERVICES	CONSULTING	56	42	72	88	101	114	132	19
	DEDICATED SOFTWARE	211	35	258	310	365	438	539	21
	EDUCATION AND TRAINING	73	86	110	156	211	274	342	36
	OTHER	44	69	64	86	112	144	180	33
TOTAL PROFESSIONAL SERVICES		384	47%	504	640	789	970	1,193	25%
TOTAL SERVICES		988	34%	1,235	1,505	1,798	2,140	2,528	21%
TOTAL TURNKEY		93	43%	138	193	261	339	420	35%

*USHS = USER-SITE HARDWARE SERVICES
**ITALY ONLY

- In formulating these predictions, INPUT has had to take account of the twin effects of recession and inflation.

  - Inflation in the Netherlands, growing at a very moderate rate, will push market prices up approximately 5-8% on a moderately regular basis.

  - Although the economic climate in the Netherlands compares very favourably with other European countries, the worldwide recession will affect the computer services industry to a certain degree. Processing services are expected to be hit by the prevailing recessionary forces in 1981. If, however, the recession continues in 1982, vendors will be carried along by a confident outlook engendered by a government support programme.

2. COMPETITIVE ENVIRONMENT

- Detailed research and analysis of published accounts of leading service companies has enabled INPUT to establish accurate rankings of these vendors by:

  - Overall revenues in calendar 1979.

  - Revenues by major market sector, again for 1979.

- A number of adjustments have been made to the leaders' stated revenues in order to normalize them for comparison and ranking purposes.

  - Captive revenues, as defined in Appendix A, have been subtracted.

  - Overseas and export revenues have been separated from domestic revenues.

  - Where reported results were for non-calendar financial years, an adjustment was made.

- Hardware and hardware maintenance revenues were extracted unless these were associated with turnkey systems.

- Exhibit III-6 shows the top ten Dutch 1979 vendors as ranked by share of the domestic market for all computer services, not including turnkey systems.

- Exhibit III-7 shows the revised 1978 rankings after making them compatible with current definitions and after applying the results of 1980 research.

- Exhibit III-8 compares revenues of the top ten Dutch companies for 1979 and 1978, showing a decrease in market domination by this group.

- Though there are no dramatic changes in the pattern of the top ten's business, it is interesting to note that:

  - Facilities management (FM) practice in the Netherlands is expected to take off, after a small and slow start, now that one of the Netherlands' major vendors has started a new specialist system for legal practices.

- Exhibit III-9 contains a list of the top suppliers in each of the three computer services sectors with their 1979 market share.

  - The software products column only contains, in this instance, the independent suppliers. A later chapter compares and discusses the roles of both the independent and hardware manufacturers in this area.

C. MARKET DEVELOPMENT IN BELGIUM

- The incremental revenue growth forecast by service sector over the five-year forward period is presented in Exhibit III-10.

- A growth rate of 21% was calculated for 1979 over 1978 revenues. This growth rate has been adjusted to be more closely in line with INPUT's U.S.

EXHIBIT III-6

THE TOP TEN COMPUTER SERVICES VENDORS BY 1979

MARKET SHARE OF THE DUTCH COMPUTER SERVICES MARKET

RANK*	VENDOR	REVENUE IN MILLIONS OF GUILDERS (FLM)				
		PROCESSING SERVICES	SOFTWARE PRODUCTS	PROFES-SIONAL SERVICES	ALL SERVICES TOTAL	TURNKEY SYSTEMS
1	VOLMAC	-	0.6	63.4	64.0	-
2	CENTRAL BEHEER	50.0	0.3	5.0	55.3	1.0
3	CVI	48.4	-	4.5	52.9	1.5
4	RAET	22.5	2.2	16.7	41.4	2.0
5	IBM	21.9	15.0	0.8	37.7	5.0
6	CAP/GEMINI/SOGETI	-	12.0	23.0	35.0	1.8
7	ARC	24.5	1.3	7.7	33.5	-
8	GEIS	30.5	-	0.5	31.0	-
9	SAMSOM	14.8	1.6	12.0	28.4	1.6
10	CCN	23.3	0.1	4.5	27.9	1.8

E=INPUT ESTIMATE

* RANKING IS BASED ON THE 'ALL SERVICES' TOTAL, WHICH EXCLUDES CAPTIVE OVERSEAS AND EXPORT, AND TURNKEY REVENUES ACCORDING TO THE MAS/E 1980 MARKET DEFINITION.

EXHIBIT III-7

THE TOP TEN COMPUTER SERVICES VENDORS IN THE NETHERLANDS, BY 1978 MARKET SHARE

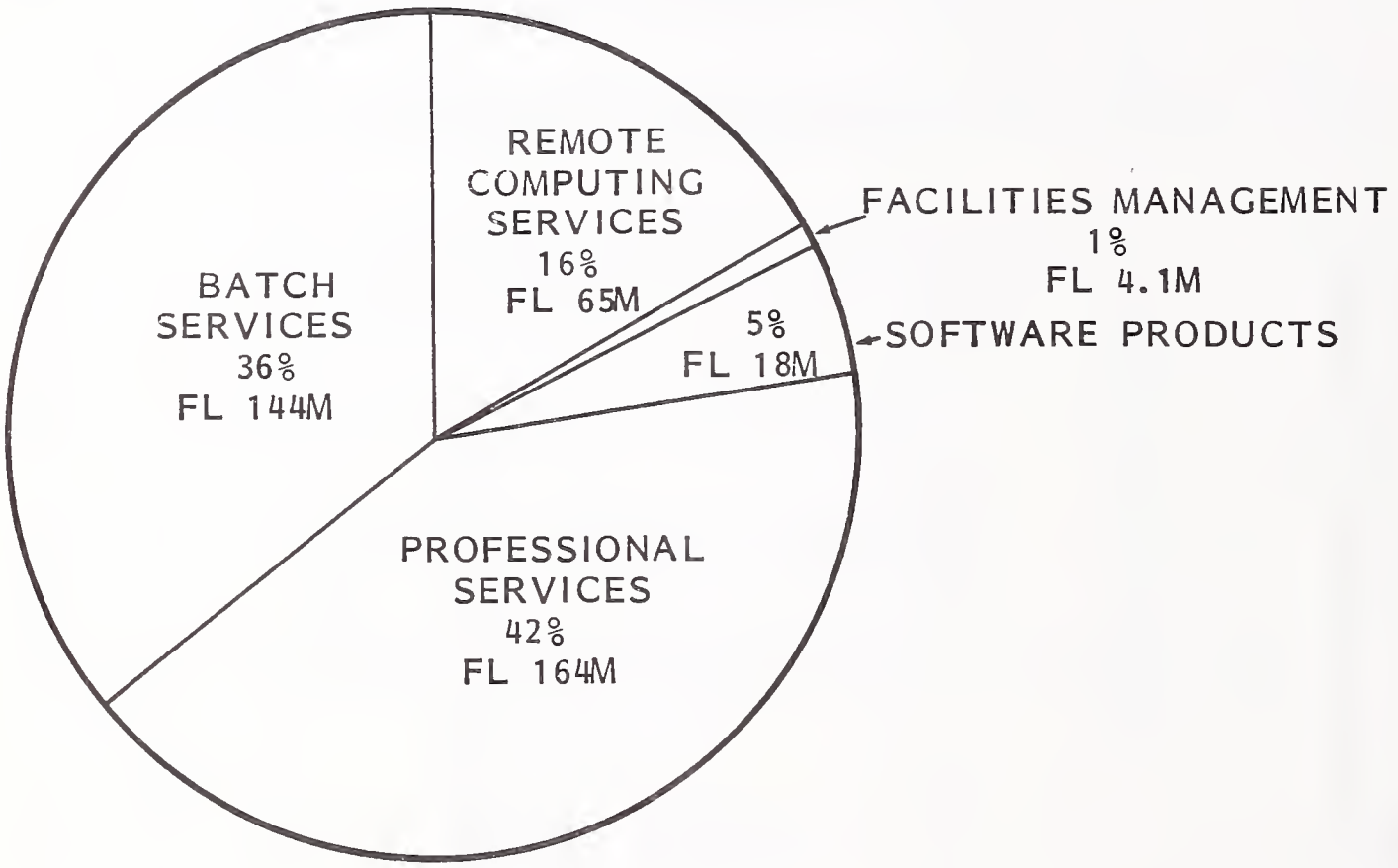
RANK	VENDOR	REVENUE IN MILLIONS OF GUILDERS (FLM)				
		PROCESSING SERVICES	SOFTWARE PRODUCTS	PROFES-SIONAL SERVICES	TOTAL SERVICES TOTAL	TURNKEY SYSTEMS
1	VOLMAC	-	0.4	47.6	48.0	-
2	CENTRAL BEHEER	42.0	0.1	4.3	46.4	0.6
3	CVI	40.8	-	3.5	44.3	1.1
4	IBM	21.6	13.0	0.9	35.5	1.5
5	RAET	14.5	1.5	10.7	26.7	2.3
6	CMG	6.6	-	17.9	24.5	-
7	CCN	20.0	-	3.7	23.7	1.3
8	SAMSOM	10.9	1.1	10.1	22.1	1.0
9	ARC	20.9	-	1.1	22.0	-
10	ARSYCOM	11.0	-	11.0	22.0	8.0

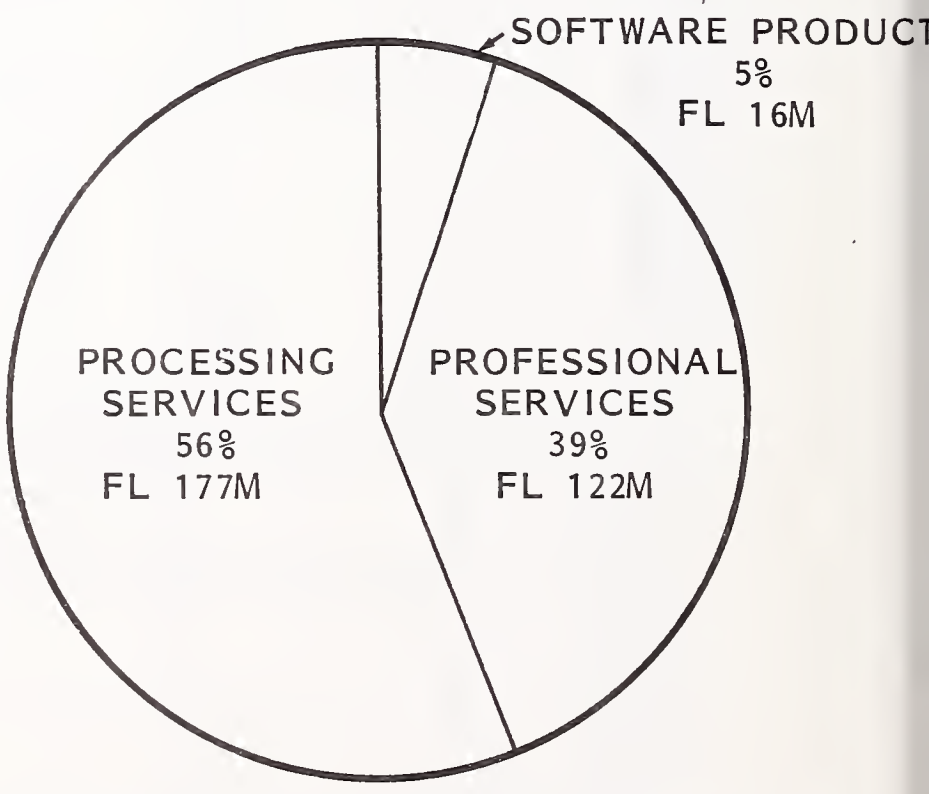
SOURCE: INPUT MAS/EUROPE DATABASE

EXHIBIT III-8

THE DUTCH COMPUTER SERVICES MARKET,
1978-1979

THE TOP TEN 1979 (FL 396M = 40% OF MARKET)





THE TOP TEN 1978 (FL 315M = 43% OF MARKET)

EXHIBIT III-9

TOP SUPPLIER RANKING AND SECTOR
MARKET SHARES BY SERVICE TYPE IN
THE NETHERLANDS

TYPE / RANK	PROCESSING SERVICES (FL 541 MILLION)		SOFTWARE PRODUCTS (FL 63 MILLION)		PROFESSIONAL SERVICES (FL 384 MILLION)	
	SUPPLIER NAME	% SHARE	SUPPLIER NAME	% SHARE	SUPPLIER NAME	% SHARE
1	CENTRAL	9.2%	IBM	23.8%	VOLMAC	16.5%
2	CVI	8.9	CAP (PANDATA)	19.0	CAP/GEMINI/ SOGETI	6.0
3	GEIS	5.6	RAET	3.5	CMG	5.4
4	ARC	4.5	SAMSOM	2.5	RAET	4.3
5	CCN	4.3	DATA PROCESS	2.5	ARSYCOM	3.4
6	RAET	4.2	INFONET	2.5	SAMSOM	3.1
7	IBM	4.0	ACD	2.2	CDC	2.1
8	ADP	4.0	ARC	2.1	LOGICA	2.1
9	ACD	3.5	VOLMAC	1.0	ARC	2.0
10	SAMSOM	2.7	CENTRAL BEHEER	0.5	NOVA	1.6
11	ARSYCOM	2.4			DATA PROCESS	1.5
12	CDC	2.3			ACD	1.5
13	CMG	1.0			CENTRAL BEHEER	1.3
14	INFONET	0.9			CVI	1.2
15	UCC	0.5			CCN	1.2
16	COMSHARE	0.4			DATALOGIE	0.8
17					EDL	0.6

EXHIBIT III-10

INCREMENTAL REVENUE GROWTH
BY MODE AND TYPE OF SERVICE, 1979-1984

COMPUTER SERVICE BY MODE AND TYPE	AAGR 1979-1984 (PERCENT)	INCREMENTAL REVENUE GROWTH IN CURRENT BELGIAN FRANCS (BF MILLION)
BATCH	9%	BF 1,588
RCS	22	4,531
FACILITIES MANAGEMENT	2	600
TOTAL PROCESSING	16	6,125
SYSTEMS SOFTWARE	25	1,349
APPLICATIONS SOFTWARE	43	1,106
TOTAL SOFTWARE	31	2,455
PROFESSIONAL SERVICES	19	2,886
TURNKEY SYSTEMS	31	798

0 2,000 4,000 6,000 8,000 10,0

procedures and definitions, in which hardware manufacturers' software product revenues have been incorporated.

- For the year 1980, an overall growth rate of 20% was expected.

- The rates between individual years do not necessarily show a straight line characteristic since the figures were built up from the more detailed forecasts which follow, and which take into account growths and declines in certain types and modes of service.

- All figures are in current Belgian francs. They include a price increase factor of 8% per annum. This price increase has been estimated from INPUT's knowledge of the quantity and timing of typical increases by leading vendors in the industry. The total Belgian market for computer services will grow in 1980 at 20%, as shown in Exhibit III-11.

- The Belgian economy will encounter a deepening of the prevailing recession during 1981 and 1982.

- The professional services sector, quite buoyant at this time, is expected to grow faster than processing services but not as fast as software products.

- Systems software houses are feeling a shortage of professional software staff and have been looking in other European countries for quality recruits to fill a temporary manpower gap.

- Software product sales, the fastest-growing services sector, was expected to reach, in 1980 over one billion Belgian francs. This has been fuelled by:

  - The increasing rate of software unbundling as large numbers of IBM 4300 installations come on-stream.

  - The introduction of IBM's chargeable software maintenance scheme for on-site services.

EXHIBIT III-11

THE BELGIAN COMPUTER SERVICES
MARKET DEVELOPMENT,
1979-1980

MODE OF DELIVERY	REPORTED 1978 (MILLION BF)	REVISED* 1978 (MILLION BF)	1979 (MILLION BF)	GROWTH 1978-1979 (PERCENT)	1980 (MILLION BF)	GROWTH 1979-1980 (PERCENT)
REMOTE DELIVERY	2,027	2,027	2,595	28%	3,192	23%
FACILITIES MANAGEMENT	-	65	64	-2	70	10
BATCH	2,747	2,550	2,805	10	3,142	12
SUBTOTAL-PROCESSING SERVICES	4,774	4,642	5,464	18%	6,404	17%
SOFTWARE PRODUCTS	262	647	873	35	1,152	32
PROFESSIONAL SERVICES	1,733	1,705	2,114	24	2,558	21
TOTAL	6,769	6,994	8,451	21%	10,114	20%
TURNKEY SYSTEMS	-	197	274	39	373	36

*REVISED TO MATCH MAS/E 1980 CATEGORIES

- Software products are predicted to take a 13% market share in 1980, having grown by 35% over 1979. Other distortions of the figures as previously measured have now been removed in the revisions made to the 1978 market figures.

  - Professional services revenues associated with processing services companies have now all been correctly assigned to the professional services category.

  - Facilities management, separated from batch services, is shown at 65 million Belgian francs.

  - Turnkey systems revenues have been extracted from professional services to be shown outside the services market entirely.

  - The overall services market size, including turnkey systems for 1978, has increased by 422 million Belgian francs.

1. FORECASTS FOR COMPUTER SERVICES, 1980-1984

- Computer services markets in Belgium are forecast to double from a 1979 base of 8,451 million Belgian francs to a total of 19,917 million Belgian francs in 1984, an AAGR of 19%.

- The outstanding features of the five-year period are the growths in software products and turnkey systems, which will both be at a 31% rate.

- Processing services will remain after five years as still the largest sector. It will possess the capability to expand faster for the rest of the decade as a result of growing database services markets.

- The strength of the software products market derives from many driving forces:

- Hardware vendors' unbundling their offerings.

- DP management's wishing to conserve their in-house effort for implementation and tailoring tasks.

- The opening of the personal computer market to both home and business users.

- The major videotex implementations expected between now and 1983.

- Exhibit III-12 summarises the effect of all these changes in the relative importance of the sectors.

- Exhibit III-13 tabulates the annual growth rates used in forecasting the market growth, as shown in detail in Exhibit III-14. The rates shown are actual forecast growth rates obtained by summing:

  - Anticipated price rises for each type of service.

  - Real growth rates forecast in each cell of the matrix formed by type and mode of service and application area (in the case of processing services).

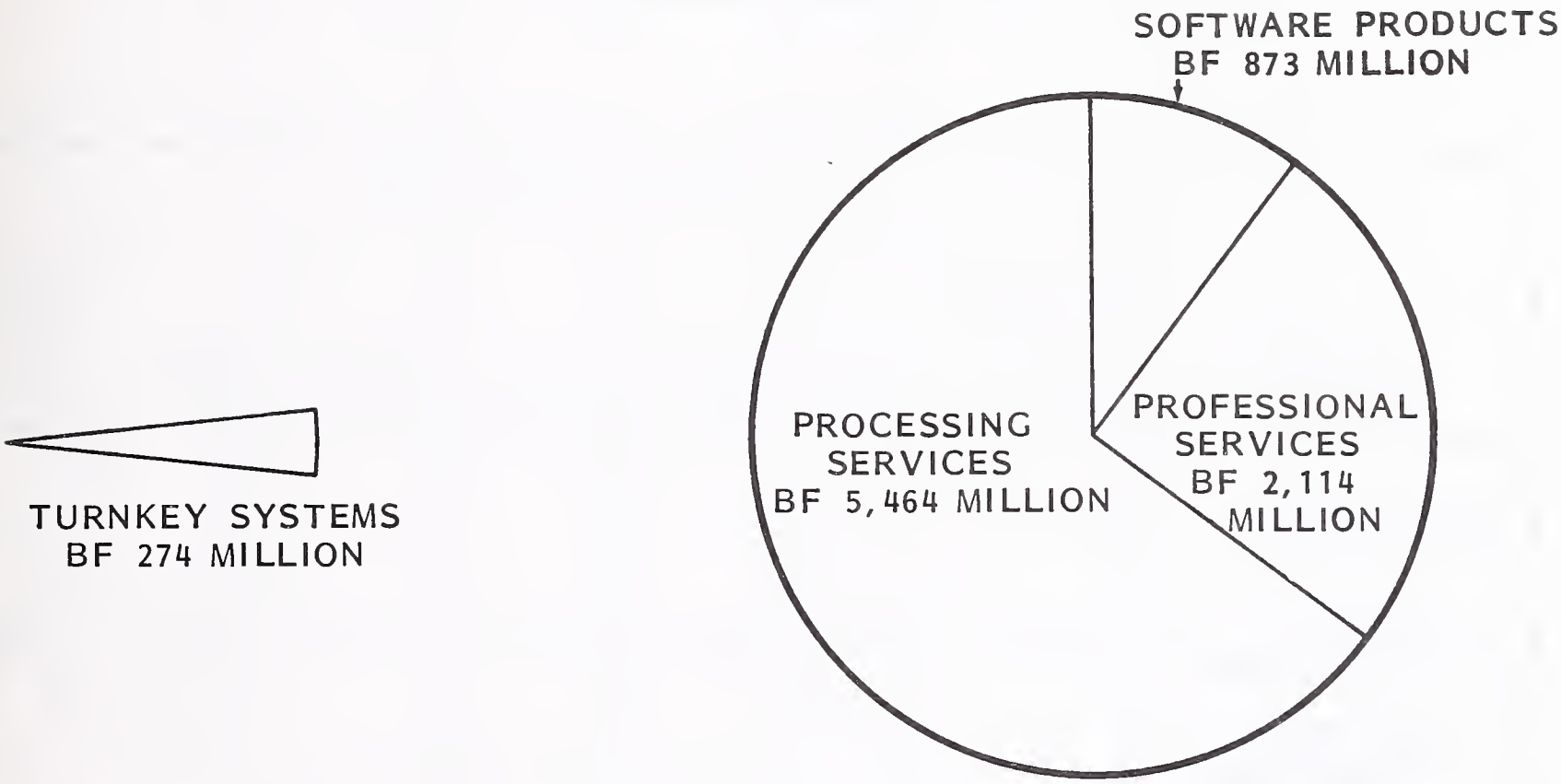
- In formulating these predictions, INPUT has had to take account of the twin effects of recession and inflation.

  - Inflation has conditioned the market to expect price increases of 8-10% on a moderately regular basis.

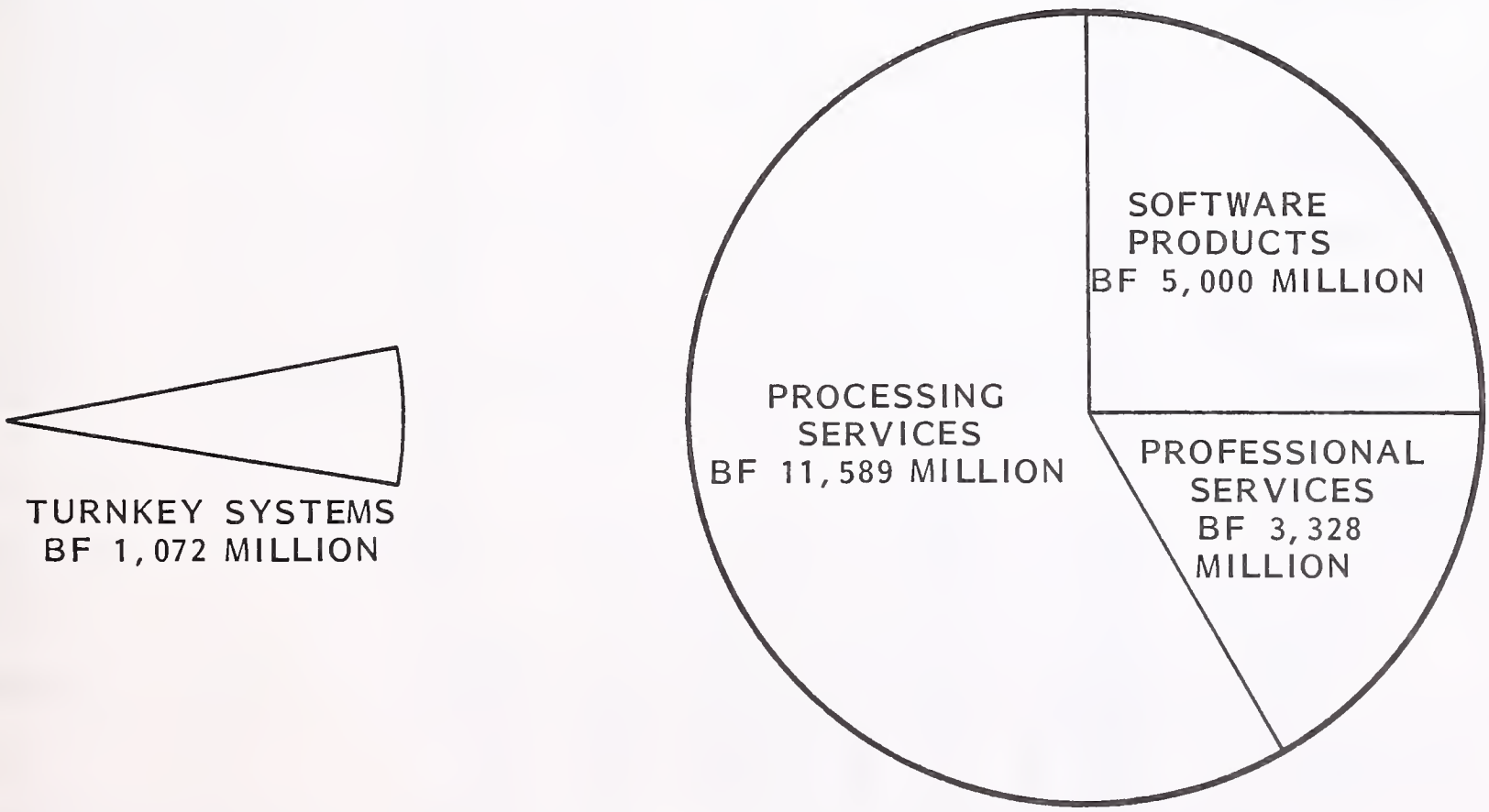
  - Processing services must expect to be impacted by recession in 1981. It is hard to assume an easing of the recession in 1982, but if this does happen and if the inflation rate slows, vendors will be carried along by a confident outlook engendered by a government support programme similar to the programme currently carried out by the French govern-

EXHIBIT III-12

BELGIAN COMPUTER SERVICES MARKET
(IN CURRENT BELGIAN FRANCS)



1979-BF 8.5 MILLION



1984-BF 19.9 MILLION

SOURCE: INPUT FORECAST

EXHIBIT III-13

COMPUTER SERVICES MARKET FORECAST BY MODE AND TYPE OF SERVICE - TOTAL, 1979-1984

BELGIUM/LUXEMBOURG

COMPUTER SERVICE	USER EXPENDITURES						
	GROWTH 1978-1979 (%)	1979-1980	1980-1981	1981-1982	1982-1983	1983-1984	AAGR 1979-1984 (%)
PROCESSING SERVICES							
REMOTE COMPUTING	28%	23	20	21	23	25	22%
FACILITIES MANAGEMENT	-2	10	5	-5	0	0	2
BATCH	10	12	10	10	8	8	9
SUBTOTAL	18%	17	15	16	16	16	16%
SOFTWARE PRODUCTS							
SYSTEMS	37	25	25	27	24	25	25
APPLICATIONS	30	53	44	37	42	39	43
SUBTOTAL	35%	32	31	30	30	31	31%
PROFESSIONAL SERVICES	24	21	20	19	16	18	19
TOTAL	21%	20	18	18	18	20	19%
TURNKEY SYSTEMS	39	36	30	30	30	28	31

EXHIBIT III-14

COMPUTER SERVICES MARKET FORECAST BY MODE AND TYPE OF SERVICE - TOTAL, 1979-1984

BELGIUM/LUXEMBOURG

COMPUTER SERVICE	USER EXPENDITURES								
	1978	1979	GROWTH 1978-1979 (%)	1980	1981	1982	1983	1984	AAGR 1979-1984 (%)
PROCESSING SERVICES									
REMOTE COMPUTING	2,027	2,595	28%	3,192	3,830	4,635	5,701	7,126	22%
FACILITIES MANAGEMENT	65	64	2	70	74	70	70	70	2
BATCH	2,550	2,805	10	3,142	3,456	3,802	4,106	4,393	9
SUBTOTAL	4,642	5,464	18%	6,404	7,360	8,507	9,877	11,589	16%
SOFTWARE PRODUCTS									
SYSTEMS	476	650	37	810	1,016	1,289	1,594	1,999	25
APPLICATIONS	171	223	30	342	493	673	956	1,329	43
SUBTOTAL	647	873	35%	1,152	1,509	1,962	2,550	3,328	31%
PROFESSIONAL SERVICES	1,705	2,114	24	2,558	3,070	3,653	4,237	5,000	19
TOTAL	6,994	8,451	21%	10,114	11,939	14,122	16,664	19,917	19%
TURNKEY SYSTEMS	197	274	39	373	484	644	838	1,072	31

ment. Otherwise, amalgamations and takeovers may be the result of a flourishing services market.

2. COMPETITIVE ENVIRONMENT

- Detailed research and analysis of published accounts of leading services companies has enabled INPUT to establish accurate rankings of these vendors by:

  - Overall revenues in calendar 1979.

  - Revenues in major market sectors, again for 1979.

- A number of adjustments have been made to the leaders' stated revenues in order to normalize them for comparison and ranking purposes.

  - Captive revenues, as defined in Appendix A, have been subtracted.

  - Overseas and export revenues have been separated from domestic revenues.

  - Where reported results were for non-calendar financial years, an adjustment was made.

  - Hardware and hardware maintenance revenues were extracted unless they were associated with turnkey systems.

- Exhibit III-15 shows the top ten Belgian vendors in 1979 as ranked by share of the domestic market for all computer services, not including turnkey systems.

- Exhibit III-16 shows the revised 1978 rankings after making them compatible with current definitions and after applying the results of 1980 research.

- Exhibit III-17 shows the breakdown of the domestic market revenues of the top ten Belgian companies for the years 1978 and 1979. Though there are no

EXHIBIT III-15

THE TOP TEN COMPUTER SERVICES VENDORS IN BELGIUM BY 1979 MARKET SHARE

RANK	VENDOR	REVENUE IN MILLIONS OF BELGIAN FRANCS (BFM)				
		PROCESSING SERVICES	SOFTWARE PRODUCTS	PROFES-SIONAL SERVICES	ALL SERVICES TOTAL	TURNKEY SYSTEMS
1	CIG	648	–	162	810	–
2	IBM	314	275	50	639	70
3	SOBEMAP/SGAB	149	–	285	434	10
4	SLIGOS	235	–	92	327	4
5	GEIS	211	–	19	230	–
6	ORDA-B	151	4	25	180	16
7	CDC	155	–	20	175	–
8	ORDINA BENELUX (SG2)	93	27	55	175	–
9	STERIABEL	–	11	123	134	89
10	EFFICIENT S.A.	–	5	125	130	30

EXHIBIT III-16

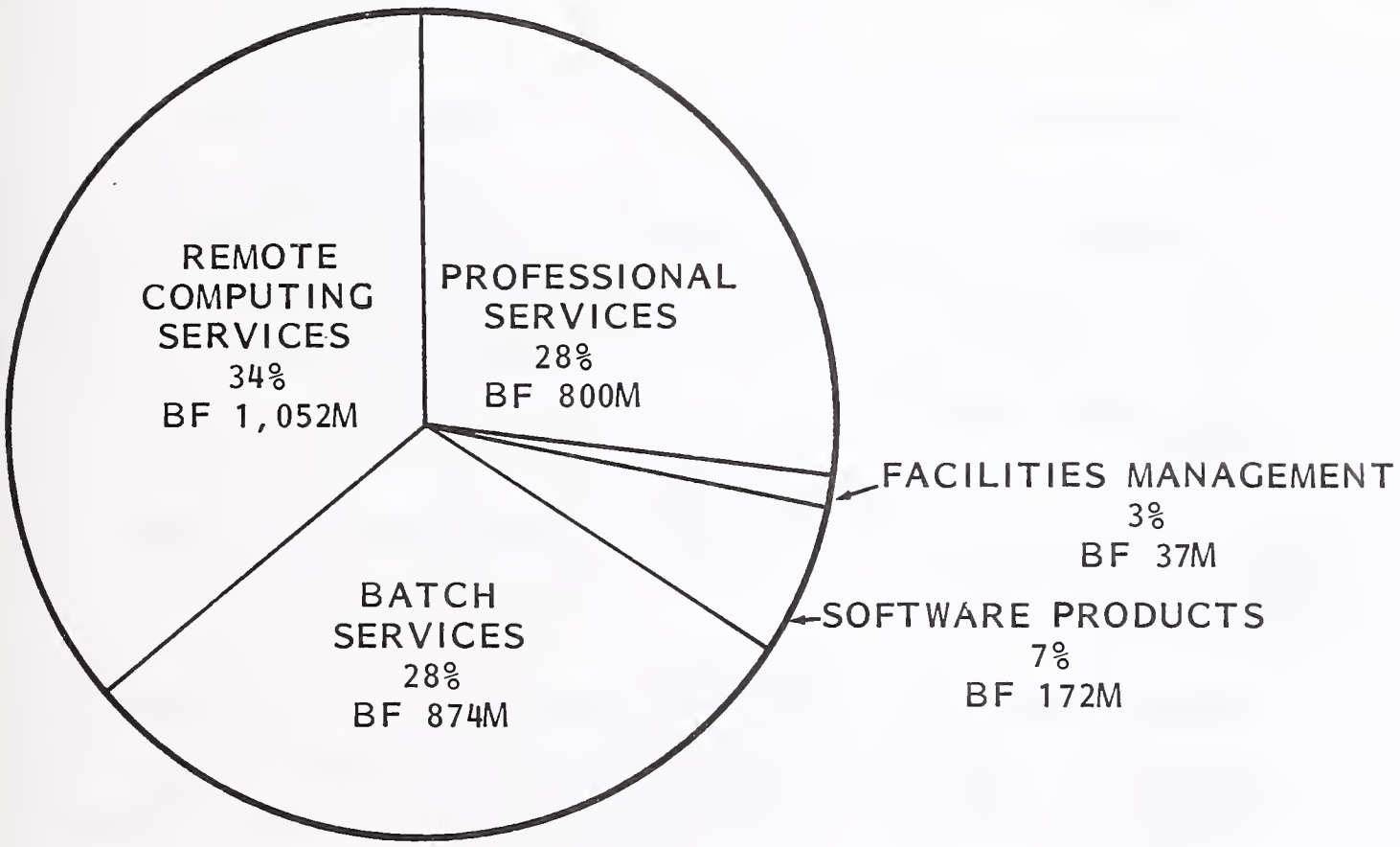
THE TOP TEN COMPUTER SERVICES VENDORS IN BELGIUM BY 1978 MARKET SHARE

RANK	VENDOR	REVENUE IN MILLIONS OF BELGIAN FRANCS (BFM)				
		PROCESSING SERVICES	SOFTWARE PRODUCTS	PROFES-SIONAL SERVICES	ALL SERVICES TOTAL	TURNKEY SYSTEMS
1	CIG	600	–	154	754	–
2	IBM	300	200	41	541	50
3	SLIGOS	216	–	87	303	3
4	SOBEMAP	–	–	180	180	–
5	CDC	153	–	17	170	–
6	SGAB	146	6	8	160	–
7	GEIS	150	–	7	157	–
8	ORDA-B	123	2	18	143	9
9	EFFICIENT S.A.	–	8	130	138	12
10	STERIABEL	–	13	100	113	54

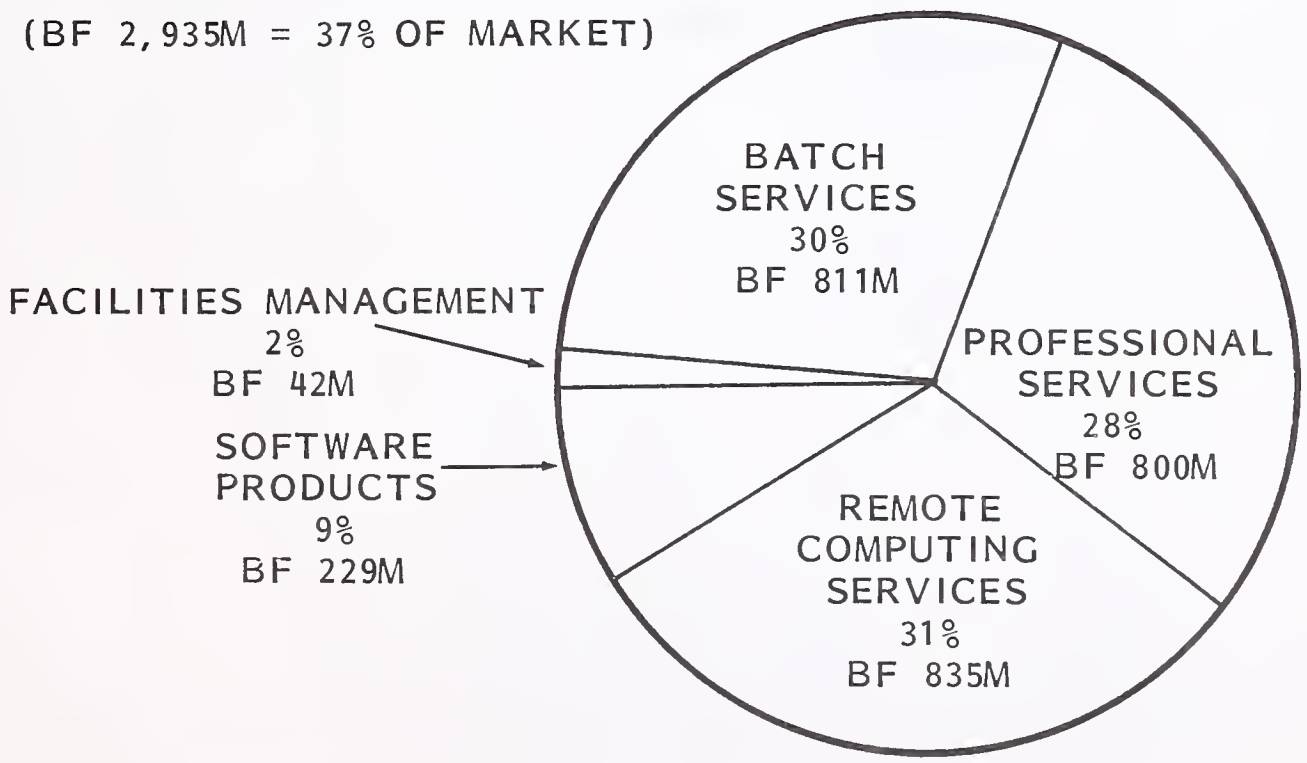
SOURCE: INPUT MAS/EUROPE DATABASE

EXHIBIT III-17

THE BELGIAN COMPUTER SERVICES MARKET,
1978-1979



THE TOP TEN 1979 (BF 2,935M = 37% OF MARKET)



THE TOP TEN 1978 (BF 2,717M = 38% OF MARKET)

dramatic changes in the pattern of the top ten's business, it is interesting to note that:

- Professional services have experienced no change over the period 1978-1979 and retain their share of 28%.

- RCS has grown by 3%. Orda-B and GEIS have contributed to this growth.

- Batch services have shown a decline of 2% over 1978-1979.

- Nonetheless, the top ten have grown at a slower rate (16%) compared to the total market (21%) and have seen their share shrink from 38% to 37%. In the current buoyant state of the industry, this trend is expected to continue.

- Exhibit III-18 shows the ranking of the companies operating in each of the three main market sectors.

  - The software products column has been in this instance reserved for the independent suppliers in order to prevent their being swamped by the hardware manufacturers. A later chapter discusses and compares the two vendor types.

EXHIBIT III-18

TOP SUPPLIER RANKING AND SECTOR MARKET SHARES BY SERVICE TYPE IN BELGIUM

RANK \ TYPE	PROCESSING SERVICES (BF 5,464 MILLION)		SOFTWARE PRODUCTS (BF 873 MILLION)		PROFESSIONAL SERVICES (BF 2,114 MILLION)	
	SUPPLIER NAME	% SHARE	SUPPLIER NAME	% SHARE	SUPPLIER NAME	% SHARE
1	CIG	11.9%	ORDINA BENELUX	3.1%	SOBEMAP	11.2%
2	IBM	5.7	STERIABEL	1.3	CIG	7.7
3	SLIGOS	4.3	SGAB	1.1	EFFICIENT SA	5.9
4	GEIS	3.9	CAP/GEMINI/ SOGETI	0.8	STERIABEL	5.8
5	SGAB	2.8	EFFICIENT SA	0.6	SLIGOS	4.4
6	CDC	2.8	ORDA-B	0.4	ORDINA/ BENELUX	2.6
7	ORDA-B	2.8	UCC/SPI	0.2	IBM	2.4
8	UCC/AC-SERVICE	2.4			CAP/GEMINI/ SOGETI	2.0
9	ORDINA BENELUX	1.7			CSC	1.0
10	GERAC	1.1			CDC	0.9
11	CSC	0.7			GEIS	0.9
12	ADP-NIS	0.7			SGAB	0.9
13	CISI	0.6				
14	COMSHARE	0.6				
15	CEGI-TYMSHARE	0.4				
16	GSI	0.2				

IV COMPUTER SERVICES MARKET ISSUES

IV COMPUTER SERVICES MARKET ISSUES

A. THE NETHERLANDS VENDORS

1. INTRODUCTION

- This section reviews the vendor data INPUT has gathered to study the market issues current to the Dutch computer services industry.

- The Dutch computer services industry has technologically achieved a high state of development. There is strong competition in the computer services market which evolved from the interactions between Dutch national and other European and American vendors. Although the market is small, it is one of the most sophisticated in the world, particularly in the area of systems development. This is mainly due to the geographical and historical position of the Netherlands as well as the country's strong financial and banking sector, which has fostered the computer services industry and aided investment in it by attracting some of the largest worldwide corporations such as Shell and Philips.

- Research in the 1980 MAS/Europe programme has particularly targetted those issues which relate to the ability to continue with constant enhancement of services and product ranges:

  - Profitability and investment potential.

- Encroachment by the hardware manufacturers.

- Shortage of key professional staff.

2. ANALYSIS OF VENDOR ISSUE DATA

a. Sample Statistics

- The MAS/Europe 1980 Vendor Issue Questionnaire was designed in a modular format to allow selective completion by different types of vendor or by vendors with differing portfolios of product.

- The questionnaire was completed by seven companies whose combined revenues in 1979 on the Dutch domestic market amounted to 182 million guilders. The sample (among which were three of the top ten vendors) therefore represents 14% of the 1979 sales value of the Dutch market.

- In addition, the respondents completed an INPUT/CAMP database update questionnaire, which is designed to cover the basic company financial and product data.

- INPUT interviewed a number of other leading Dutch vendors, or companies operating in the Netherlands, during 1980 on a variety of projects. Though not subjected to the present detailed analysis, the data stemming from these other interviews have been taken into account in:

  - General evaluation of the sample's findings.

  - The market and sector forecasts found in other chapters of this report.

- The analysis in this chapter is concerned with those issues which are common to all types of vendors.

- Issues specific to vendor types are analysed later in the chapters which bear the titles appropriate to each type, Chapters VI through VIII.

b. Sector-Specific Marketing

- Interviewed vendors were asked whether their product development was biased towards cross-industry or industry-specific products.

  - One vendor regarded itself as favouring cross-industry products.

  - Three others favoured industry-specific products.

  - The remaining three had no particular bias.

- In Exhibit IV-1, the replies of all respondents on the likely split of development effort in two and five years' time were graded and plotted in bar-chart form. The results show a considerable bias in favour of developing industry-specific products.

- Within the next five years, the bias towards industry-specific products will continue to grow; this was confirmed when responses were analysed by type of company, by initial bias position and in two- and five-year timeframes.

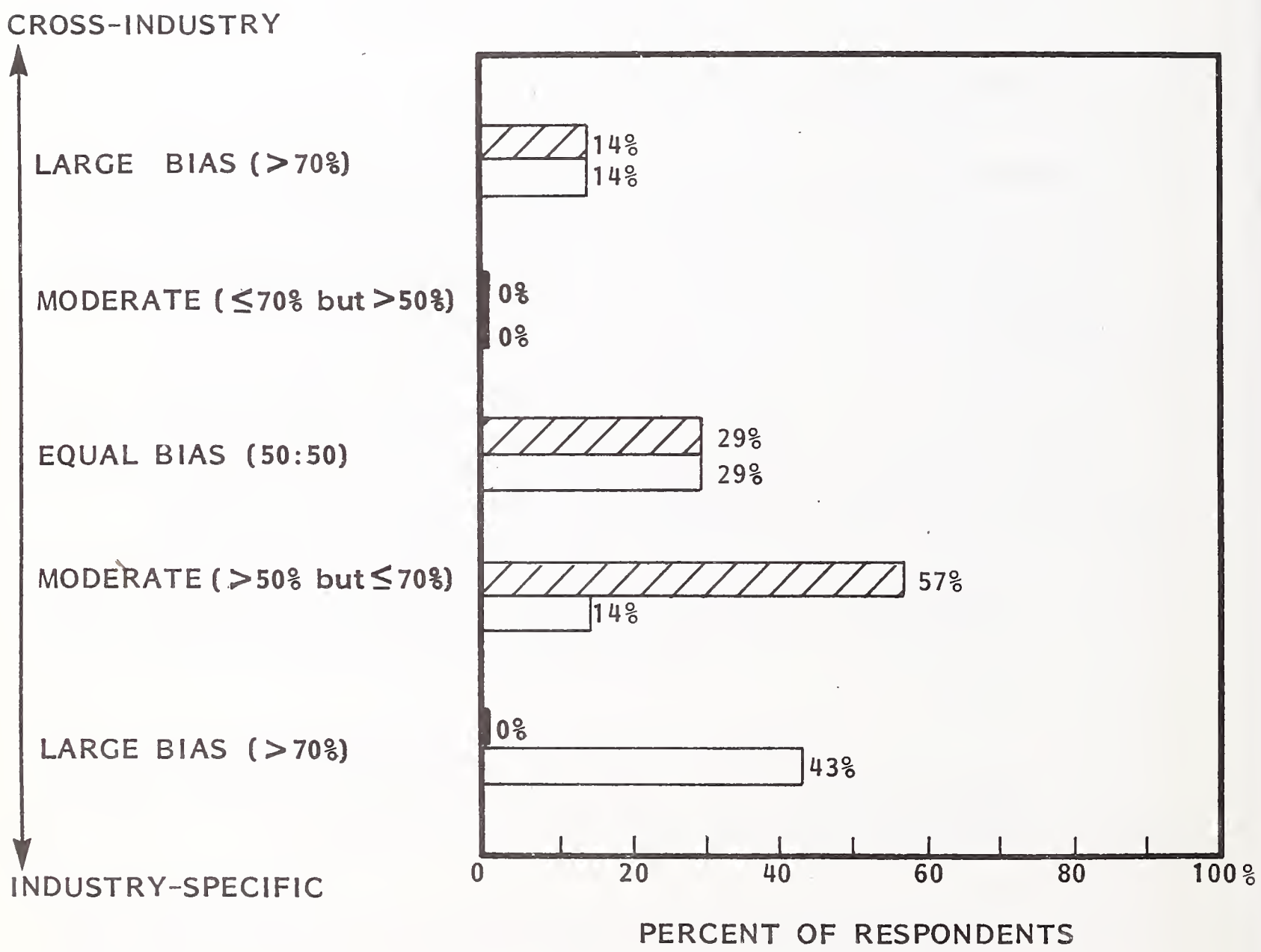
  - Comprehensive services vendors now have a large cross-industry bias, but there is a minor future movement towards industry-specific products.

  - Software houses have a much more evident bias towards industry-specific products.

  - As for processing services vendors, the move is more in the direction of industry-specific products. It is interesting to observe that comprehensive services vendors who have already started developing industry-specific products will continue to do so in the future.

EXHIBIT IV-1

DISTRIBUTION OF RESPONDENTS' PRODUCT
DEVELOPMENT BIAS IN TWO AND FIVE YEARS' TIME



- Other services vendors offering cross-industry products at present are not likely to expand the development of these products, if they are not already planning to develop industry-specific products.

- When responses were analysed by type of company, by initial bias position and in two- and five-year timeframes, the results confirmed the move towards industry-specific, as shown in Exhibit IV-2.

- Processing services vendors who have initially favoured cross-industry products are not likely to increase the development of such products within the next five years. However, those with industry-specialty products will continue to increase their development in the near future.

- Comprehensive services vendors have moderately increased the development of industry-specific products.

c. Decline in Customer Revenues

- Respondents were questioned on the size of average customer revenue in order to evaluate the strength of the impetus away from direct selling and towards indirect methods, as a result of sales costs' forming an increasing percentage of total costs.

- Interview results revealed that six of the seven vendors interviewed have not experienced any decline in their average revenue per customer.

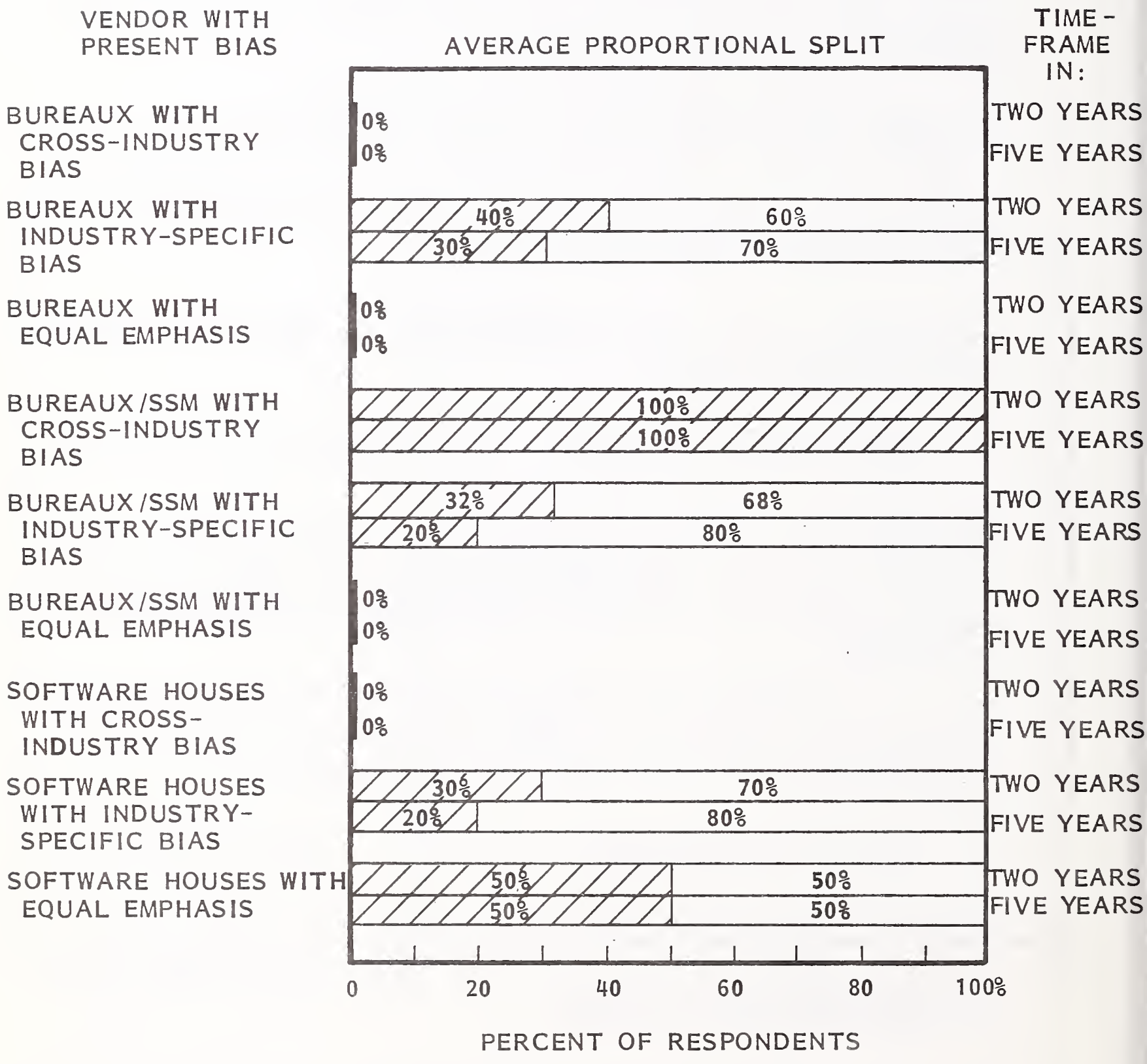
d. Effect of Economic Climate

- Most of the vendors interviewed did not have any particular strategic plans to counteract the effect of inflation on their pricing policy. All but one respondent took inflation into account.

- Similarly, all but one vendor took account of recession. However, the majority seemed unconcerned and did not expect the recession to continue for a

EXHIBIT IV-2

PROPORTION OF RESPONDENTS' PRODUCT DEVELOPMENT
OF CROSS-INDUSTRY
AND INDUSTRY-SPECIFIC PRODUCTS



prolonged period of time. In two cases recession was seen as a benefit to services companies and a disadvantage to one of their main rivals, the minicomputer suppliers.

e. Staff Shortages

- Six of eight replies indicated a shortage of staff in one or more grades as a real obstacle to company growth, while two saw it as no obstacle at all.

- Exhibit IV-3 illustrates the impact of staff shortages in the different job functions. This is shown according to the percentages of responses marking each category of impact. An overall weighted rating is added to allow inter-grade comparisons.

- On this method, the highest scoring staff grades were, in sequence:

  - Sales executives.

  - Software professionals.

  - Managers.

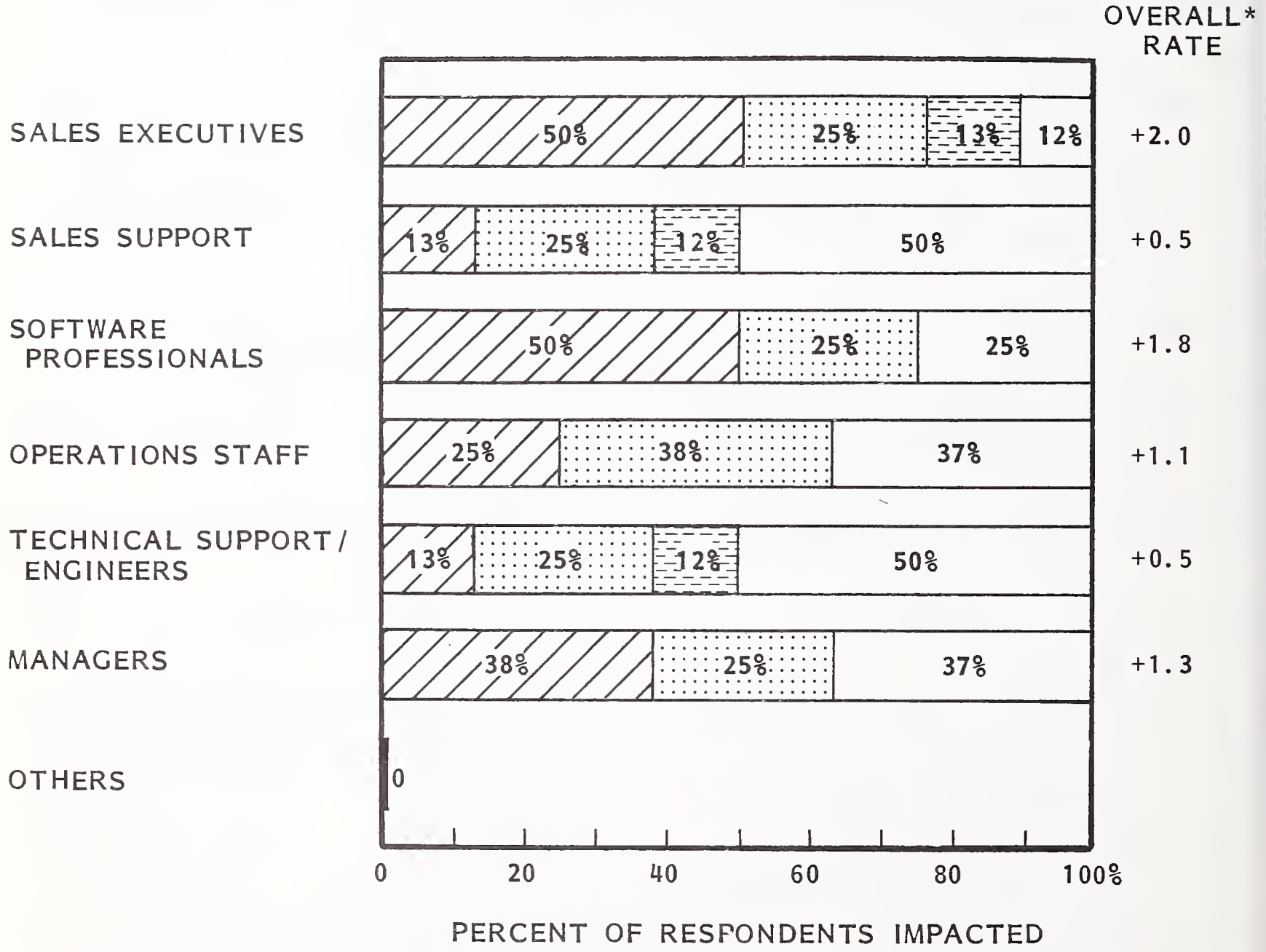
- The results showed that overall staff shortages were a major problem impeding company growth. The shortages in staff reported seem to emphasise a lack of quality rather than quantity.

f. Most Serious Competition

- Exhibit IV-4 lists the competitors or solutions most frequently mentioned by respondents. Only fifteen competitors were named, of which one was 'in-house DP solution', which received the highest number of mentions.

EXHIBIT IV-3

IMPACT OF STAFF SHORTAGES ON VENDOR'S GROWTH PROSPECTS IN DIFFERENT GRADES



*SEE TEXT

HIGH IMPACT

MEDIUM

LOW

NO IMPACT

EXHIBIT IV-4

COMPETITORS MENTIONED MOST OFTEN

MENTION RANKING	TYPE*
IN-HOUSE SOLUTION	M
IBM	M
RAET+	S
CMG+	S
LOGICA+	S
VOLMAC	S
CDC	S
ADP	S
COMSHARE	S
SIA	S
MINI MANUFACTURERS	M
ARSYCOM	S
MAI	M
CAP	S
PANDATA	S

*S = SERVICES COMPETITOR
M = IN-HOUSE/MANUFACTURER SOLUTION
+ INDICATES EQUAL RANKING WITH THE PREVIOUS ENTRY.

g. Communications Environment

- Of the eight vendors completing the communications module of the questionnaire, only one saw its growth prospects being harmed by the PTT monopoly position over the next five years. The vendor was principally a software house.

- The analysis of the communications factors which impact the services business is shown in Exhibit IV-5. The highest ratings for impact on vendor growth, in order of decreasing severity, were:

  - Degradation of leased-line service.

  - Tariff increases.

  - Vetting of network connections.

- The highest severity rating on a scale from 3 (severe) to -1 (beneficial impact) was 1.5 for the degradation of leased-line service. This compares very well with the 1.66 rating which was the highest in the U.K. for the same issue.

h. Response to the Impact of the PTT

- The one vendor that perceived an impact from the PTT on its growth in either timeframe responded with a policy to avoid diversifying in markets where the PTT had already established a monopoly and to try to offset obstructions to its growth by user pressure.

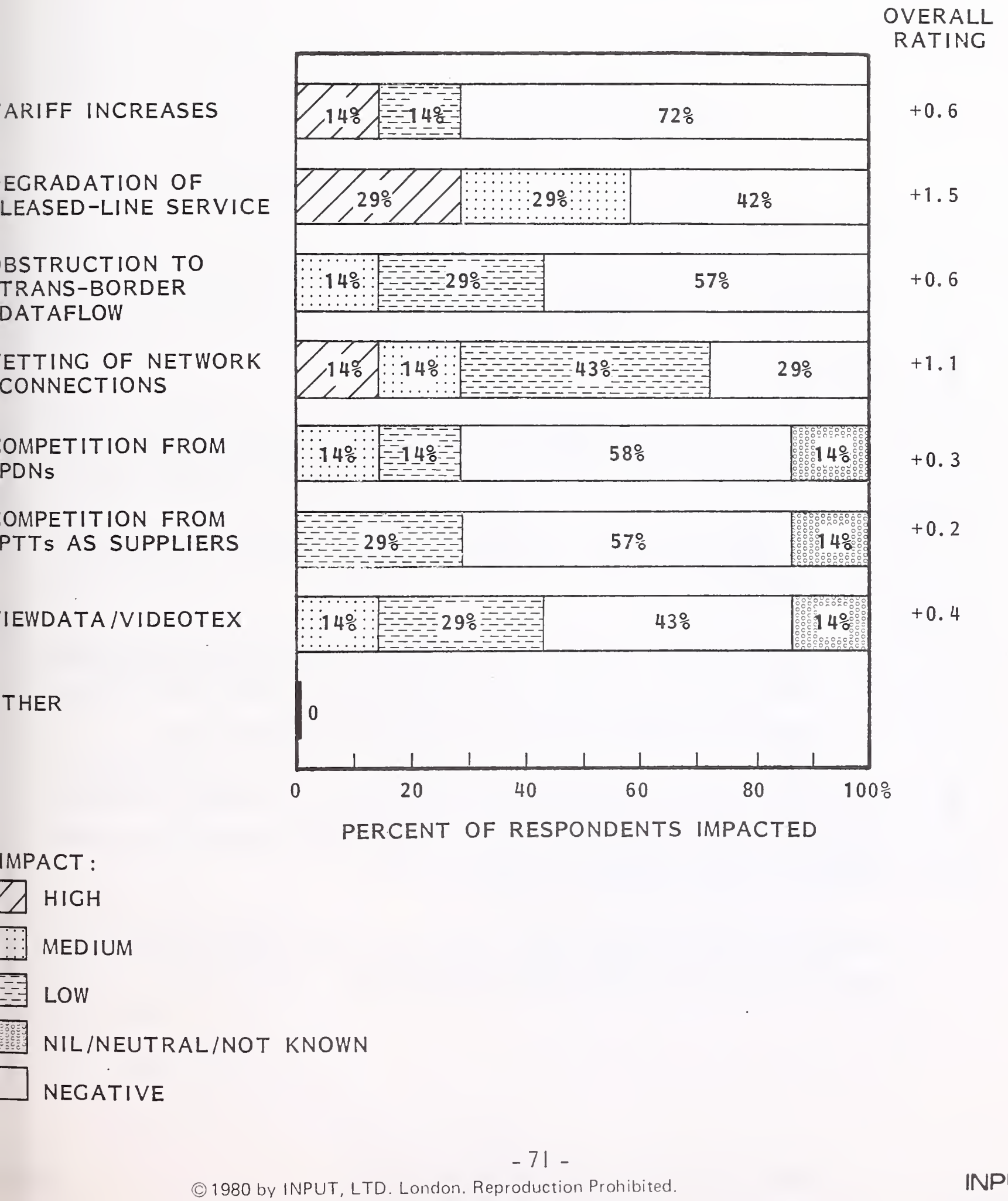
i. Future Offerings

- The future offerings of the leading vendors in the sample are characterised by:

  - A high regard for traditional bureau networks.

EXHIBIT IV-5

PERCEIVED IMPACT OF PTT MONOPOLY
POSITION ON VENDOR GROWTHS



IMPACT:

- HIGH
- MEDIUM
- LOW
- NIL/NEUTRAL/NOT KNOWN
- NEGATIVE

- A desire to make future use of Transpac and the PDNs in other countries as they become available.

- A moderate move toward future offerings of database services in one form or another:

  . Videotex.

  . Euronet.

  . Other standard means of delivering access to proprietary data.

- It can be seen that the use of PDNs and Transpac is a major future enhancement at the top end of the Dutch market.

- The position is illustrated graphically in Exhibit IV-6:

  - The Netherlands' computer services market is an advanced one where the classic bureau network philosophy has already manifested itself.

  - The Netherlands will make potentially higher usage of its public data network.

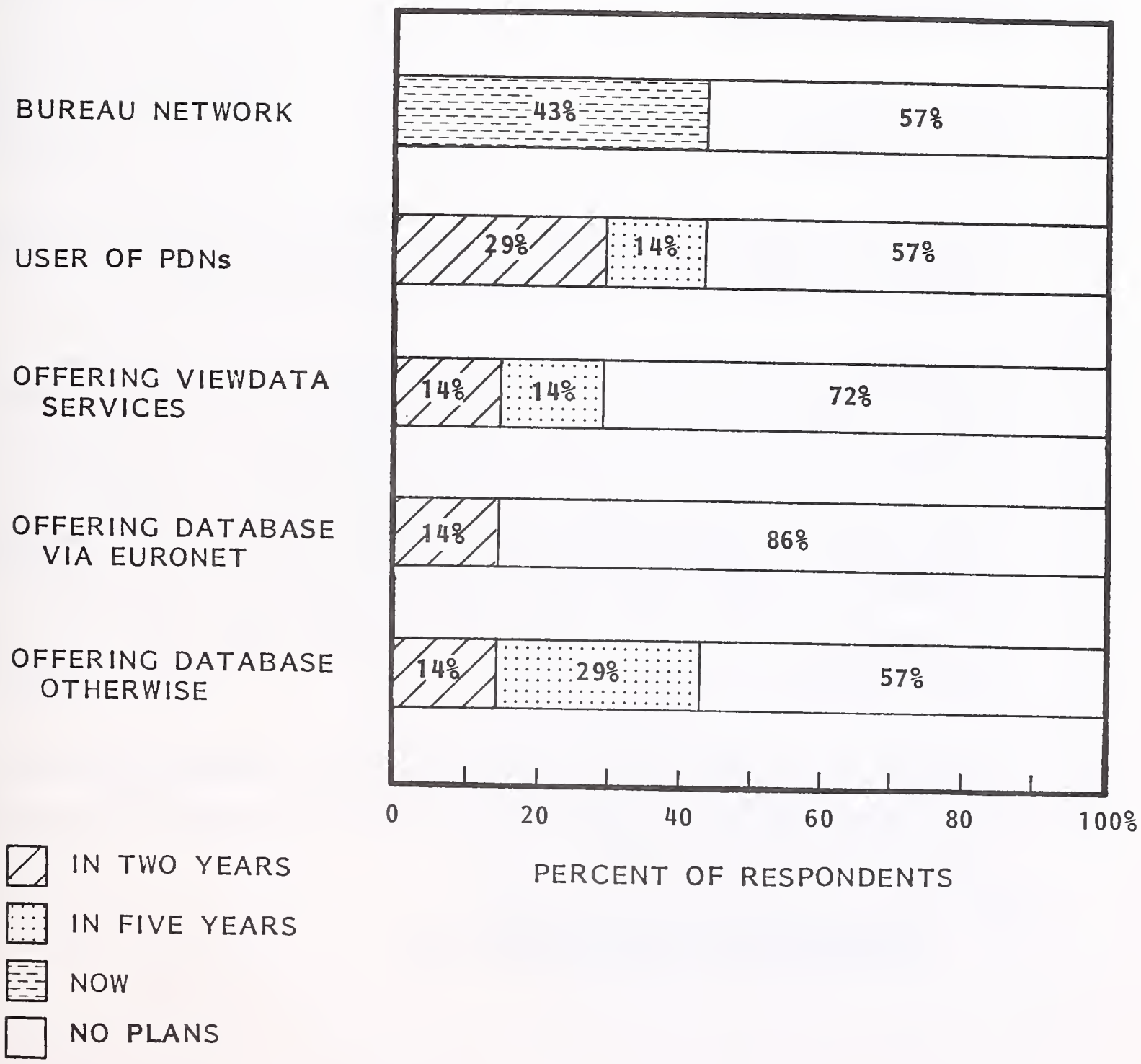
  - Vendors are very aware of the existence of more services which could be offered in the form of viewdata-type services, Euronet for the supply of database services as well as other database services.

- The Dutch market seems to be reaching almost a technological saturation point, but vendors are still interested in new application methods and products which will further enhance the market.

- Among the 'office-of-the-future' areas which have business potential for services companies, vendors ranked the following:

EXHIBIT IV-6

ANTICIPATED ENHANCEMENTS TO VENDORS' PRODUCT RANGES



- User site word processing.

- Electronic mail.

- Image processing systems/graphics.

- FAX and multifunctional equipment are less favoured as business areas. Exhibit IV-7 illustrates the vendors' perceptions of their future business volume associated with the new office concepts.

B. BELGIUM VENDORS

1. INTRODUCTION

- This section reviews the vendor data which INPUT has gathered to study the market issues current to the Belgian computer services industry.

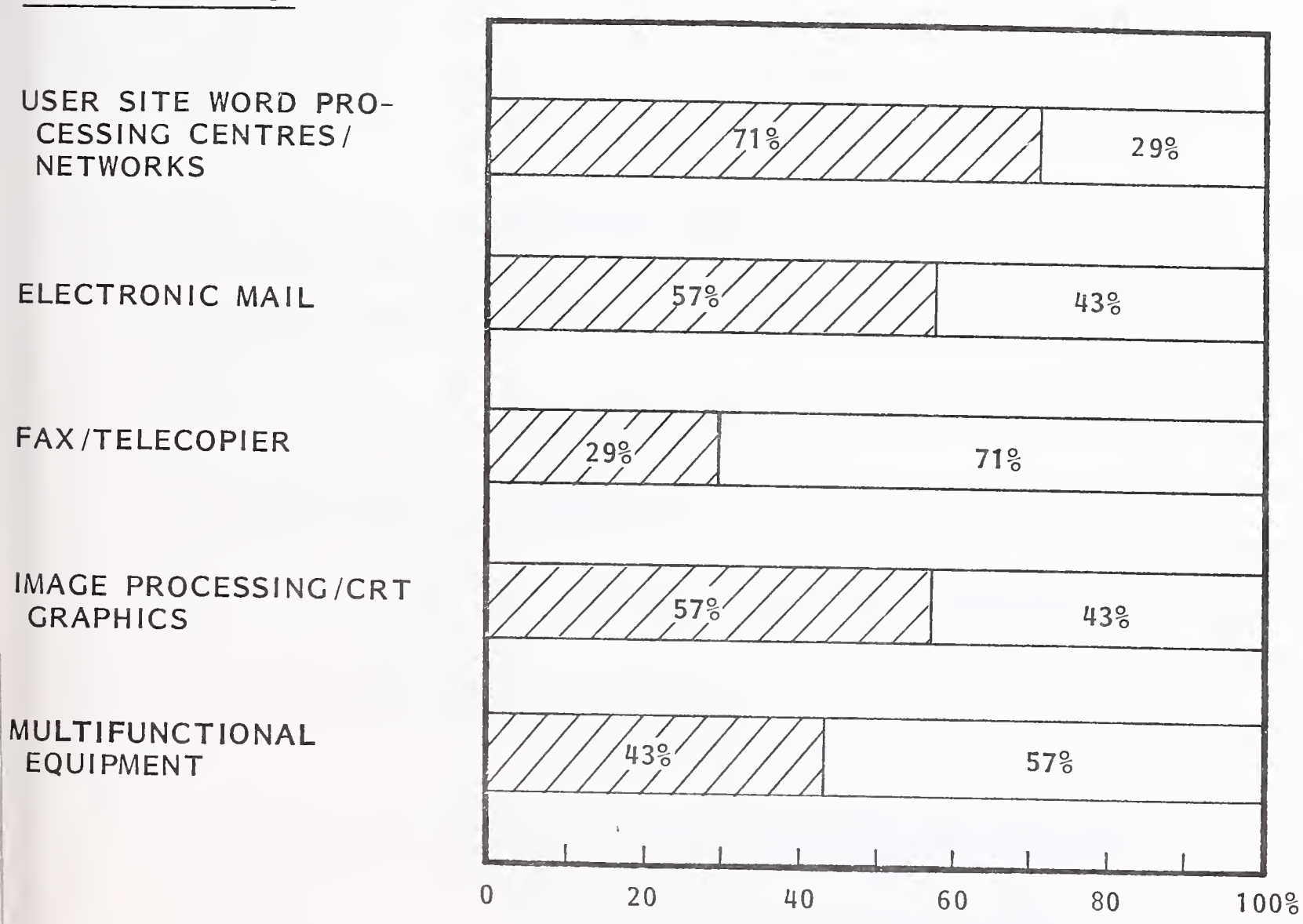
- The Belgian market, although small in size, is dense in terms of machines. The Belgian computer services market is among the most technologically advanced in Europe; however, when taking up with new techniques, it will probably lag behind the Netherlands, the U.K. and France. Although the Belgian market can be regarded as conservative, with a growth rate slower than average for the rest of Europe, even the next few years' techniques will undoubtedly catch up especially in the mini and smaller computer area and in the data communications sector.

- Research in the 1980 MAS/Europe programme has targetted particularly on those issues which relate to the ability to continue with constant enhancement of services and product ranges:

  - Profitability and investment potential.

EXHIBIT IV-7

PERCEIVED OPPORTUNITIES FOR COMPUTER SERVICES VENDORS IN ASSOCIATION WITH OFFICE-OF-THE-FUTURE APPLICATIONS



- Encroachment by the hardware manufacturers.

- Shortage of key professional staff.

2. ANALYSIS OF VENDOR ISSUE DATA

- The MAS/Europe 1980 Vendor Issue Questionnaire was designed in a modular format to allow selective completion by different types of vendor or by vendors with differing portfolios of product.

- The questionnaire was completed by operating companies whose combined revenues in 1979 on the Belgian domestic market amounted to 898 million Belgian francs. The sample (among which were four of the top ten vendors) therefore represents 10% of the 1979 Belgian market.

- INPUT interviewed a number of other leading Belgian vendors during 1980 on a variety of projects. Though not subjected to the present detailed analysis, the data stemming from these other interviews have been taken into account in:

  - General evaluation of the sample's findings.

  - The market and sector forecasts found in other chapters of this report.

a. Sector-Specific Marketing

- Interviewed vendors were asked whether their development was biased toward cross-industry or industry-specific products.

  - Two vendors regarded themselves as favouring cross-industry products.

  - One favoured industry-specific.

  - Three had no particular bias.

- In Exhibit IV-8, the replies of all respondents on the likely split of development effort in two and five years' time were plotted in bar-chart form. The result shows a moderate bias towards functional products.

- When responses were analysed by type of company, by initial bias position and in two-and five-year timeframes, the results confirmed the move towards industry-specific, as shown in Exhibit IV-9.

- Processing services vendors who have initially favoured cross-industry products are not likely to increase the development of such products within the next five years. However, those with industry-specific products will continue increasing their development in the near future.

- Comprehensive services vendors have moderately increased the development of industry-specific products.

b. Decline in Customer Revenues

- All but one of the vendors interviewed reported non-declining average revenues.

c. Effect of Economic Climate

- The effect of inflation on pricing policy was clearly reported. Only one vendor out of six failed to take account of inflation. Among those who quoted a percentage price rise, the average was 10%.

- By way of contrast, only two vendors took account of recession. The remaining four viewed themselves unaffected by the recession; in two cases the recession was regarded as beneficial to services companies and disadvantageous to one of their main rivals, the minicomputer suppliers.

- One of the computer services companies offering RCS facilities reported that users are more in need of remote computing facilities during recessionary

EXHIBIT IV-8

DISTRIBUTION OF RESPONDENTS' PRODUCT
DEVELOPMENT BIAS IN TWO AND FIVE YEARS' TIME

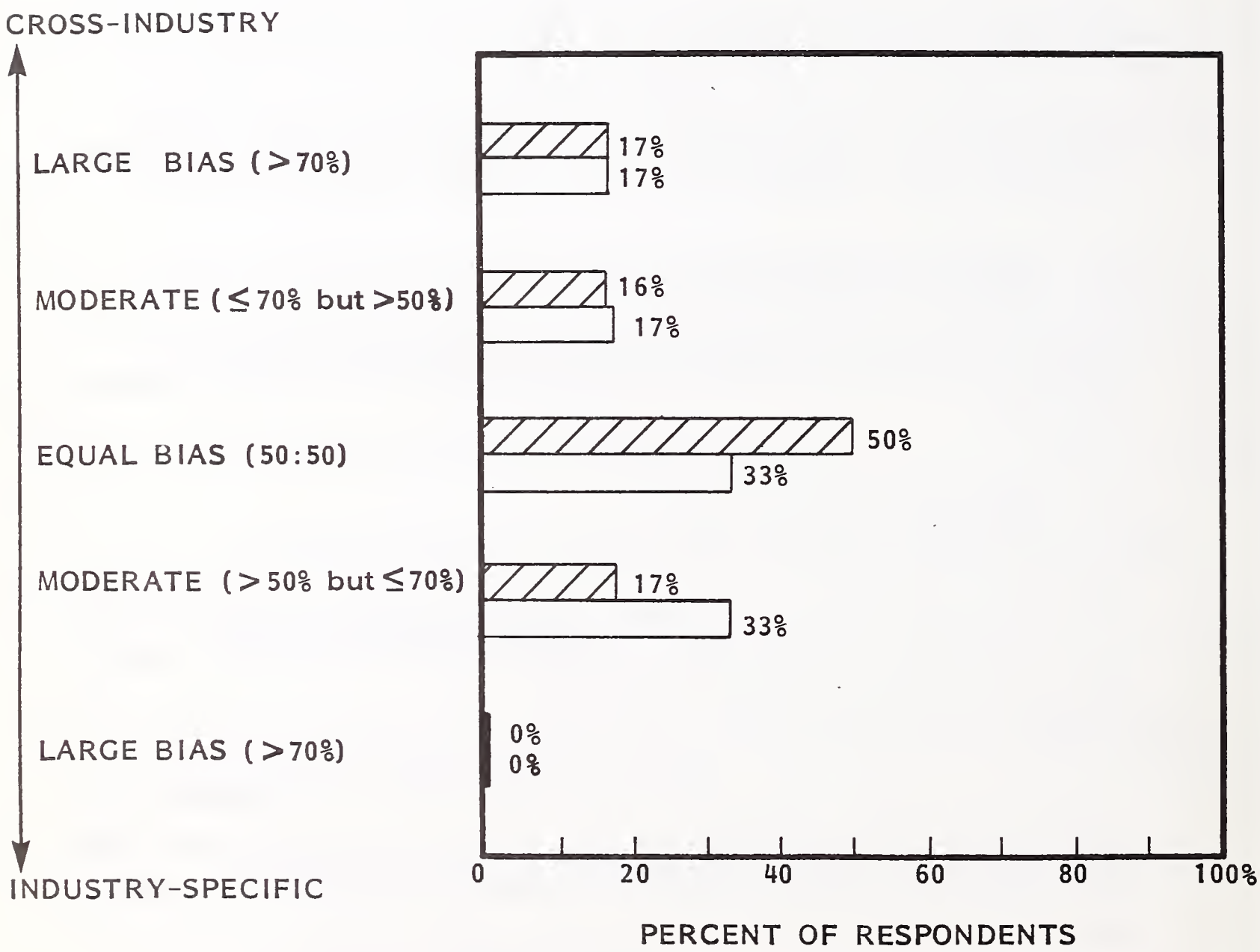
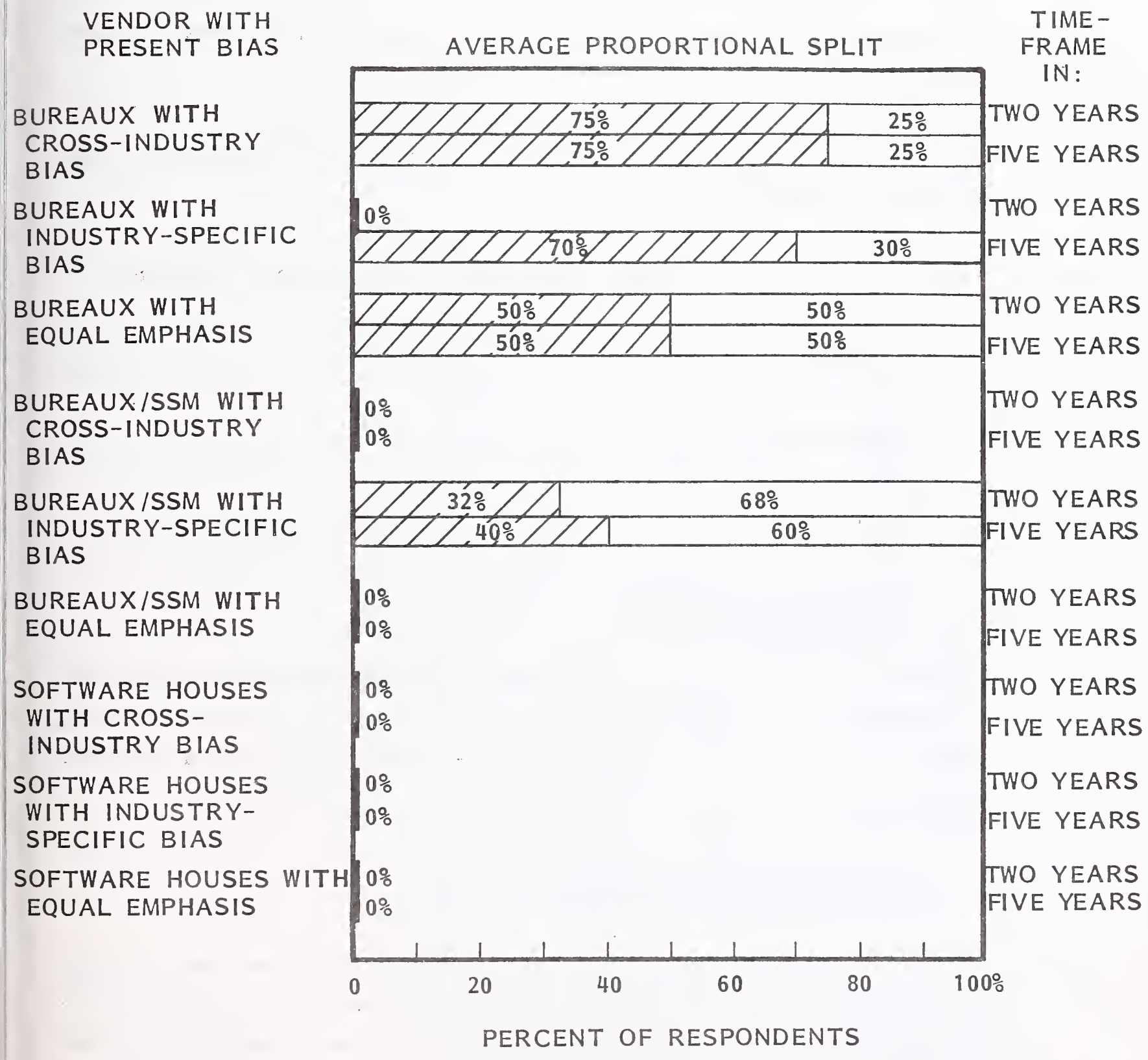


EXHIBIT IV-9

PROPORTION OF RESPONDENTS' PRODUCT DEVELOPMENT
OF CROSS-INDUSTRY
AND INDUSTRY-SPECIFIC PRODUCTS



periods. The majority of vendors have a firm belief that the recession will not prevail for a long period of time, which is an optimistic view of the current situation.

d. Staff Shortages

- All respondents indicated a shortage of staff in one or more grades as a real obstacle to their company's growth.

- Exhibit IV-10 illustrates the force of the impact of staff shortages in the different job functions.

- Following this method, the highest-scoring staff grades were, in sequence:

  - Software professionals

  - Sales executives.

  - Sales support.

e. Most Serious Competition

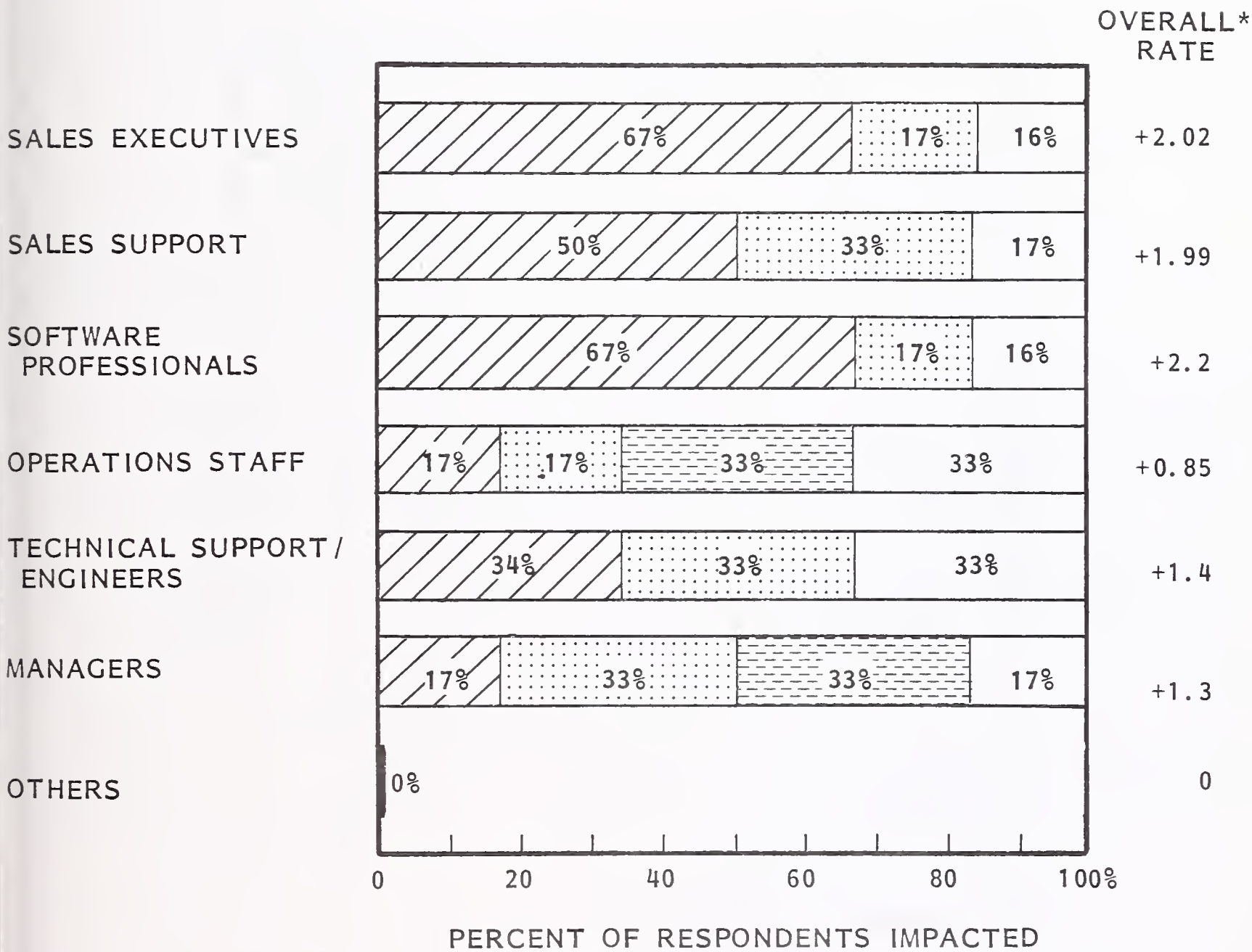
- Exhibit IV-11 lists the competitors or solutions most frequently mentioned by respondents. Only thirteen competitors were named, of which one was 'in-house DP solution'. The highest number of mentions for any one rival was three.

f. Communications Environment

- Of the six vendors completing this part of the questionnaire, three saw their growth prospects being harmed by the PTT monopoly position over the next two years. Over the five-year period these three vendors were joined by one more vendor. Three of the four were principally processing services companies.

EXHIBIT IV-10

IMPACT OF STAFF SHORTAGES IN DIFFERENT GRADES ON VENDORS' GROWTH PROSPECTS



*SEE TEXT

- HIGH IMPACT
- MEDIUM
- LOW
- NO IMPACT

EXHIBIT IV-11

COMPETITORS MENTIONED MOST OFTEN

MENTION RANKING	TYPE*
IBM	M/S
CAP-GEMINI	S
GEIS+	S
MINI MANUFACTURERS	M
IN-HOUSE SOLUTION+	M
CCMC	S
CISI	S
COMSHARE	S
GSI	S
SEMA	S
STERIA	S
SG2	S
SOBEMAP	S

*S = SERVICES COMPETITOR
M = IN-HOUSE/MANUFACTURER SOLUTION
+ INDICATES EQUAL RANKING WITH THE PREVIOUS ENTRY

- In spite of the negative responses given by vendors regarding the impact of the PTT monopoly position, all vendors rated their perceived impacts from the listed factors with some degree of positive effect.

- The analysis of the factors which impact the services business is shown in Exhibit IV-12. The highest ratings for impact on vendor growth (in order of decreasing severity) were given to:

  - Degradation of leased-line service.

  - Tariff increases.

  - Obstruction to transborder data flow.

  - Vetting of network connections.

- The highest severity rating on a scale from 3 (severe) to -1 (beneficial impact) was 2.2 for the degradation of leased-line service. This compares with the 1.66 rating which was the highest in the U.K. for the same factor.

- Viewdata/videotex is seen to some extent as an overall benefit by the vendors.

g. Responses to the Impact of the PTT

- Of the four respondents who perceived an impact to their growth in either of the timeframes:

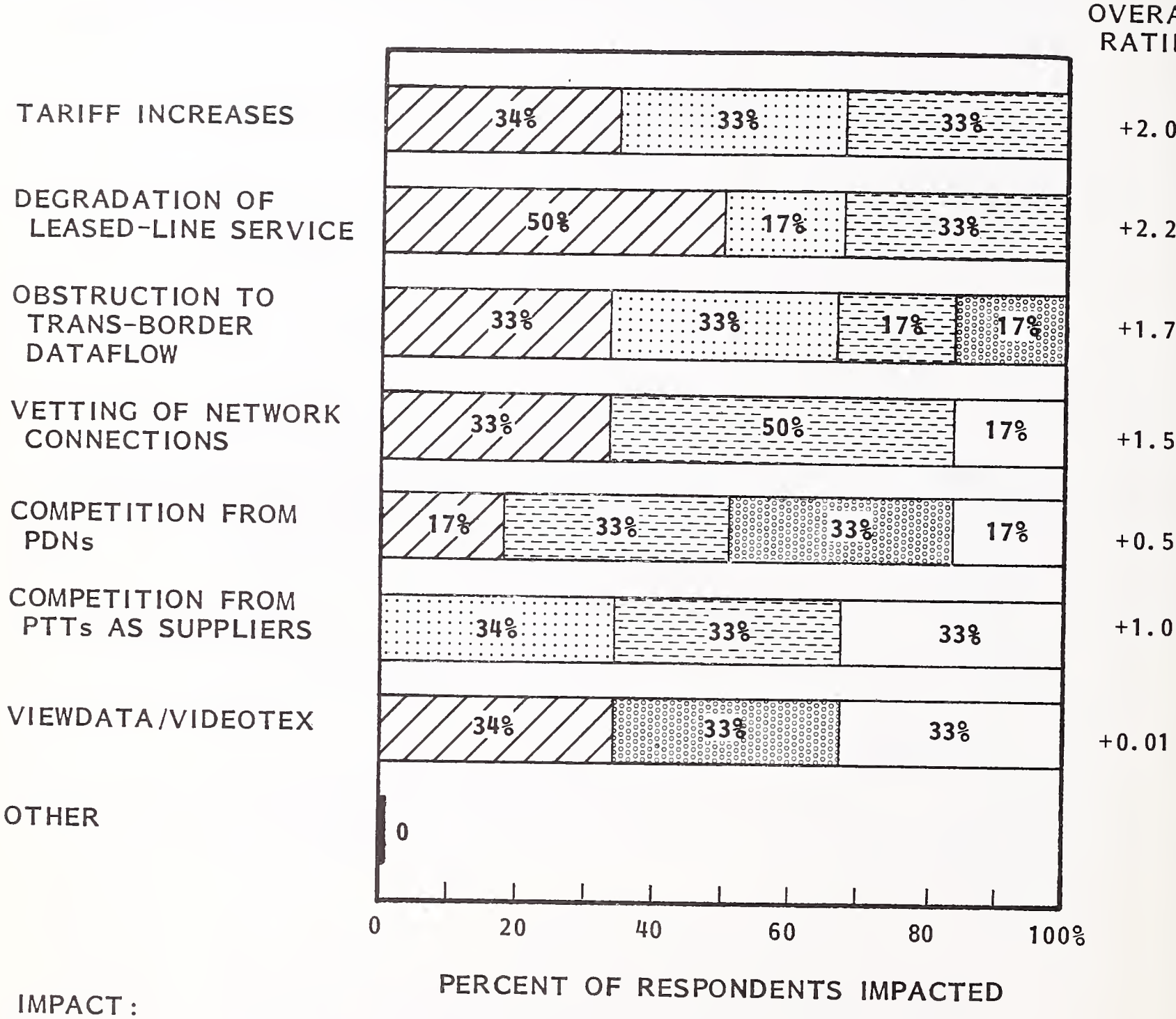
  - One would diversify into other areas.

  - Another would improve its competitive edge, which, being an international company, it felt capable of doing.

  - Another would combine these two strategies.

EXHIBIT IV-12

PERCEIVED IMPACT OF PTT MONOPOLY
POSITION ON VENDOR GROWTHS



- The last one would seriously consider in-country processing, being the only option left.

- No further options were quoted.

h. Future Offerings

- The future offerings of the leading vendors in the sample are characterised by:

  - A developed and considerable regard for traditional bureau networks.

  - A moderate desire to make use of the PDNs in other countries as they come available.

  - A moderate push to embrace database services in one form or another.

- All respondents expected within two years to be involved in, or are already in, at least one database delivery service method. Therefore, it can be assumed that proprietary database services are a major future enhancement at the top end of the Belgian market. The position is illustrated graphically in Exhibit IV-13.

  - Belgium has a well-established philosophy of the classical bureau network phenomenon.

  - Belgium has a moderate usage of its public data network.

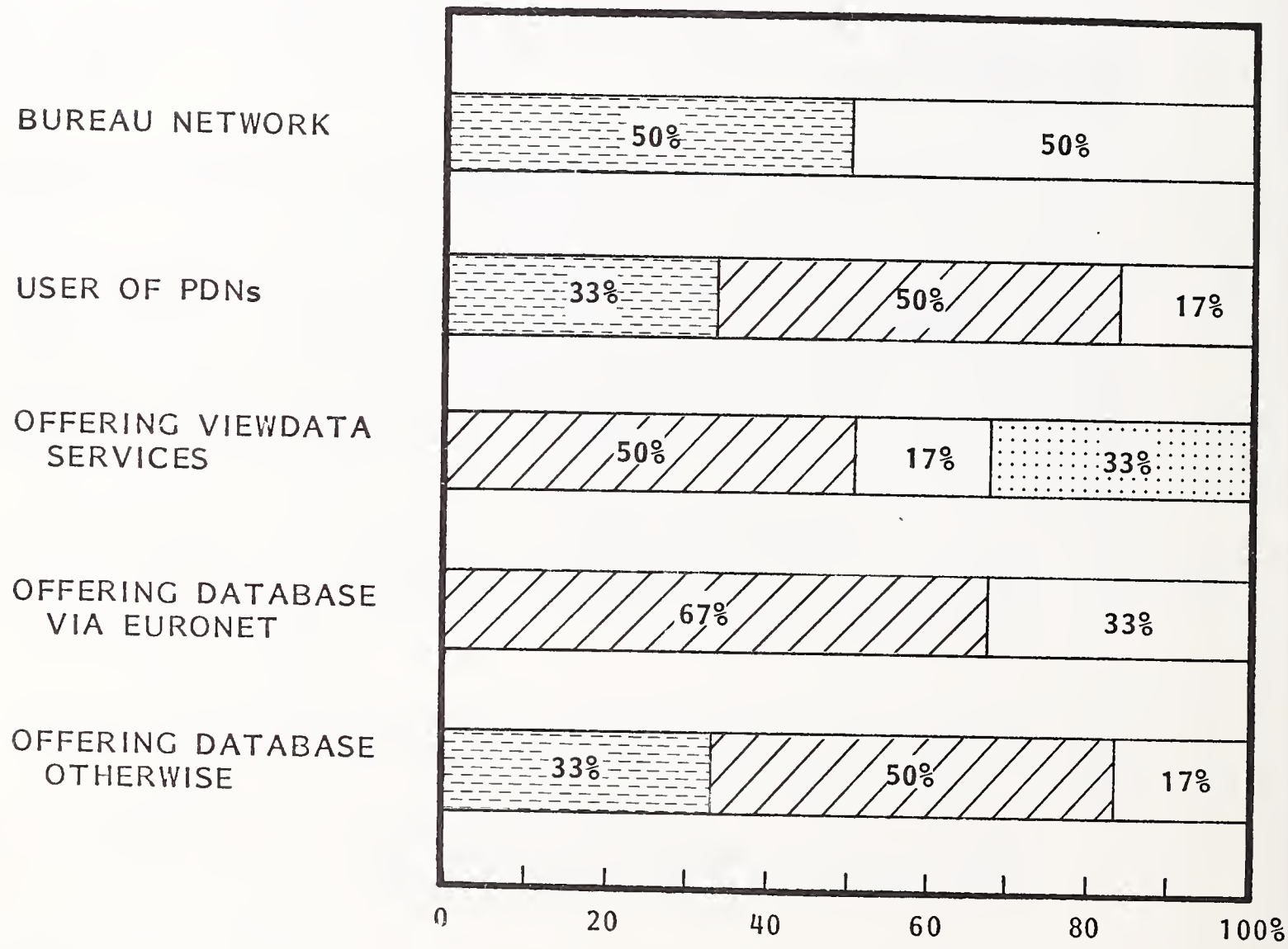
  - Within the very near future Belgium will catch up in the other European markets in other database delivery methods.

  - Belgium has already a large base of Euronet usage.

- Among the 'office-of-the-future' areas which have business potential for services companies, vendors rank the following:

EXHIBIT IV-13

ANTICIPATED ENHANCEMENTS TO VENDOR PRODUCT RANGES



- User site word processing.

- Electronic mail.

- Image processing systems/graphics.

- Multifunctional equipment.

- Exhibit IV-14 illustrates the vendors' perceptions of their future business volume associated with the new office concepts.

C. ANALYSIS OF USER DATA

1. INTRODUCTION

- This section analyses the findings from the User Questionnaire which was completed by 52 companies (26 questionnaires from each country), which were combined, researched and presented to include details of their budgets for 1980-1981.

2. EDP PLANS

- Exhibit IV-15 shows the relative importance ascribed to each of the primary objectives in 1980, 1981 and 1982.

- The priorities given by respondents to each objective have been weighted according to the priority numbers attributed to them; the results have been summed and averaged over all responses.

- As in the U.K., the installation of on-line applications was the most important priority in 1980, and will be for the following two years. The next three objectives in importance in 1982 are:

EXHIBIT IV-14

PERCEIVED OPPORTUNITIES FOR
COMPUTER SERVICES VENDORS IN
'OFFICE-OF-THE-FUTURE' APPLICATIONS

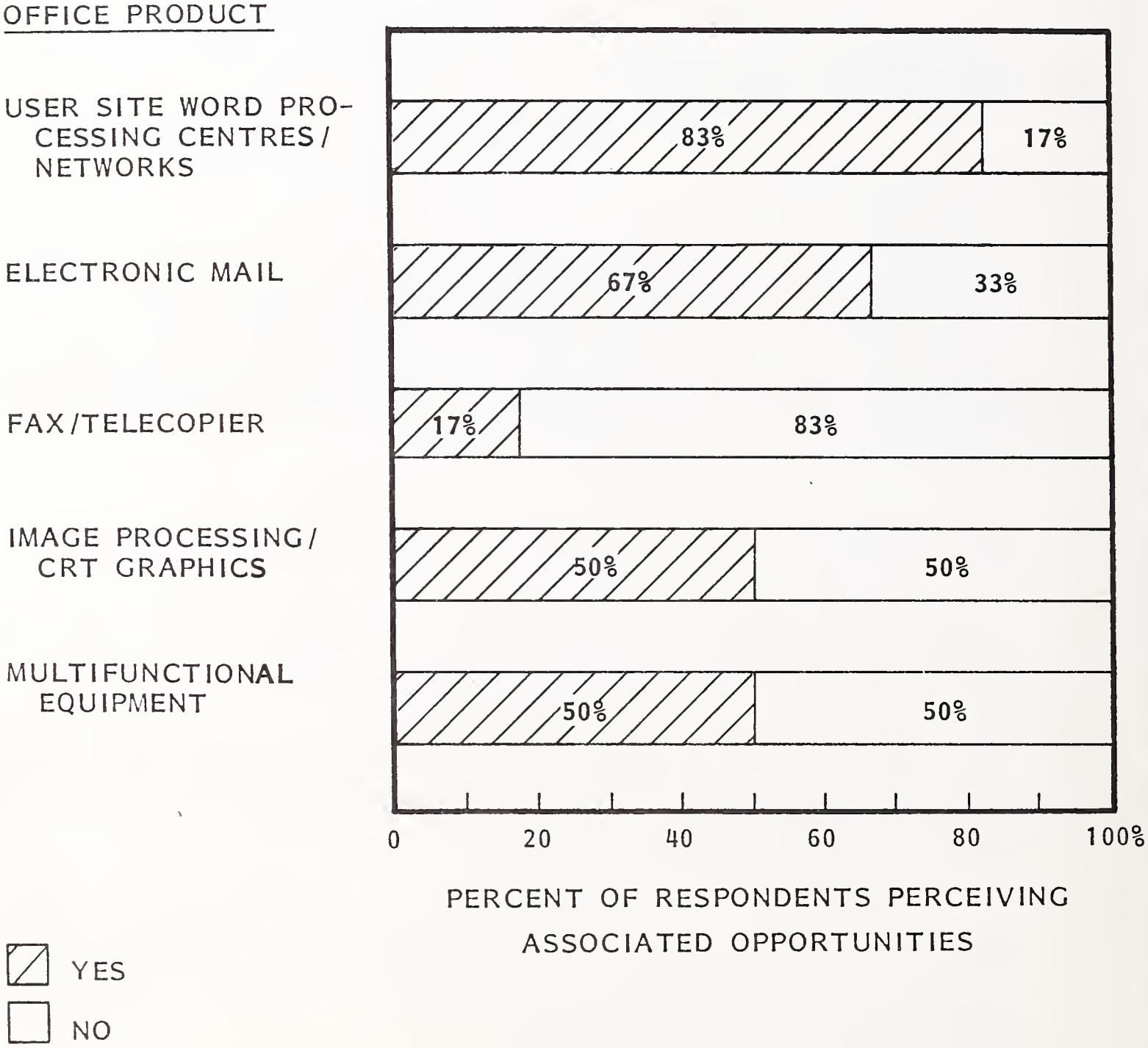
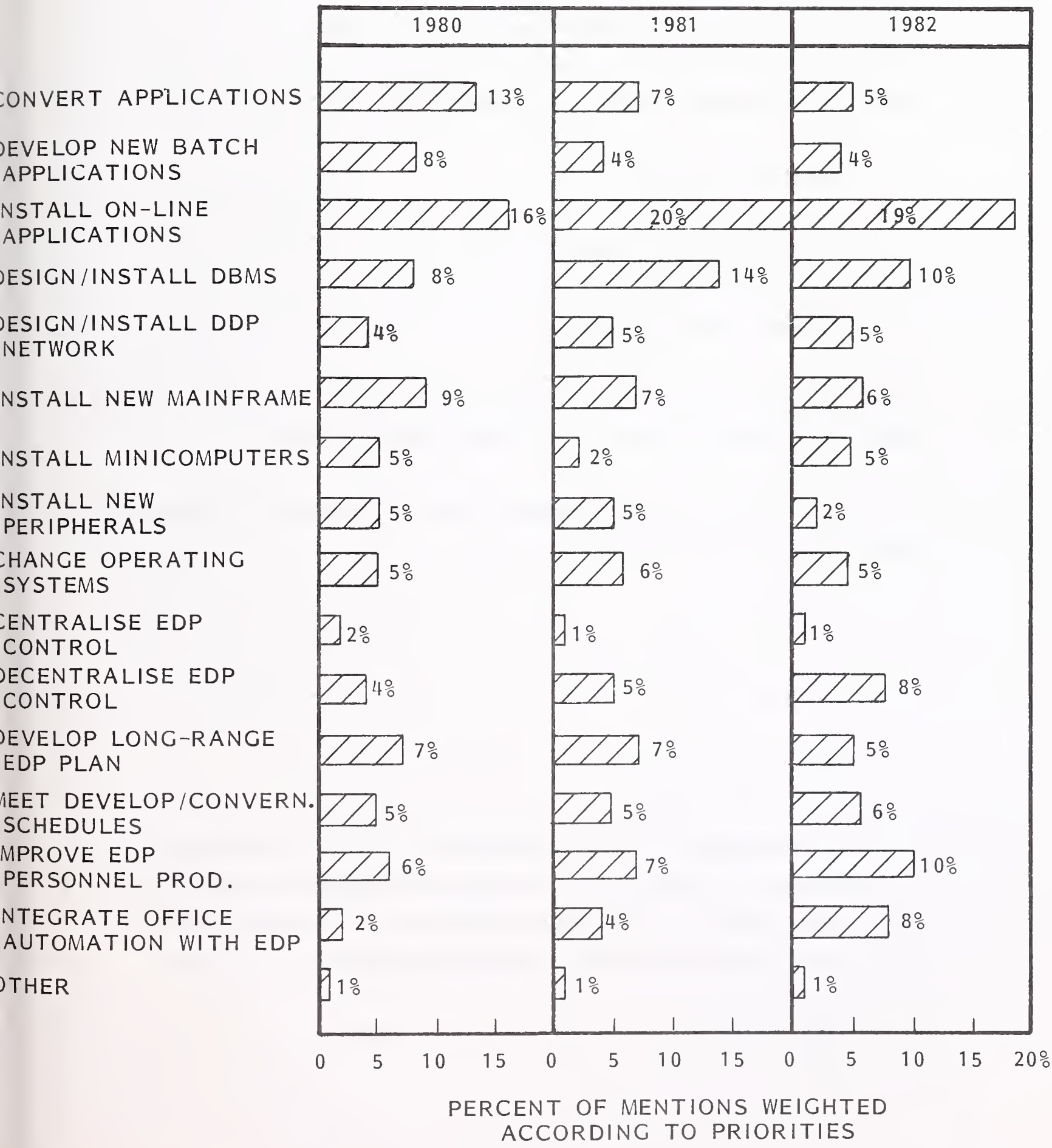


EXHIBIT IV-15

PRIMARY OBJECTIVES IN 1980, 1981 AND 1982
WEIGHTED ACCORDING TO THE NUMBER OF MENTIONS IN EACH PRIORITY



- Installations of DBMS.
- Improved EDP personnel production.
- Decentralisation of EDP control.

- All four objectives have an increasing priority with time.
- The more traditional activities are on the decline:
  - Conversion of applications.
  - Developing new batch applications.
  - Installing new mainframes.
- Over the three-year period, the objective with the greatest relative change in importance is the integration of office automation with EDP.
- A picture emerges of a conventional IBM-led progression through on-line applications to DBMS and thereafter to:
  - Decentralisation.
  - DDP networking.
  - Office automation.
- In Belgium, the situation has developed where users are too busy installing on-line applications. When they eventually turn to developing their DBMS, it will prove difficult to dismantle the file-orientated structures already set up. This could open new opportunities for services companies to:
  - Educate companies in the importance of DBMS.

- Help with the design and implementation.

- Offer test-bed evaluations to companies that do not know which DBMS to choose.

- In the Netherlands, the situation has developed further where users have already been introduced to DBMS and its implementations. However, in some cases, services companies can still act as short-term suppliers of DBMS processing to companies that would like to try it before making a total commitment.

3. EDP PROBLEMS

- Examination of Exhibit IV-16 shows how computer users rank their current problems. Personnel recruiting is the leading number one priority problem. Others are:

  - Lack of user involvement in system/application development.

  - Excessive applications development time.

  - Better planning and control.

  - Lack of general management understanding.

  - Need for improvement in operations.

- These are primarily people-orientated problems. This finding is in common with other countries in Europe and with the U.S. In particular, it agrees with the interest shown in the issue of programmer productivity in the U.S.A. as evidenced by the welcome given to INPUT's U.S. multiclient study on this subject, Improving Productivity in the EDP Department.

EXHIBIT IV-16

MOST SIGNIFICANT PROBLEMS FACED BY EDP MANAGERS IN 1980 - RANKED BY NUMBER OF MENTIONS WEIGHTED BY OTHER PRIORITIES

PROBLEM	PERCENT OF MENTIONS IN EACH PRIORITY					
	PRIORITY 1	PRIORITY 2	PRIORITY 3	PRIORITY 4	PRIORITY 5	ALL PRIORITIES
EXCESSIVE APPLICATION DEVELOPMENT TIME	14%	14%	10%	17%	6%	12%
PERSONNEL RECRUITING	17	8	8	7	6	10
NEED FOR BETTER PLANNING AND CONTROL	8	12	15	7	16	18
LACK OF USER INVOLVEMENT IN SYSTEM DEVELOPMENT	13	14	17	12	10	13
LACK OF GENERAL MANAGEMENT UNDERSTANDING	13	10	4	7	3	9
NEED FOR IMPROVEMENT IN OPERATIONS	6	16	8	12	10	9
PERSONNEL TRAINING	8	2	13	12	10	7
NEED TO IMPROVE DATA COMMUNICATIONS	6	10	6	12	10	7
INADEQUATE EDP FUNDING (BUDGETS)	2	4	4	2	10	2
INADEQUATE SYSTEMS SOFTWARE	11	8	6	9	13	8
OTHERS	–	2	2	–	–	1
UNSATISFACTORY HARDWARE MAINTENANCE	2	–	6	2	6	2
PERCENT TOTAL	100%	100%	100%	100%	100%	100%

4. APPLICATION AREAS

- The status of respondents' existing applications and the weighted importance of new developments they are undertaking in 1980 are both shown in Exhibit IV-17. The profile shows that order entry/billing/purchasing and accounting/finance are the leading applications implemented at present.

- Areas of industrial/manufacturing control and engineering/design/R&D are maintaining their attraction for users, and areas of production/inventory control and distribution/transport are increasing in popularity.

- Exhibit IV-18 shows that accounting/finance and engineering/design/R&D applications are the most often implemented centrally.

- The overall split between central and remote sites, at 5:1, shows that in-house processing has firmly manifested itself in the user sector.

- The data in Exhibit IV-19 show the overall split in software development between in-house development and outside purchase at 88:12.

5. BUDGET

- All fifty-two companies responded to the budget category questions.

- Exhibits IV-20 and IV-21 show how budgets break down between categories and also between central and remote sites in the two countries.

- Exhibits IV-22 and IV-23 give INPUT estimates of current and 1981 total DP budgets.

  - All categories of budget spent through DP departments; i.e., for those companies with an identifiable DP function.

EXHIBIT IV 17

COMPARISON OF RESPONDENTS' EXISTING APPLICATION AREAS WITH THEIR 1980 DEVELOPMENTS

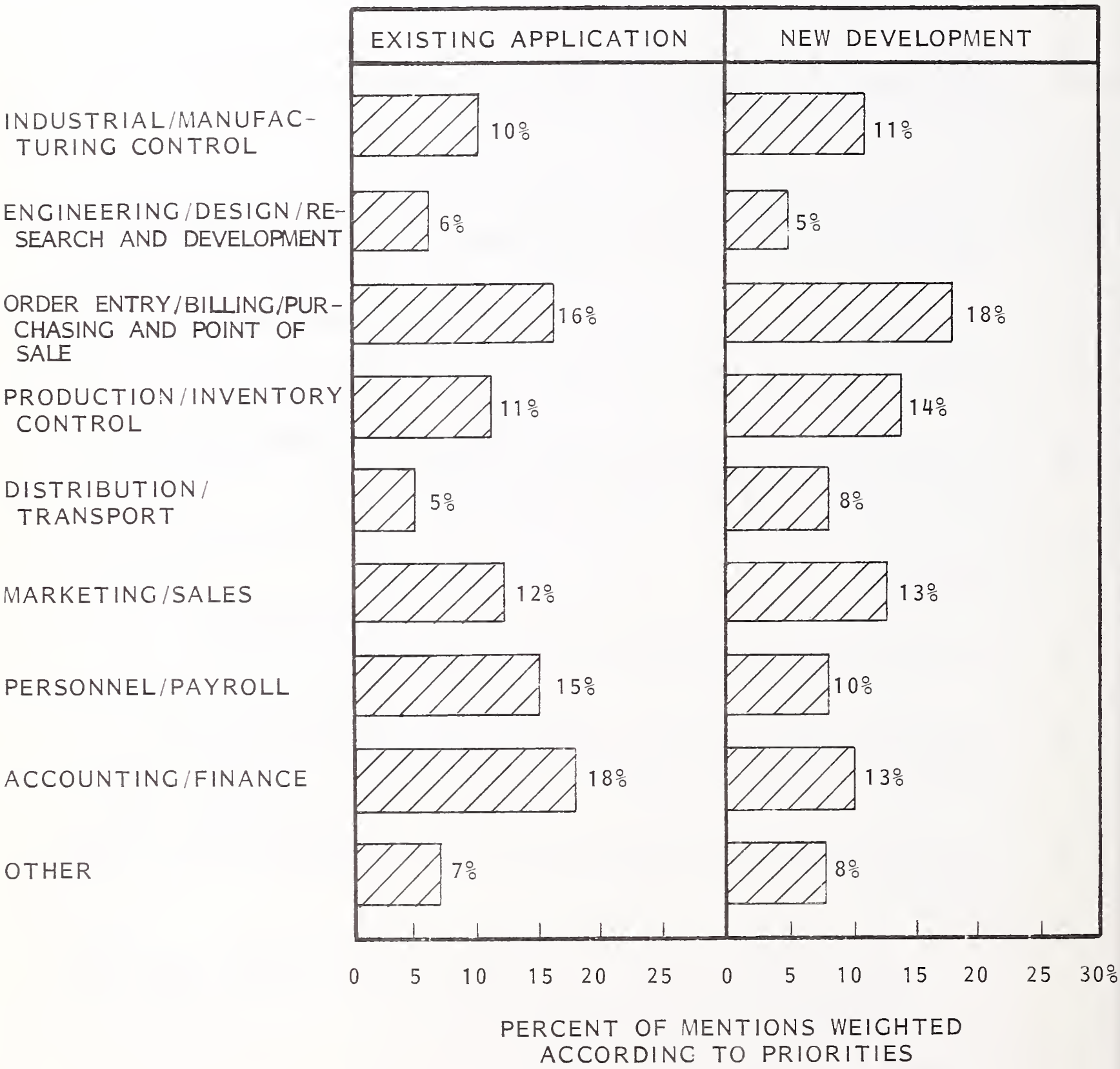


EXHIBIT IV-18

PRIMARY MODES OF OPERATION FOR NEW DEVELOPMENT:
CENTRAL VERSUS REMOTE SITES

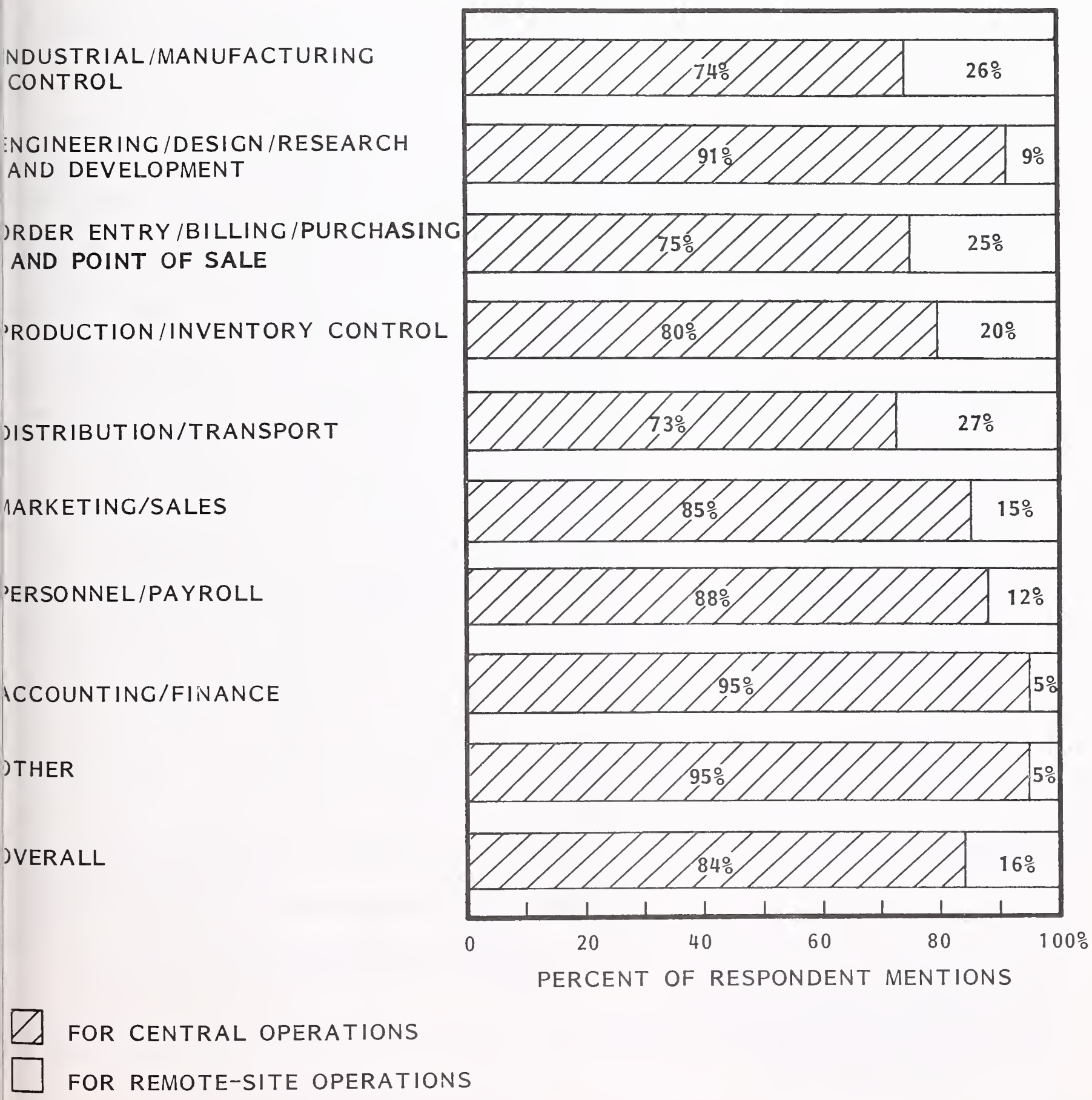


EXHIBIT IV 19

SOURCES OF NEW APPLICATION DEVELOPMENTS:
IN-HOUSE VERSUS OUTSIDE PURCHASE

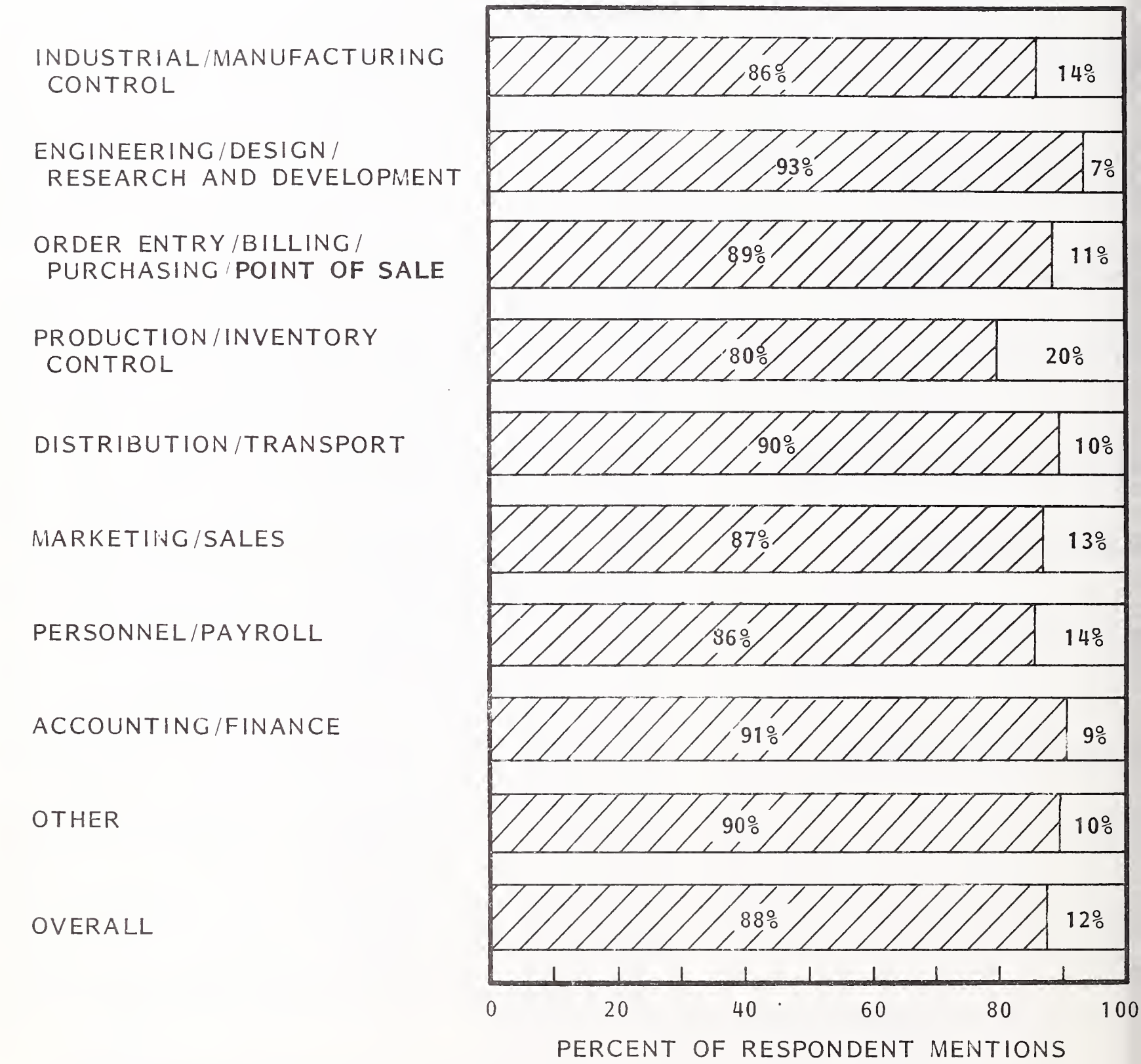


EXHIBIT IV-20

RESPONDENTS' BUDGET CATEGORIES: BREAKDOWN BETWEEN CENTRAL AND REMOTE SITES, ANTICIPATED GROWTH IN 1982 - THE NETHERLANDS

BUDGET CATEGORY	1980 BUDGET		PERCENT SPLIT BETWEEN SITES		CHANGE IN FL 1980-1981
	FL MILLION	PERCENT OF TOTAL	CENTRAL	REMOTE	
PERSONNEL	22.7	46.6%	97.3%	2.7%	6.0%
MAINFRAMES	7.5	15.0	96.3	3.7	-3.3
PERIPHERALS	3.2	6.6	100.0	-	6.4
MINICOMPUTERS	2.2	4.5	70.0	30.0	4.0
TERMINALS	2.0	4.0	81.0	19.0	13.9
COMMUNICATIONS	2.4	4.9	80.0	20.0	17.0
SOFTWARE	3.6	7.4	96.2	3.8	17.5
MAINTENANCE	2.0	4.0	96.5	3.5	2.0
PROCESSING SERVICES	1.9	3.9	71.7	28.3	-13.4
SUPPLIES AND OTHER INCLUDING PROFESSIONAL SERVICES	1.2	2.5	94.2	5.8	5.4
TOTAL	48.7	100.0%	82.2%	10.8%	6.3%

EXHIBIT IV-21

RESPONDENTS' BUDGET CATEGORIES: BREAKDOWN BETWEEN CENTRAL AND REMOTE SITES, ANTICIPATED GROWTH IN 1982 - BELGIUM/LUXEMBOURG

BUDGET CATEGORY	1980 BUDGET		PERCENT SPLIT BETWEEN SITES		CHANGE IN BF 1980-1981
	BF/LF MILLION	PERCENT OF TOTAL	CENTRAL	REMOTE	
PERSONNEL	170.1	41.6%	92.5%	7.5%	5.2%
MAINFRAMES	72.3	17.7	95.9	4.1	5.6
PERIPHERALS	40.9	10.0	97.0	3.0	2.7
MINICOMPUTERS	23.1	5.7	67.0	33.0	19.9
TERMINALS	28.8	7.0	88.0	12.0	38.8
COMMUNICATIONS	29.7	7.3	82.4	17.6	23.3
SOFTWARE	17.0	4.2	99.6	0.4	7.0
MAINTENANCE	4.1	1.0	91.7	8.3	-2.2
PROCESSING SERVICES	8.3	2.0	90.0	10.0	-2.9
SUPPLIES AND OTHER INCLUDING PROFESSIONAL SERVICES	14.3	3.5	93.5	6.5	2.7
TOTAL	408.6	100.0%	90.0%	10.0%	10.08%

EXHIBIT IV-22

EDP EXPENDITURES BY DATA PROCESSING MANAGERS
FOR TOTAL NETHERLANDS MARKET

BUDGET CATEGORY	EXPENDITURE				ANTICIPATED GROWTH, 1980-1981 (PERCENT)
	1980		1981		
	FL MILLION	PERCENT	FL MILLION	PERCENT	
PERSONNEL INCLUDING RECRUITMENT AND TRAINING	1,661	48%	1,761	48%	6%
MAINFRAMES	422	12	435	12	-3
PERIPHERALS	264	8	279	8	6
MINICOMPUTERS	256	7	287	8	12
TERMINALS	152	4	174	5	14
COMMUNICATIONS HARDWARE	70	2	82	2	17
SOFTWARE INCLUDING SOFTWARE MAINTENANCE	83	2	98	3	18
HARDWARE MAINTENANCE	206	6	227	6	10
PROCESSING SERVICES	182	5	191	5	-5
PROFESSIONAL SERVICES AND OTHER	163	5	192	5	18
TOTAL	3,459	100%	3,726	100%	7.7%

EXHIBIT IV-23

EDP EXPENDITURES BY DATA PROCESSING MANAGERS
FOR TOTAL BELGIUM/LUXEMBOURG MARKET

BUDGET CATEGORY	EXPENDITURE				ANTICIPATED GROWTH, 1980-1981 (PERCENT)
	1980		1981		
	BF MILLION	PERCENT	BF MILLION	PERCENT	
PERSONNEL INCLUDING RECRUITMENT AND TRAINING	14,090	38%	14,795	36%	5%
MAINFRAMES	6,420	17	6,805	17	6
PERIPHERALS	3,628	10	3,737	9	3
MINICOMPUTERS	2,068	6	2,482	6	20
TERMINALS	2,538	7	3,528	9	39
COMMUNICATIONS HARDWARE	2,648	7	3,257	8	23
SOFTWARE INCLUDING SOFTWARE MAINTENANCE	1,124	3	1,203	3	7
HARDWARE MAINTENANCE	1,764	5	1,869	5	6
PROCESSING SERVICES	1,726	5	1,778	4	-3
PROFESSIONAL SERVICES AND OTHER	1,270	3	1,308	3	3
TOTAL	37,276	100%	40,762	100%	9.4%

- Twelve users reported an impact on their budget due to the prevailing recession amounting to an average increase of 8%.

- Seventeen users reported an impact from inflation of an 8% increase.

- Those areas affected by the continuing inflationary climate were mainly salaries, personnel costs and development costs.

- Exhibits IV-24 and IV-25 show the breakdown of total spent in the two countries between DP managers and end users. As in other countries the DP manager was, by far, in control of software products expenditures while the end-user was responsible for about three-quarters of the funds spent for processing services.

6. USER SATISFACTION

- Questions were posed to DP management on:

  - Their satisfaction with external services used.

  - Growth rates expected between 1980 and 1982.

- Responses were weighted by a point system (3 for high satisfaction, 1 for medium and -1 for low) to establish the comparative rating shown in Exhibit IV-26

- The best ratings, in order, were given to:

  - Turnkey systems.

  - Software products.

  - Facilities management.

EXHIBIT IV 24

COMPARISON OF USER EXPENDITURE SOURCES IN 1980,
BY MAJOR CATEGORY OF COMPUTER SERVICES -
NETHERLANDS

TYPE OF COMPUTER SERVICE	VIA DATA PROCESSING MANAGER		VIA END USER		BOTH SOURCES
	FL MILLION	PERCENT SPLIT	FL MILLION	PERCENT SPLIT	
PROCESSING SERVICES	182	28%	463	72%	645
SOFTWARE PRODUCTS	83	97	3	3	86
PROFESSIONAL SERVICES	130	26	373	74	503
TOTAL	395	32%	839	68%	1,234

EXHIBIT IV-25

COMPARISON OF USER EXPENDITURE SOURCES IN 1980, BY MAJOR CATEGORY OF COMPUTER SERVICES - BELGIUM/LUXEMBOURG

TYPE OF COMPUTER SERVICE	VIA DATA PROCESSING MANAGER		VIA END USER		BOTH SOURCES
	BF MILLION	PERCENT SPLIT	BF MILLION	PERCENT SPLIT	
PROCESSING SERVICES	1,726	27%	4,678	73%	6,404
SOFTWARE PRODUCTS	1,124	98	28	2	1,152
PROFESSIONAL SERVICES	1,105	43	1,453	57	2,558
TOTAL	3,955	39%	6,159	61%	10,114

EXHIBIT IV-26

USERS' SATISFACTION WITH SERVICES

TYPE OF SERVICE	NON-USERS' MENTIONS	USERS' SATISFACTION				
		ALL MENTIONS	MENTIONS			OVERALL* RATING
			HIGH	MEDIUM	LOW	
RCS - INTERACTIVE	36	16	6	9	1	1.6
RCS - REMOTE BATCH	44	8	2	5	1	1.3
BATCH SERVICES	35	17	5	10	2	1.4
FM	39	13	6	6	1	1.8
SUBTOTAL PROCESSING SERVICES	154	54	19	30	5	1.5
TURNKEY SYSTEMS	45	7	4	2	1	1.9
HARDWARE MAINTENANCE	1	51	34	14	3	2.2
SUBTOTAL HARDWARE SERVICES	46	58	38	16	4	2.2
SYSTEMS SOFTWARE	3	49	23	25	1	1.9
APPLICATIONS SOFTWARE	21	31	13	14	4	1.6
SUBTOTAL SOFTWARE PRODUCTS	24	80	36	39	5	1.8
CONSULTANCY	36	16	4	5	7	0.6
TAILORED SOFTWARE	37	15	9	4	2	1.9
EDUCATION/TRAINING	14	38	14	20	4	1.5
SUBTOTAL PROFESSIONAL SERVICES	87	69	27	29	13	1.4
TOTAL FOR ALL SERVICES	311	261	120	114	27	1.7

*WEIGHTED ACCORDING TO GRADE OF SATISFACTION

- Education/training.

- Worst ratings were given to:
  - Consultancy.
  - Batch services.
  - RCS.

- Satisfaction ratings for some services are consistent with predictions of growth rates over the next two years. For instance:

	Satisfaction	Growth Anticipated 1980-1982
Turnkey Systems	1.9	11.0% AAGR
Systems Software	1.9	9.2% AAGR

7. OFFICE-OF-THE-FUTURE ISSUES

- Exhibit IV-27 presents a summary of the findings on present and future usage of data communications, database and office automation facilities.

- When and whether these services are going to be integrated into the responsibilities of the DP department is illustrated in Exhibit IV-28. The telex, although very highly used, is normally not under the DP function.

- In most cases, responsibility for future implementation is assumed to rest with DP management.

EXHIBIT IV-27

PRESENT AND FUTURE USAGE OF TELECOMMUNICATIONS
AND OFFICE AUTOMATION FACILITIES

CATEGORY OF SERVICE	NUMBER OF MENTIONS OF USE				
	NOW	1980-1982	1983-1985	NO PLANS	DON'T KNOW
DIAL-UP	19	8	6	18	1
LEASED LINE	18	5	6	22	1
PACKET NETWORK	2	1	4	41	4
TELEX/TWX	41	4	-	7	-
PRESTEL	1	-	1	45	5
EURONET	2	1	1	43	5
IN-HOUSE VIEWDATA	16	2	2	27	5
OTHER DATABASE	3	1	1	42	4
ELECTRONIC MAIL	1	5	8	31	7
WORD PROCESSING	22	10	8	9	3
IMAGE PROCESSING	3	1	2	40	6
TELECOPIER/ FACSIMILE	20	4	4	20	4
CRT GRAPHICS	4	5	3	36	4

EXHIBIT IV-28

RESPONSIBILITY AND PLANS FOR THE DP DEPARTMENT
IN CONNECTION WITH TELECOMMUNICATIONS AND OFFICE AUTOMATION

CATEGORY OF SERVICE	EDP RESPONSIBILITY FOR SERVICES (NUMBER OF MENTIONS)				
	NOW	1980-1982	1983-1985	NO PLANS	DON'T KNOW
DIAL-UP	19	8	6	18	1
LEASED LINE	18	5	6	22	1
PACKET NETWORK	2	1	4	41	4
TELEX/TWX	6	1	-	45	-
PRESTEL	1	-	1	45	5
EURONET	2	1	1	43	5
IN-HOUSE VIEWDATA	15	2	2	28	5
OTHER DATABASE	3	1	1	43	4
ELECTRONIC MAIL	1	5	8	31	7
WORD PROCESSING	14	10	8	17	3
IMAGE PROCESSING	3	1	2	40	6
TELECOPIER/ FACSIMILE	16	3	4	25	4
CRT GRAPHICS	4	5	3	36	4

V PROCESSING SERVICES

V PROCESSING SERVICES

A. MARKET GROWTH IN 1979

1. THE NETHERLANDS

- The Netherlands' market for processing services grew from FL 615 million to HFL 778 million in 1979, an increase of 26.5%.

- Within this market, there were marked differences between the various subsectors, with remote computing services registering a 30% growth and batch services 19%.

- Facilities management, at FL 9 million, represents a mere 1.2% of the total processing services market.

- Allowing for inflation, the real growth in remote computing services revenues was closer to 24%, a healthy growth nevertheless, while batch services were closer to 13% in real terms.

- Exhibit V-1 shows the Netherlands' processing services markets by mode of service for 1978-1980.

EXHIBIT V-1

THE NETHERLANDS' PROCESSING SERVICES MARKET
BY MODE OF SERVICE, 1978-1980

SUBSECTOR AND MODE OF SERVICE	REVENUE 1978 (FL MILLION)		REVISED GROWTH RATE 1978-1979 (PERCENT)	REVENUES (FL MILLION)		GROWTH RATE 1979-1980 (PERCENT)
	AS REPORTED	REVISED		1979	1980	
REMOTE COMPUTING (RCS)	182	182	30%	237	301	27%
- INTERACTIVE	N/A	57	42	81	109	35
- REMOTE BATCH	N/A	104	18	123	141	15
- DATABASE ENQUIRY	N/A	6	117	13	23	77
- USER SITE HARDWARE SERVICES (USHS)	N/A	14	42	20	28	40
FACILITIES MANAGEMENT (FM)	-	5	80	9	14	50
BATCH SERVICES	322	247	19	295	330	12
TOTAL PROCESSING	504	434	-	541	645	26.4%

a. The RCS Market in the Netherlands

- The RCS market in the Netherlands in 1979 was FL 237 million, of which 34.2% was for interactive services, 51.9% for remote batch, 5.5% for database enquiry and 8.4% for user site hardware services. In relation to the total market, the RCS market in the Netherlands is one of the best developed in Europe.

- The RCS market has been redefined by the exclusion of associated professional services revenues, which are now properly included under the latter category.

- Interactive services, at FL 81 million, are growing at 42% per annum.

  - A significant proportion of this revenue is earned from foreign multinational companies doing financial reconciliations.

  - Usage by Dutch companies, however, is far from insignificant and contributes to the relatively strong showing of interactive services in this market.

- Remote batch services, at FL 123 million, are growing at the slower rate of 18%. This slower growth parallels the situation in other countries.

- The market for database enquiry, at FL 13 million, is still in its infancy, as elsewhere in Europe and will almost double between 1979 and 1980.

- The market for user site hardware services, at FL 20 million, is as yet insubstantial, although it compares favourably with other European countries. The market will grow at 40% through the forecast period.

b. The Batch Services Market in the Netherlands

- The batch services market in the Netherlands was FL 295 million in 1979, an increase of 19.4% over the revised figure of FL 247 million for 1978.

- The batch services market has been redefined to exclude associated professional services revenues.

- As in other Western European markets, batch services show a slower growth in real terms than other market segments and are declining as a percentage of the total processing services market.

2. BELGIUM/LUXEMBOURG

- The Belgian/Luxembourg market for processing services grew from BF 4,642 million in 1978 to BF 5,464 million in 1979, an increase of 18%.

- Within this market, there were marked differences between the various subsectors, with remote computing services registering a 28% growth, and batch services a mere 10%.

- Facilities management, as elsewhere, is not extensive at BF 64 million, and actually registered a slight decline in 1979.

- After allowing for some 10% inflation, the real growth in remote computing services was 18%, while batch services remained static.

- The batch services market in Belgium/Luxembourg was BF 2,805 million in 1979, an increase of 10% over the 1978 figure of BF 2,550 million, or a zero increase after allowing for inflation.

- The batch services market has been redefined to exclude associated professional services revenues.

- As in other Western European markets, batch as a mode is static in real revenue terms and declining as a percentage of the total processing services market.

B. MARKET FORECASTS (1980-1984)

1. THE NETHERLANDS

- Exhibit V-2 compares the Netherlands' processing services by mode of service for 1979 and 1984.

- Exhibit V-3 shows detailed market forecasts for processing services by mode of delivery to 1984.

a. The Remote Computing Services Market

(1) The Interactive Market

- The interactive market in the Netherlands is one of the largest pro rata in Europe, at 15% of all processing services.

- The market is dominated by U.S. multinationals (GEISCO, IBM, CDC and ADP) although some indigenous vendors offer this service.

- GEISCO's European processing centre is in the Netherlands at Amstelveen. This site was chosen after careful consideration of alternatives.

- The Netherlands has the highest population of interactive vendors in Europe after the U.K., due probably to the widespread use of the English language.

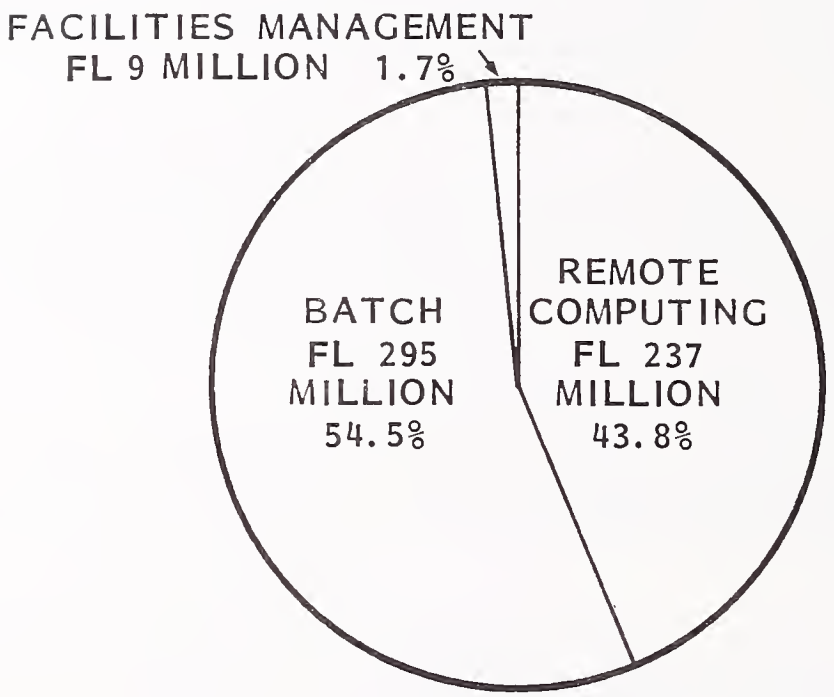
- INPUT forecasts a continued high growth, at 29% per annum, for interactive services.

(2) The Remote Batch Market

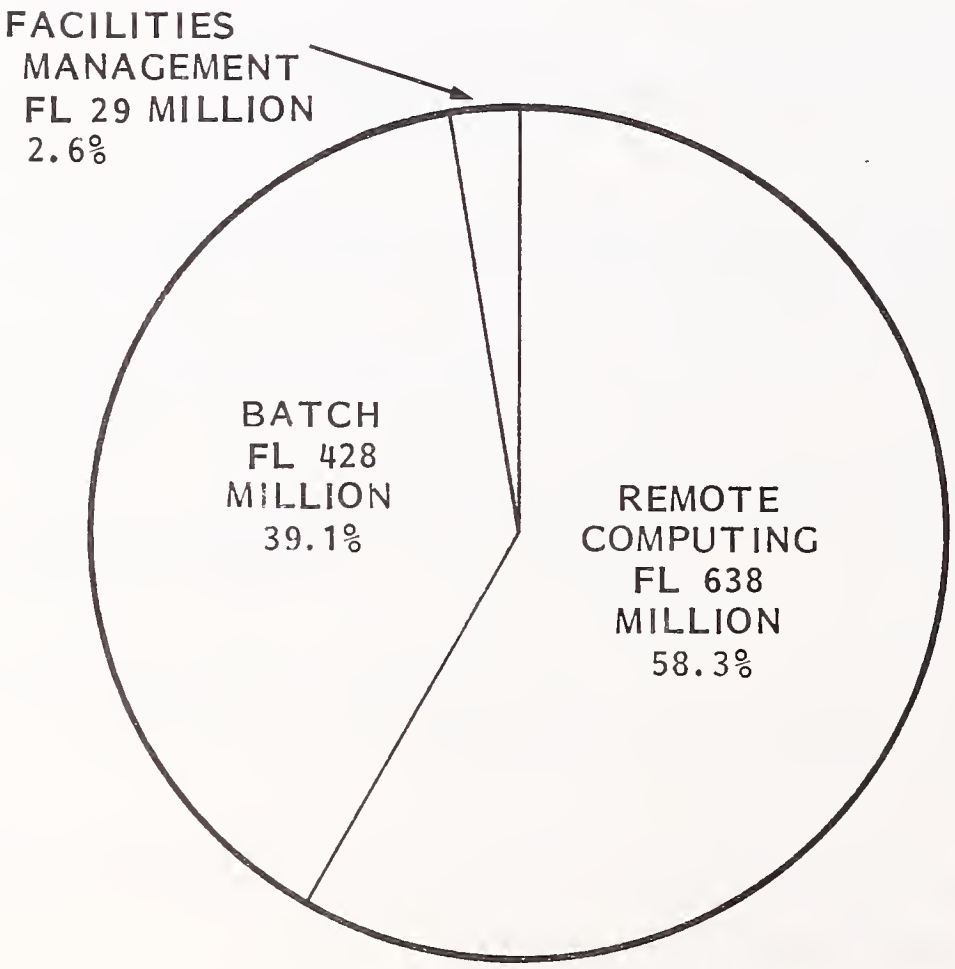
- The remote batch market in the Netherlands is divided between IBM, CDC and several medium-sized national vendors.

EXHIBIT V-2

PROCESSING SERVICES MARKET BY MODE
NETHERLANDS



1979 FL 541 MILLION



1984 - FL 1,095 MILLION

EXHIBIT V-3

THE NETHERLANDS' PROCESSING SERVICES
MARKET FORECASTS BY MODE OF DELIVERY - 1979-1984

MODE OR SUBMODE	MARKET FORECAST IN FL MILLION								
	1978	1979	GROWTH 1978-1979 (PERCENT)	1980	1981	1982	1983	1984	AAGR 1979-1984 (PERCENT)
INTERACTIVE	57	81	42.0%	109	142	181	227	290	29%
REMOTE BATCH	104	123	18.3	141	155	174	188	195	10
DATABASE	6	13	116.6	23	38	49	61	74	30
USHS	14	20	42.9	28	32	44	60	79	43
SUBTOTAL RCS	181	237	30.2	301	367	448	536	638	22
FM	5	9	80.0	14	18	20	27	29	26
BATCH	247	295	19.4	330	363	392	416	428	8
ALL PROCESSING	433	541	25.0%	645	748	860	979	1,095	15%

- Of these national vendors, the most significant are CCN, CVI, RAET and ACD.

- Remote batch appears to be a more favoured mode of delivery for national vendors, possibly because they lack expertise in setting up networks for interactive use.

(3) The User Site Hardware Services Market

- Although the USHS market in the Netherlands is still in its infancy, there are signs that the concept is well established with processing services vendors.

- The U.S. multinationals are actively promoting their USHS offerings in the Netherlands.

- The major national processing services companies are also actively promoting both USHS and turnkey systems.

- INPUT forecasts an annual growth rate of 40% for user site hardware services through 1984.

(4) The Database Enquiry Market

- In common with other European countries, the database enquiry market in the Netherlands is still in its infancy.

- INPUT forecasts an extremely healthy growth rate of 77% per annum for this service type.

b. <u>The Batch Services Market</u>

- The Netherlands batch services market is characterised by several medium-sized multiservice vendors and many smaller local bureaux.

- All batch bureaux offer related professional services to their clients. These revenues have been reclassified under professional services, leaving a total batch services market of HFL 295 million in 1979.

- INPUT forecasts an annual average growth rate for batch services of 8% during the forecast period.

- As elsewhere in Europe, batch services in the Netherlands are declining as a percentage of total processing services in favour of newer delivery modes and turnkey systems.

2. BELGIUM/LUXEMBOURG

- Exhibit V-4 compares Belgian/Luxembourg processing services by mode of service for 1979 and 1984. Exhibit V-5 shows detailed market forecasts by delivery mode to 1984.

a. The Remote Computing Services Market

(1) The Interactive Market

- The interactive market in Belgium, as in the Netherlands, forms a large part of the total processing services market, at 16.5%.

- The market is dominated by two groups: the U.S. multinationals (GEIS, IBM, CSC) and bank-owned national services companies (ORDA-B, CIG).

- The interactive market in Belgium benefits from the many headquarters of U.S. multinationals located in that city.

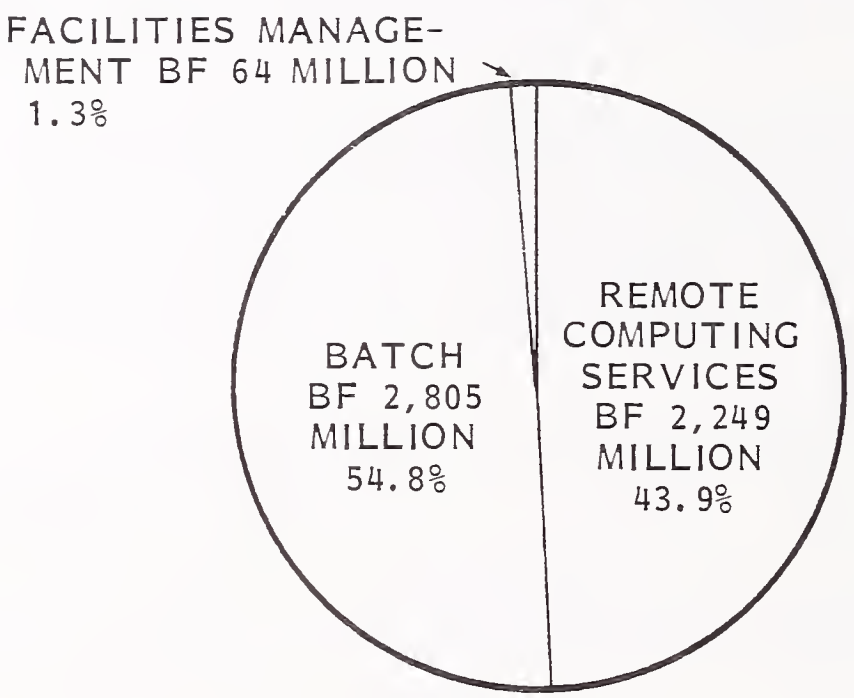
(2) The Remote Batch Market

- The remote batch market in Belgium is dominated, as elsewhere in Europe, by the U.S. hardware manufacturers (IBM, CDC, etc.).

EXHIBIT V-4

BELGIUM/LUXEMBOURG

PROCESSING SERVICES MARKETS BY MODE OF SERVICE



1979 - BF 5,118 MILLION

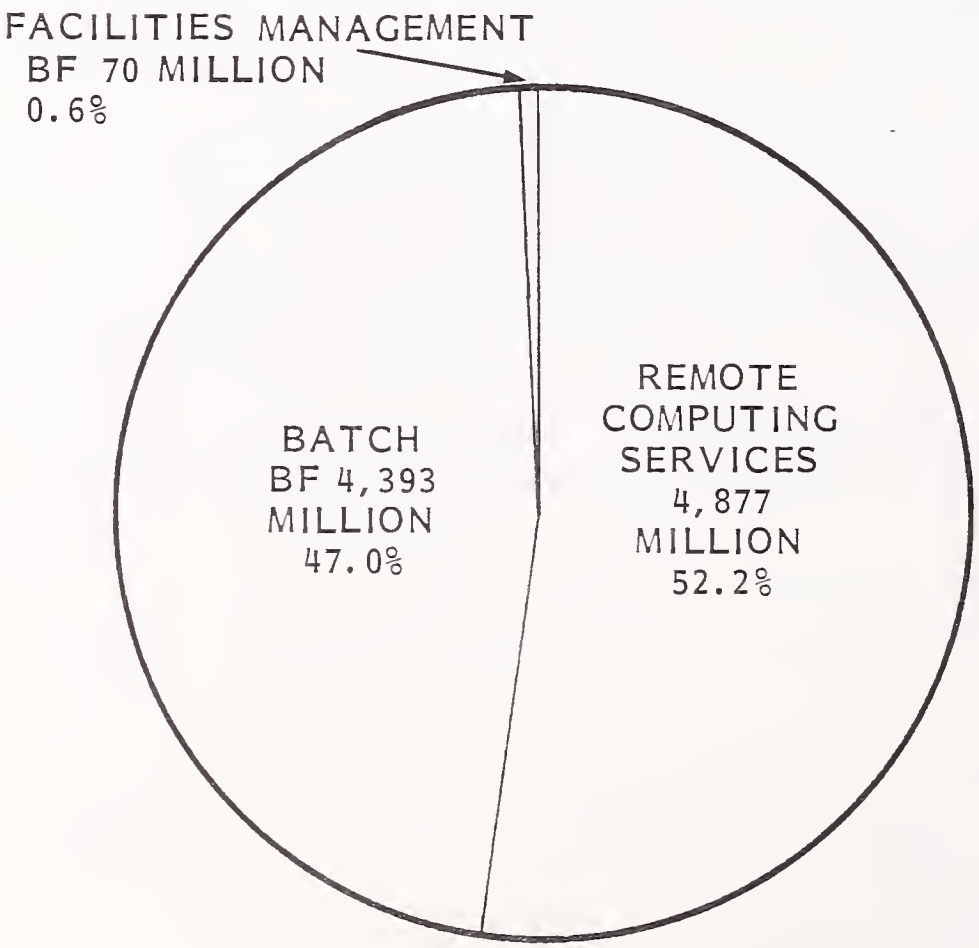


EXHIBIT V-5

THE BELGIUM/LUXEMBOURG PROCESSING SERVICES
MARKET FORECASTS BY MODE OF DELIVERY - 1979-1984

MODE OR SUBMODE	MARKET FORECAST IN BF MILLION								
	1978	1979	GROWTH 1978-1979 (PERCENT)	1980	1981	1982	1983	1984	AAGR 1979-1984 (PERCENT)
INTERACTIVE	698	805	15.3%	935	1,120	1,325	1,494	1,726	16.5%
REMOTE BATCH	1,110	1,154	4.0	1,264	1,408	1,522	1,631	1,802	9.3
DATABASE	76	104	36.8	202	315	428	606	741	48.1
USHS	143	186	30.0	264	308	384	462	608	26.7
SUBTOTAL RCS	2,027	2,249	11.0	2,665	3,151	3,659	4,193	4,877	16.7
FM	65	64	-2	70	74	70	70	70	1.8
BATCH	2,550	2,805	10.0	3,142	3,456	3,802	4,106	4,393	9.4
ALL PROCESSING	4,642	5,118	10.2%	5,877	6,681	7,531	8,369	9,340	12.8%

- Remote batch vendors in Belgium are actively promoting USHS as an alternate delivery mode.

- INPUT forecasts a growth rate of 9.3% per annum for this service type during the forecast period.

(3) The Database Enquiry Market

- As elsewhere in Europe, the database enquiry market in Belgium is as yet insubstantial, at BF 130 million in 1979.

- Belgium and Luxembourg together house the great majority of officials of the European economic community.

- Banking is one of the main economic activities in Luxembourg.

- These factors will assist the Belgium/Luxembourg database enquiry market to grow substantially to an estimated BF 741 million in 1984, at an AAGR of 48.1%.

(4) The User Site Hardware Services Market

- The USHS concept has gained a high degree of acceptance in Belgium/ Luxembourg.

- Most major national bureaux are offering, or are about to offer, USHS.

- INPUT forecasts a 26.7% AAGR for this market which reaches 608 BF million in 1984.

C. VENDOR ISSUES

1. INTRODUCTION

- Ten of the thirteen companies interviewed completed the processing services module of the vendor questionnaire.

2. GROWTH IN REAL NEW BUSINESS

- Only two companies reported a slowing in the rate of growth of real new business. Both of these were major international RCS vendors.

- In two years' time, only one vendor saw the slowdown in new business growth continuing. The remainder saw their present rate of growth continuing.

- In INPUT's view, these assumptions are broadly correct, in that processing services vendors will be able to maintain their growth in the future, albeit via different delivery modes.

3. IMPACT OF IN-HOUSE DP

- Six respondents reported that in-house DP developments were adversely affecting their growth prospects.

- The causes of lost accounts are estimated as follows:

- Standalone mini equipment	17.0%
- In-house networks	35.5
- Batch processing on own mainframe	47.5
	100.0%

4. NEW TYPES OF USER

- Respondents divided 7:3 on the subject of whether new users preferred a mini/micro solution or not, with seven vendors affirming this trend.

- For those seven vendors, the split of new account prospect losses was as follows:

  - Another processing bureaux 10%
  - Mini/micro solution 35%
  - In-house mainframe 21%

- Comments on this situation included:

  - 'Takes longer to evaluate various alternatives due to the impact of recession.'
  - 'Users look for capacity and price.'
  - 'We are not in the mini/micro business.'
  - 'We experience frequent losses to existing manual systems.'

- There were no significant differences in response between batch and RCS vendors.

5. USHS AS AN ANSWER

- Respondents indicated a belief in the future efficacy of USHS as a means of enhancing bureau revenues, but did not, in general, see it as an immediate benefit.

- Exhibit V-6 analyses the ratings given by respondents and reflects the steadily increasing perceived importance of USHS.

- Typical comments include:

  - 'Only useful as a service extension - not product.'

  - 'Full service or total industry specialisation the only way.'

  - 'Considered a defense mechanism for some - for us it represents considerable growth potential.'

  - 'Development of communications will reduce need for USHS.'

6. FACILITIES MANAGEMENT

- Respondents saw an increasing market for facilities management as an alternative to processing services.

- Exhibit V-7 analyses the ratings given by respondents to this question. Comments included:

  - 'Goes back to batch soluton - internal but not total.'

  - 'FM will take off in Europe when recession and rightward political trends force unions to compromise.'

  - 'A competitor has taken the market and it's now difficult to penetrate.'

7. INCREASE IN COST OF OBTAINING NEW BUSINESS

- Four respondents reported an increase in the cost of obtaining new business.

EXHIBIT V-6

RESPONDENTS' RATINGS OF USER SITE HARDWARE SERVICES
AS A MARKETING TOOL

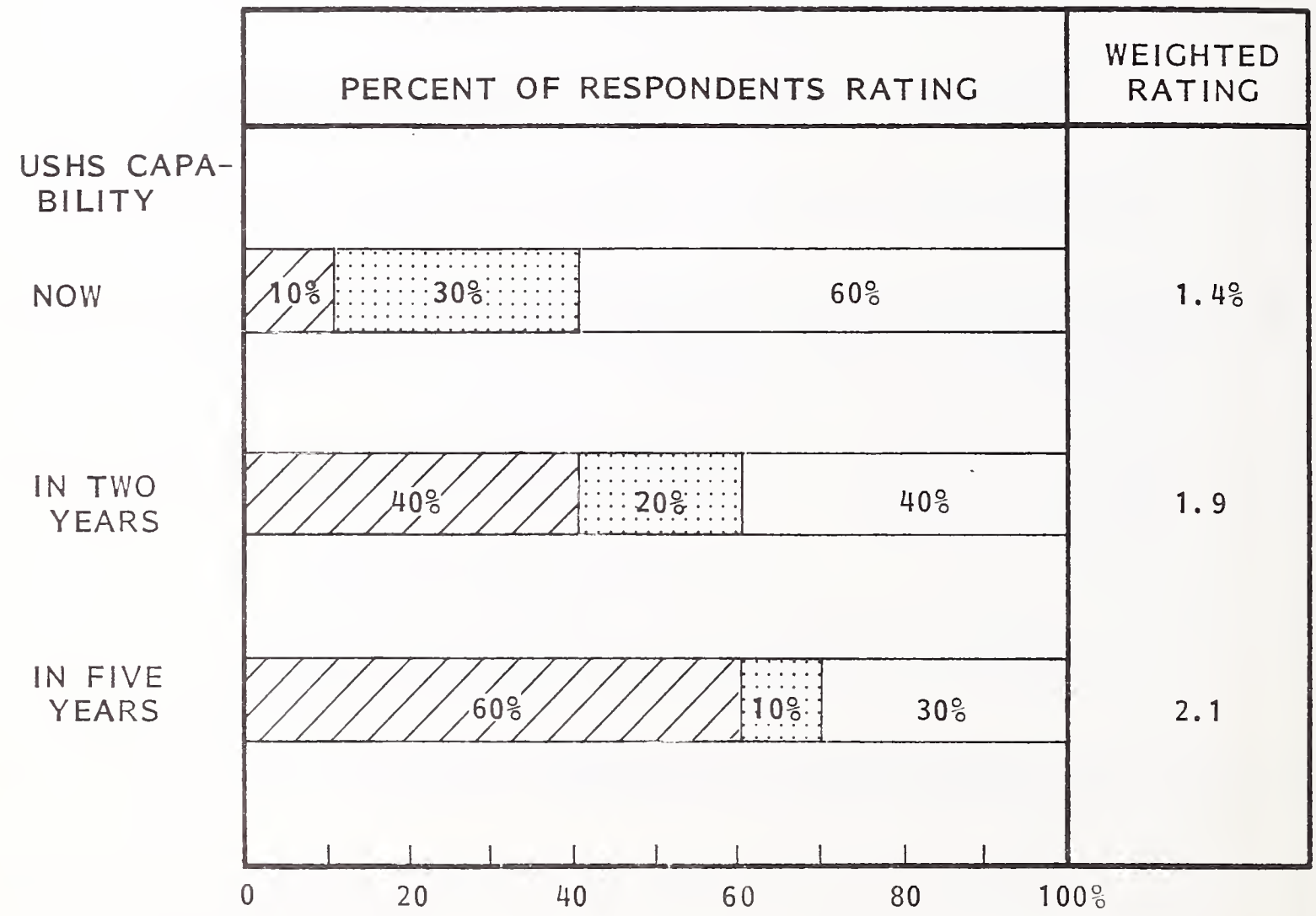
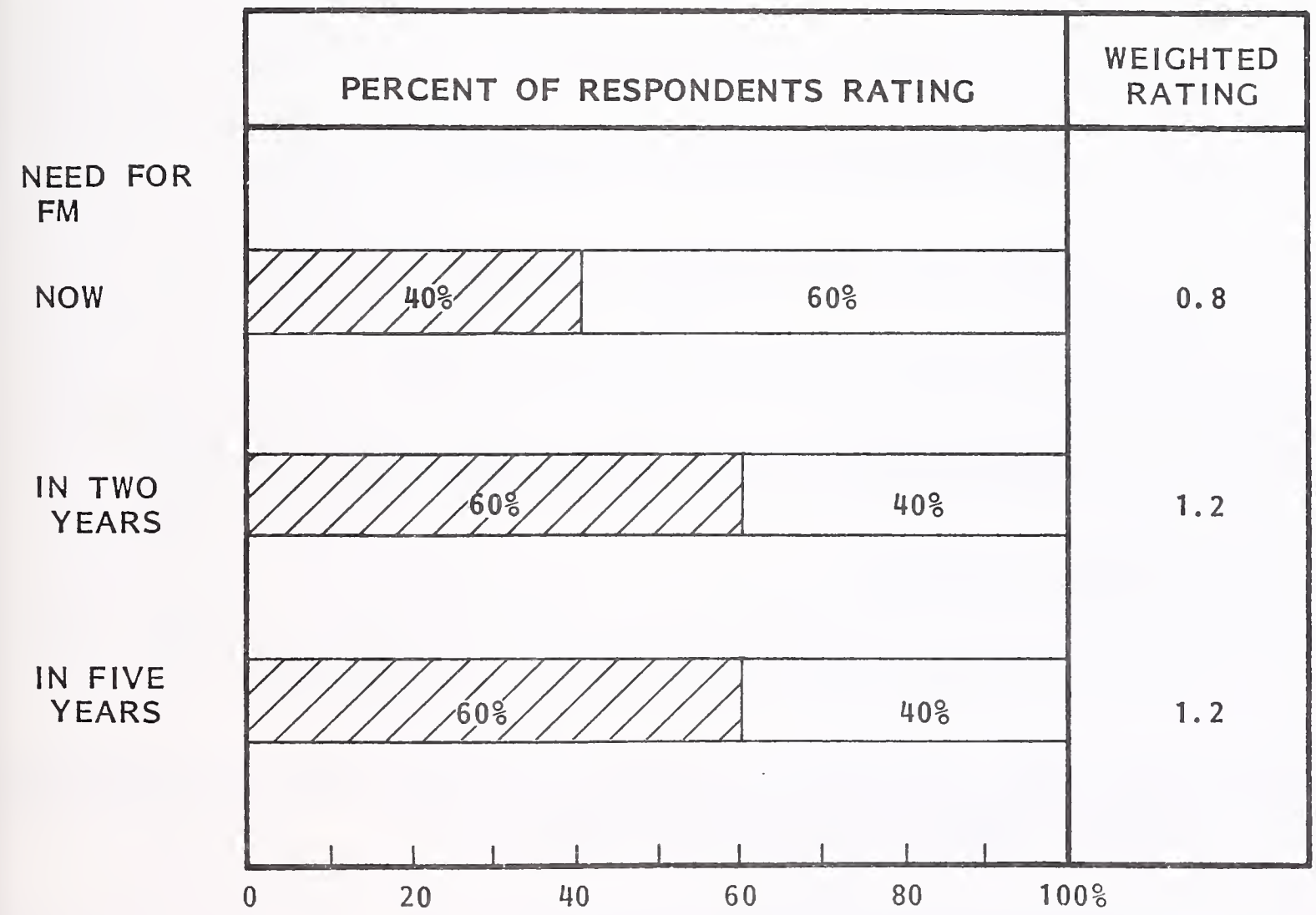


EXHIBIT V-7

RESPONDENTS' RATINGS OF FACILITIES MANAGEMENT
AS AN ALTERNATIVE TO PROCESSING SERVICES



- Of the three who were able to quote a percentage increase, the average was 15%.

8. RETAILING THROUGH THIRD PARTIES

- Three vendors currently retail their services through third parties, at an average level of 7% of turnover.

- In two years' time, however, five vendors anticipate retailing through third parties to an average level of 8% of turnover.

- Comments on third-party retailing included:

  - 'Need to use specialists; e.g., accountants.'

  - 'Need distribution channels for mass-market small users.'

  - 'Old question of leverage versus loss of focus.'

  - 'Buying services companies to cover larger area.'

9. PRICING ELEMENTS

- All but one vendor uses all of the pricing elements mentioned.

- One vendor uses transaction pricing only, and one vendor uses transaction pricing in addition to the mentioned elements.

- On trends, there was a general inclination towards value-added transaction pricing.

- Little use of fixed capacity pricing techniques was registered.

- Methods for increasing prices varied widely, as follows:

- Historical cost plus — 3 vendors
- Market value — 4 vendors
- A combination of above — 3 vendors

10. SOFTWARE PROCUREMENT/DEVELOPMENT

- Exhibit V-8 illustrates sources of software procurement under three categories:
  - Manufacturer-supplied software.
  - Bought-in software from an outside source (including software used on a royalty basis).
  - In-house software development.
- Only in the area of systems software did manufacturers' offerings predominate. In the other two categories, in-house development was preferred by a wide margin.
- Outside software purchases were predictably restricted to applications software and utilities.
- The question relating to the number of sales to recover software development costs drew a negligible response, with no vendor able or willing to give accurate figures.

11. PROFITABILITY

- Out of eight responses on the impact of various factors on profitability, three felt there had been some impact from at least one of the factors mentioned.

EXHIBIT V-8

SOURCES OF SOFTWARE PROCUREMENT

TYPE OF SOFTWARE	PERCENT USE OF METHOD		
	MANU-FACTURER-SUPPLIED	BOUGHT-IN	IN-HOUSE DEVELOPMENT
SYSTEMS	57%	6%	37%
UTILITIES	22	24	54
APPLICATIONS	0.5	29	70.5

- On the basis of a weighted rating to measure this effect, the ranking of factors (score out of 24) was:

  - Depreciation of equipment 10
  - Price increases matching inflation 9
  - Falling hardware costs 8

- Few respondents felt that they spent too much time now on day-to-day profit management, to the detriment of medium-term planning.

- Three vendors similarly felt that day-to-day management impacted long-term planning also.

D. COMPETITIVE ANALYSIS

1. NETHERLANDS

- Exhibit V-9 ranks the leading vendors by market share of processing services in 1979.

- National vendors predominate, with only three U.S. vendors in the top ten (GEIS, IBM and ADP).

- The top ten vendors account for 51% of the Netherlands' processing market.

- Exhibit V-10 ranks the top companies for each of the three subsector modes of processing.

  - U.S. vendors (GEIS, IBM, CDC) predominate in the RCS subsector.

EXHIBIT V-9

TOP SUPPLIER RANKING AND SECTOR MARKET SHARES BY SERVICE TYPE, NETHERLANDS - 1979

RANK	PROCESSING SERVICES 541 MILLION GUILDERS		SOFTWARE PRODUCTS 63 MILLION GUILDERS		PROFESSIONAL SERVICES 384 MILLION GUILDERS	
	SUPPLIER NAME	% SHARE	SUPPLIER NAME	% SHARE	SUPPLIER NAME	% SHARE
1	CENTRAL-BEHEER	9.2%	IBM	23.8%	VOLMAC	16.5%
2	CVI	8.9	CAP(PANDATA)	19.0	CAP/GEMINI/SOGETI	6.0
3	GEIS	5.6	RAET	3.5	CMG	5.4
4	ARC	4.5	SAMSOM	2.5	RAET	4.3
5	CCN	4.3	DATA PROCESS	2.5	ARSYCOM	3.4
6	RAET	4.2	INFONET	2.5	SAMSOM	3.1
7	IBM	4.0	ACD	2.2	CDC	2.1
8	ADP	4.0	ARC	2.1	LOGICA	2.1
9	ACD	3.5	VOLMAC	1.0	ARC	2.0
10	SAMSOM	2.7	CENTRAL-BEHEER	0.5	NOVA	1.6
11	ARSYCOM	2.4			DATA PROCESS	1.5
12	CDC	2.3			ACD	1.5
13	CMG	1.0			CENTRAL-BEHEER	1.3
14	INFONET	0.9			CVI	1.2
15	UCC	0.5			CCN	1.2
16	COMSHARE	0.4			DATA LOGIE	0.8
17					EDL	0.6

EXHIBIT V-10

TOP SUPPLIER RANKING AND SUBSECTOR MARKET SHARES
BY TYPE OF PROCESSING SERVICES, NETHERLANDS - 1979

RANK / TYPE	RCS 235 MILLION GUILDERS		FM 9 MILLION GUILDERS		BATCH 295 MILLION GUILDERS	
	SUPPLIER NAME	% SHARE	SUPPLIER NAME	% SHARE	SUPPLIER NAME	% SHARE
1	GEIS	12.9%	CEA	17.8%	CVI	13.8%
2	IBM	8.6	RAET	16.7	CEA	10.2
3	CDC	5.3	DATALOGIE	11.1	ARC	7.7
4	CCN	3.6	SAMSOM	11.1	ADP	5.6
5	CVI	3.2	INFONET	7.8	CCN	5.0
6	RAET	3.2			RAET	4.6
7	ACD	3.1			SAMSOM	4.2
8	ADP	2.2			ACD	3.9
9	CEA	1.9			CMG	3.8
10	ARSYCOM	1.5			ARSYCOM	3.3

- FM is entirely national in character.

- Local bureaux predominate in the batch sector.

- National multiservice vendors such as CEA, CCN and RAET show strongly in all sectors.

2. BELGIUM/LUXEMBOURG

- Exhibit V-11 ranks the leading vendors by market share of processing services in 1979.

- The market is dominated by three basic groupings:

  - National vendors owned by banks (CIG, ORDA-B).

  - U.S. vendors (IBM, CDC, CSC, ADP).

  - French vendors (SLIGOS, ORDINA, CISI).

- The top ten vendors account for some 38.5% of the market.

- Exhibit V-12 ranks the top companies for each of the three subsector modes of processing.

  - National vendors predominate in RCS.

  - French vendors dominate the FM market.

  - The batch market is split between all three groupings.

- No non-bank-owned Belgian vendor shows in the top five rankings of any sector.

EXHIBIT V-11

TOP SUPPLIER RANKING AND SECTOR MARKET SHARES BY SERVICE TYPE,
BELGIUM/LUXEMBOURG - 1979

RANK	PROCESSING SERVICES 5,060 MILLION BF		SOFTWARE PRODUCTS 873 MILLION BF		PROFESSIONAL SERVICES 2,114 MILLION BF	
	SUPPLIER NAME	% SHARE	SUPPLIER NAME	% SHARE	SUPPLIER NAME	% SHARE
1	CIG/GTS*	12.8%	ORDINA BENELUX	3.1%	SOBEMAP	11.2%
2	IBM	6.2	STERIABEL	1.3	CIG	7.7
3	SLIGOS	4.6	SGAB	1.1	EFFICIENT SA	5.9
			CAP/GEMINI/ SOGETI	0.8	STERIABEL	5.8
4	SGAB	3.0	EFFICIENT SA	0.6	SLIGOS	4.4
5	CDC	3.0	ORDA-B	0.4	ORDINA BENELUX	2.6
6	ORDA-B	3.0	UCC/SPI	0.2	IBM	2.4
7	UCC/AC-SERVICE	2.6			CAP/GEMINI/ SOGETI	2.0
8	ORDINA BENELUX	1.9			CSC	1.0
9	GERAC	1.3			CDC	0.9
10	CSC	0.8			GEIS	0.9
11	ADP-NIS	0.8			SGAB	0.9
12	CISI	0.7				
13	COMSHARE	0.7				
14	CEGI-TYMSHARE	0.5				
15	GSI	0.2				

*INCLUDES MARK III REVENUES (NOW GEIS).

EXHIBIT V-12

TOP SUPPLIER RANKING AND SUBSECTOR MARKET SHARES
BY TYPE OF PROCESSING SERVICE,
BELGIUM/LUXEMBOURG - 1979

TRANK	RCS 2,249 MILLION BF		FM 64 MILLION BF		BATCH 2,805 MILLION BF	
	SUPPLIER NAME	% SHARE	SUPPLIER NAME	% SHARE	SUPPLIER NAME	% SHARE
1	CIG/GTS*	12.6%	SLIGOS	36.4%	CIG/GTS	13.0%
2	IBM	7.2	CEGI-TYMSHARE	3.3	SLIGOS	6.8
3	ORDA-B	6.8	SG2	2.8	IBM	5.5
4	CDC	5.1	GSI	1.4	SGAB	3.6
5	SG2	3.4			UCC	2.9
6	SGAB	2.5			CDC	1.4
7	UCC	2.3				
8	CSC/INFONET	1.8				
9	ADP	1.7				
10	COMSHARE	1.4				
11	CISI	1.4				

*INCLUDES MARK III REVENUES (NOW GEIS).

VI SOFTWARE PRODUCTS

VI SOFTWARE PRODUCTS

A. INTRODUCTION

- The expansion of software products and usage in Belgium is less dramatic than elsewhere in Europe, but with the emergence of the mini/micro and small business sectors the picture is likely to change by 1983.

- Like their counterparts in other European countries, DP managers in Belgium are looking for potential savings and price/performance benefits that can be achieved through tested software, as well as systems support software to improve overall performance.

- The software products market in the Netherlands is not fully developed, but it is certainly more advanced than its counterpart in Belgium. The Dutch market is forward-looking in applying advanced as well as established systems software products. Dutch companies are very much in favour of investing in new generations of products in order to maintain growth, market share and profitability.

- Software products sold to another party in the computer services industry may:

  - Earn royalties on a bureau machine.

  - Be used as a development tool within a software company.

- These two sources of revenue are excluded from INPUTs definition of the software market. The MAS/Europe programme defines markets in terms of end user expenditures. However, because of the size of these two sources in the Benelux countries, some measurement and discussion of them is included in this chapter.

B. MARKET DEVELOPMENT (1979-1984)

1. GROWTH, 1979-1980

- Software product sales in Belgium reached BF 873 million in 1979, which was 35% higher than 1978.

- In the Netherlands the software product market reached FL 63 million in 1979, an increase of 44% over 1978.

- These high growth rates are expected to continue in both countries in 1980, with the market reaching BF 1,152 million and FL 86 million in Belgium and the Netherlands respectively.

2. MARKET TRENDS, 1979-1984

- Over the next five-year period this sector is predicted to grow at a rate of 31% in Belgium to reach BF 3,328 million by 1984, and similarly at 31% in the Netherlands to reach FL 240 million. These markets include:

  - Both systems and applications products.

  - Products from hardware manufacturers and from independent suppliers.

- Exhibits VI-1 and VI-2 show how the growth rates affect the breakdown between systems and applications software and between hardware vendors and independents in Belgium and the Netherlands.

	Belgium		The Netherlands	
	1979	1984	1979	1984
- Systems Software	75%	61%	51%	45%
- Applications Software	25	39	48	55
	100%	100%	100%	100%
- Hardware Suppliers	69	70	73	53
- Independents	31	30	27	47
	100%	100%	100%	100%

- In Belgium the shares of hardware vendors and independents will remain more or less the same over the period of 1979-1984; however, in the Netherlands the future is certainly in favour of the independents, where their market share will reach 47% in 1984 as compared to 27% in 1979.

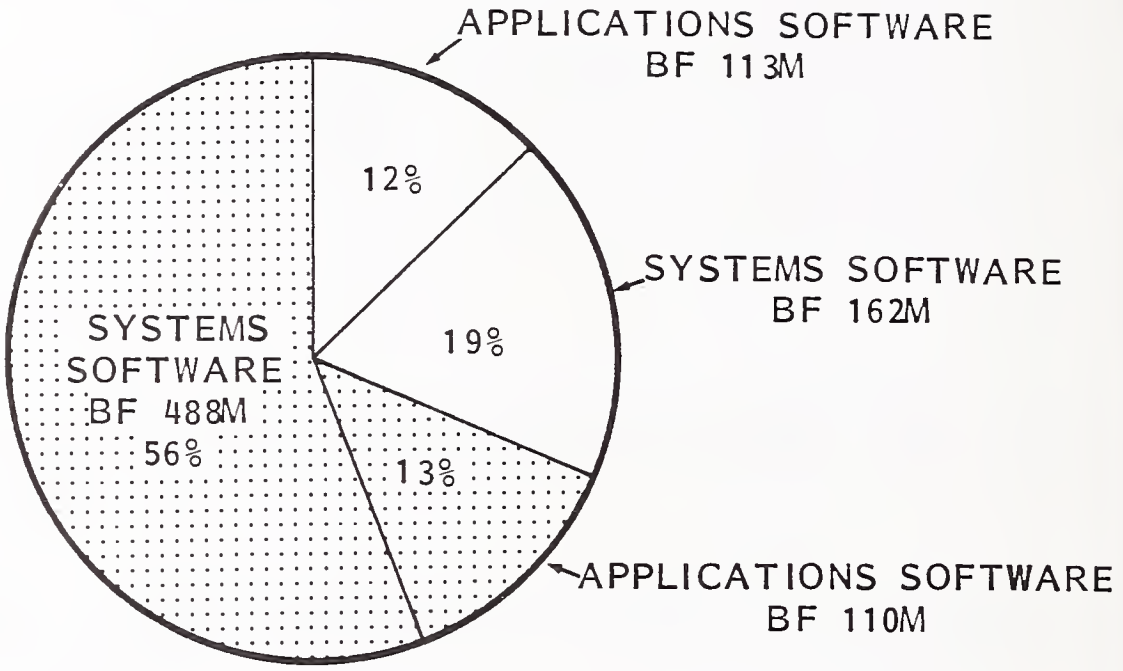
- In Belgium and the Netherlands, software products still largely consist of systems software, and though this bias is being steadily modified, the trend is only very slowly in favour of applications. Some of the reasons for this are:

  - Systems software can be more readily defined and therefore developed and marketed with less risk than applications software.

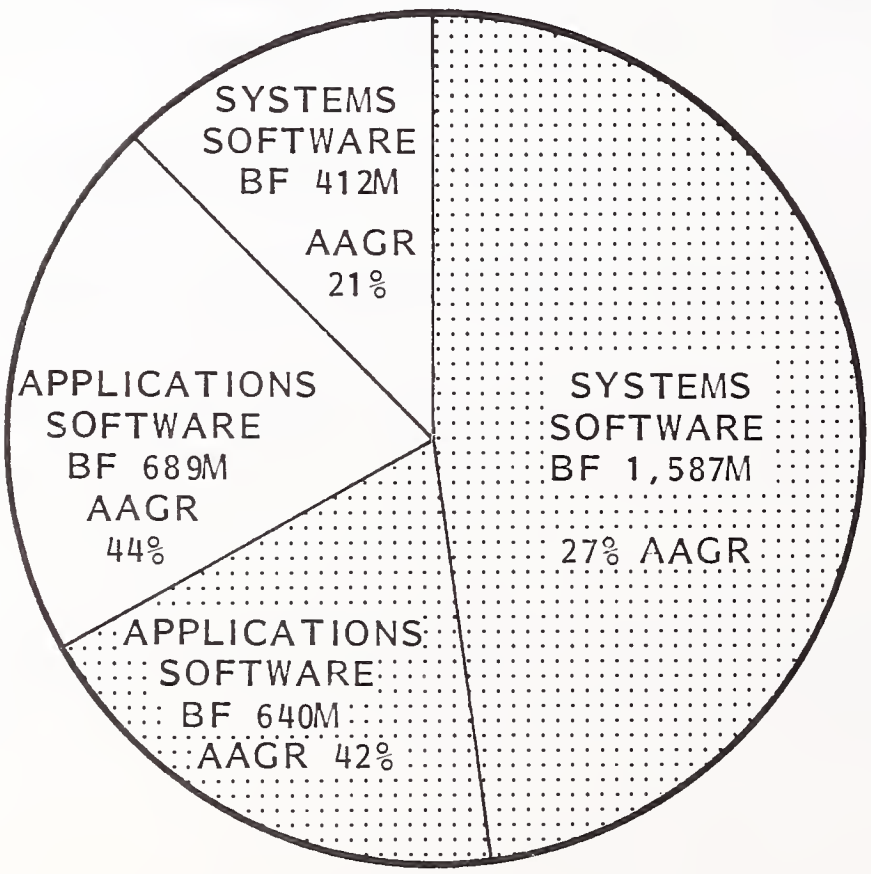
- In Belgium, especially, the increasing number of end user programmers creates a need for newer and more usable software implementation tools, such as DBMS modules, data dictionaries, table processors, text editors, etc.

EXHIBIT VI-1

SOFTWARE PRODUCTS MARKETS
IN BELGIUM



1979 - BF 873 MILLION

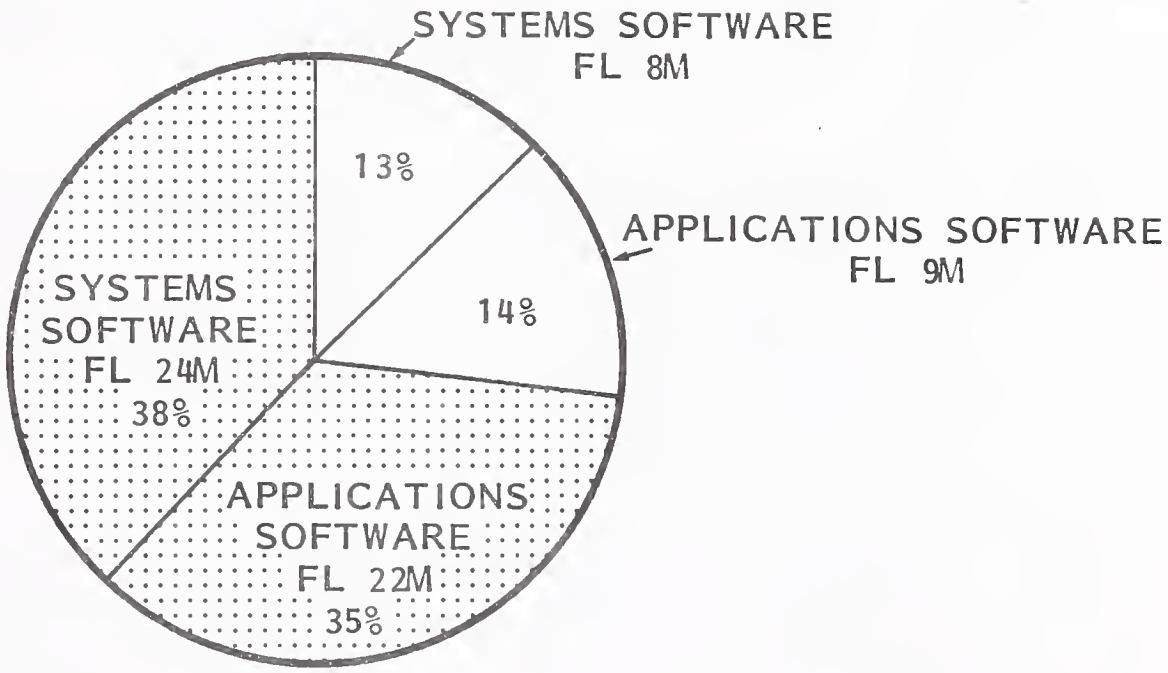


1984 - BF 3,328 MILLION

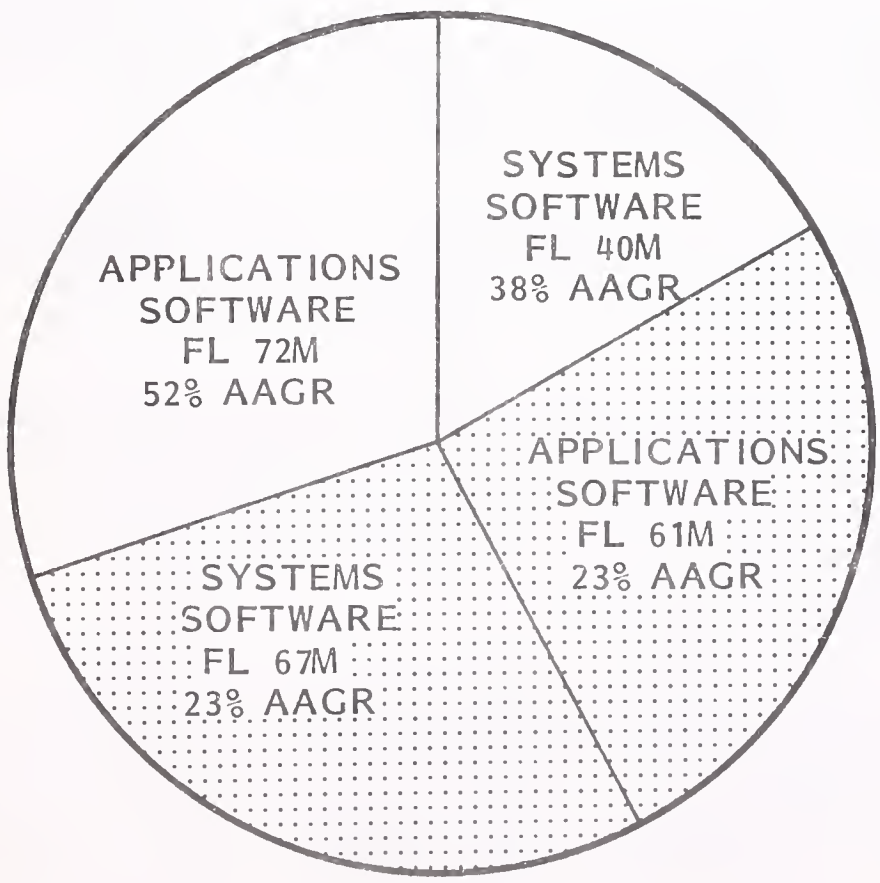
SOURCE: INPUT FORECAST

EXHIBIT VI-2

SOFTWARE PRODUCTS MARKETS
IN THE NETHERLANDS



1979 - FL 63 MILLION



HARDWARE VENDORS

INDEPENDENTS

1984 - FL 240 MILLION

SOURCE: INPUT FORECAST

- Also, the standardisation of requirements for application products is still difficult enough to make the market for any product easily identifiable and targettable, though some of the obstacles to this (e.g., different accounting practices, the language barriers,etc.) are in the course of being dismantled.

  - In the Netherlands language translators and dictionary look-up routines are now commonly system modules.

- The detailed forecasts for the software product sector are in Exhibits VI-3 and VI-4, where a Belgian market of BF 1,152 million is predicted for the current year. Growth between 1979 and 1980 has decreased by 3%. The growth rate is predicted to stay at 31% for 1981, thereafter decreasing by 1% in 1982 to remain at that level until 1984.

- The Dutch market was expected to reach FL 86 million in 1980. During the year 1979-1980 the growth of the software products market will decline by 7% compared to its rate during 1978-1979 to reach 37%. Further decline is expected for the following four years, ranging from 33% for 1981 to 26% in 1984.

- These overall rates have been obtained by considering the growth of the sectors and the two types of vendors.

  - In Belgium, systems software from the independents will experience a slow but steady increase over the period 1979-1984.

  - However, systems software from the hardware suppliers is expected to maintain its present unbundling impetus and to gain additional growth in 1983 from the next generation of equipment to be announced in the 1981-1982 timeframe.

- Similarly in the Netherlands, the projected growth rate for systems software from the independents shows a moderate growth rate reaching its highest rate of 24% in 1981; thereafter a steady growth rate is expected.

EXHIBIT VI-3

THE BELGIUM/LUXEMBOURG SOFTWARE PRODUCTS

MARKET FORECASTS BY SUBSECTOR, 1979-1984

SUBSECTOR	MARKET FORECAST (BF MILLION)								
	1978	1979	GROWTH 1978-1979 (PERCENT)	1980	1981	1982	1983	1984	AAGR 1979-1984 (PERCENT)
SYSTEMS SOFTWARE									
HARDWARE VENDORS	340	488	43%	629	801	1,018	1,270	1,587	27%
INDEPENDENTS	136	162	19	181	215	271	324	412	21
SUBTOTAL	476	650	36%	810	1,016	1,289	1,594	1,999	25%
APPLICATIONS SOFTWARE									
HARDWARE VENDORS	87	110	26	172	248	335	470	640	42
INDEPENDENTS	84	113		170	245	338	486	689	44
SUBTOTAL	171	223	30%	342	493	673	956	1,329	43%
ALL PRODUCTS									
HARDWARE VENDORS	427	598	36	801	1,049	1,353	1,740	2,227	30
INDEPENDENTS	220	275	31	351	460	609	810	1,101	32
TOTAL	647	873	34%	1,152	1,509	1,962	2,550	3,328	31%

EXHIBIT VI-4

THE DUTCH SOFTWARE PRODUCTS MARKET

FORECASTS BY SUBSECTOR, 1979-1984

SUBSECTOR	MARKET FORECAST (BF MILLION)								
	1978	1979	GROWTH 1978-1979 (PERCENT)	1980	1981	1982	1983	1984	AAGR 1979-1984 (PERCENT)
SYSTEMS SOFTWARE									
HARDWARE VENDORS	19	24	29%	30	37	46	56	67	23%
INDEPENDENTS	5	8	82	13	19	25	32	40	38
SUBTOTAL	24	32	41%	43	56	71	88	107	27%
APPLICATIONS SOFTWARE									
HARDWARE VENDORS	17	22	29	27	30	37	48	61	23
INDEPENDENTS	4	9	125	17	28	41	56	72	52
SUBTOTAL	21	31	47%	44	58	78	104	133	34%
ALL PRODUCTS									
HARDWARE VENDORS	36	46	29	57	67	83	104	128	23
INDEPENDENTS	9	17	102	30	47	66	88	112	46
TOTAL	45	63	44%	87	114	149	192	240	31%

- The growth rate for systems software from hardware vendors will decline after 1980, where it reached its highest rate of 46%.

- Applications software in Belgium will increase its overall market share in the aforementioned period by 13%, whereas in the Netherlands applications software will lose 13% of its market share by 1984. This has two main causes:

  - The hardware vendors, especially in the small business machine (SBC) sector, are clearly unbundling and charging more competitively.

  - Personal computers will experience fast expansion, creating a large demand for applications products.

C. USER ATTITUDES AND THE DISPERSAL OF INTELLIGENCE

1. ATTITUDES TOWARDS SYSTEMS SOFTWARE

- Six suppliers received three or more mentions as preferred vendors by the Dutch companies interviewed. All six suppliers were hardware manufacturers.

- Similarly, four suppliers received three or more mentions from Belgian user companies. All four were hardware manufacturers.

- The ranking by number of mentions for the suppliers of systems software in both countries was as follows:

	Belgium	The Netherlands
- Hardware Vendors	36 mentions	43 mentions
- Independents	9 mentions	7 mentions

- Individual vendor ranking among hardware vendors was:

	Belgium	The Netherlands
- IBM	17 mentions	20 mentions
- Honeywell	5 mentions	7 mentions
- Burroughs	1 mention	4 mentions
- Nixdorf	4 mentions	3 mentions
- Olivetti	--	3 mentions
- Univac	3 mentions	1 mention
- Siemens	2 mentions	1 mention
- DEC	--	2 mentions

- Hewlett-Packard, ICL and Philips had one mention each.

- Of those users whose first preference was for a manufacturer's software:

	Belgium	The Netherlands
- IBM	47%	45%
- Honeywell	14%	16%
- Burroughs	3%	9%
- Nixdorf	11%	7%

- The other remaining suppliers accounted for 25% in Belgium and 23% in the Netherlands.

2. ATTITUDES TOWARDS APPLICATIONS SOFTWARE

- Though only 14 manufacturers were mentioned for both countries, 36 services vendors obtained at least one mention. The majority of these were small software companies. Some of the multinational software product vendors named were Westinghouse, Systime, MSA, Pansophic, Cincom and ADR.

- Some of the national software products vendors mentioned were DARO, CSR, Computer Association, ESC, IC-Systems and ORDA-B.

- The most frequently mentioned reason for purchasing outside services was the usefulness of packaged products in coping with standard business system requirements.

- The most frequently quoted reason for dissatisfaction was the inadequacy of maintenance and after-sales support. The next most frequent reason was the inflexibility of products in the face of individual needs. However, only 23% of those responding were dissatisfied with software products.

- Three comments mentioned a supplier, IBM, and all three were complimentary.

D. VENDOR ISSUES AND THE IMPACTS ON PROFITABILITY

1. INTRODUCTION

- The outlook for the software products vendors in Belgium started off poor compared to that of the other kinds of services vendors; however, this picture is beginning to change.

- Computing facilities, as long as they were expensive, were not traditionally accepted as an important or necessary investment except to a few. The advent of the minicomputer has changed attitudes. The application of technology to all facets of business and professional activity over the last few years has accelerated dramatically, although it has not everywhere reached the size and high consideration that the Dutch software products market has achieved in the Netherlands.

- The Dutch software products vendors are to some extent moving towards productisation, with software products and turnkey services showing the highest growth. Competition is fierce in the Dutch market, particularly in the software services sector, which justifies the strong move towards specialisation by services vendors to consolidate their positions in the market.

- The average growth quoted by two Dutch services vendors was 30% during the next five-year timeframe.

- It is notable to mention that all four vendors saw their profitability improving by the impact of the current fast expansion rates.

2. SOFTWARE DEVELOPMENT PLANNING

- The cost recovery period for the services vendors interviewed was variable, stretching over a span of two to three years depending on the pricing set by their competitors, which determined the volume of sales over which the cost was actually recovered.

3. COST OF SALES

- As regards the increasing costs of the vendors' new business in the near future, two of the four services vendors who responded to this question gave a negative answer; both are comprehensive services vendors. The remaining two gave affirmative replies but could not give an estimated percentage for the cost increases.

4. COMPARISON WITH HARDWARE MANUFACTURERS

- Seventy five percent of the companies interviewed did not operate by setting their prices at market value, and hence do not use the prices of hardware manufacturers as a guide to their own.

- On the other hand, all vendors envisaged increased competition from the hardware manufacturers. This would be counterbalanced by selecting tightly defined areas and improving their overall marketing operations.

5. SUPPORT AND SERVICING

- The Dutch services vendors reported the present use of phone-in support centres and remote diagnosis, whereas the Belgian vendors were not planning to use support/servicing activities.

E. COMPETITIVE ANALYSIS

- Exhibits VI-5 and VI-6 rank the leading suppliers by market share of the Dutch and Belgian domestic markets for software products.

- The Dutch services market is probably the most internationally 'open' market in Europe. The strength of the national companies has, therefore, to be attributed solely to their technical, managerial and marketing expertise, which is lacking in the Belgian market even though Brussels, as capital of the EEC, is attracting an increasing number of U.S.-based computer firms as a centre from which to control European operations. However, this should by no means indicate that the market is totally dominated by U.S.-based companies, for there are several European and national suppliers that have all built up relatively large user bases and are likely to maintain these market positions.

EXHIBIT VI-5

TOP SUPPLIER RANKING AND MARKET SHARES:
THE NETHERLANDS, 1979

TYPE / RANK	ALL SOFTWARE PRODUCTS (FL 63 MILLION)	
	SUPPLIER NAME	PERCENT SHARE
1	IBM	23.8%
2	CAP (PANDATA)	19.0
3	RAET	3.5
4	SAMSOM	2.5
5	DATA PROCESS	2.5
6	INFONET	2.5
7	ACD	2.2
8	ARC	2.1
9	VOLMAC	1.0
10	CENTRAL BEHEER	0.5

EXHIBIT VI-6

TOP SUPPLIER RANKING AND MARKET SHARES:
BELGIUM, 1979

TYPE / RANK	ALL SOFTWARE PRODUCTS (BF 873 MILLION)	
	SUPPLIER NAME	PERCENT SHARE
1	ORDINA BENELUX	3.1%
2	STERIABEL	1.3
3	SGAB	1.1
4	CAP/GEMINI/SOGETI	0.8
5	EFFICIENT SA	0.6
6	ORDA-B	0.4
7	UCC/SPI	0.2

- Exhibit VI-5 shows IBM leading the software suppliers in the market, followed by CAP (Pandata). These two foreign multinationals are followed by a set of national companies.

- Seven of the top 10 vendors are national companies, and between them they hold 25% of the total computer services market in the Netherlands. Given these abilities, which are certainly attributes of all the leading companies, it is somehow surprising that they have not yet made the effort to develop large international markets.

- In Belgium a new software products vendor, Ordina Benelux, has a 31% share of the software products market.

  - Exhibit VI-6 shows that foreign companies dominate the Belgian market.

  - It is wrong, however, to assume that Belgium is an extension of neighbouring French and German computer markets.

VII PROFESSIONAL SERVICES

VII PROFESSIONAL SERVICES

A. INTRODUCTION

- The professional services sectors in the Netherlands and Belgium are the second largest sectors to processing services and consist of:

  - Consultancy.
  - Tailored software.
  - Education and training.
  - Other, including contract programming.

B. MARKET DEVELOPMENT (1979-1984)

1. GROWTH, 1979-1980

- Professional services, the second largest services sector in the Netherlands, stands presently at FL 384 million and is expected to grow at an aggregate rate of 25% reaching a size of FL 1,194 million by 1984.

- Exhibits VII-1 and VII-2 show this clearly and forecast the Belgian professional services sector to grow at an aggregate rate of 19% and to reach a size of BF 5,000 million in 1984 as compared to its present size of BF 2,114 million.

- The growth rates for the period 1978-1979 for the Dutch sector and Belgian sector were 47% and 24% respectively, taking current price increases into consideration.

- The project orientation of this sector has allowed and will continue to allow vendors to hide price rises easily because of the difficulty in comparing one project with another. This would apply to fixed-price contracts in the tailored software services area, but less to time-and-materials or cost-plus contracts.

- Exhibits VII-3 and VII-4 show the market developments in Belgium and the Netherlands during the past three years.

- No sudden changes occur in the growth rates of the four subsectors of the Belgian professional services market sector, shown in Exhibit VII-3. The growth rates of the subsectors varied from 23% to 28% in 1978-1979. However, a drop of 5% is shown in the average growth rate in 1979-1980 for software development as well as education and training.

- The longer-term outlook for these services depends on two major driving forces:

  - IBM's desire and need to work more closely with third parties.

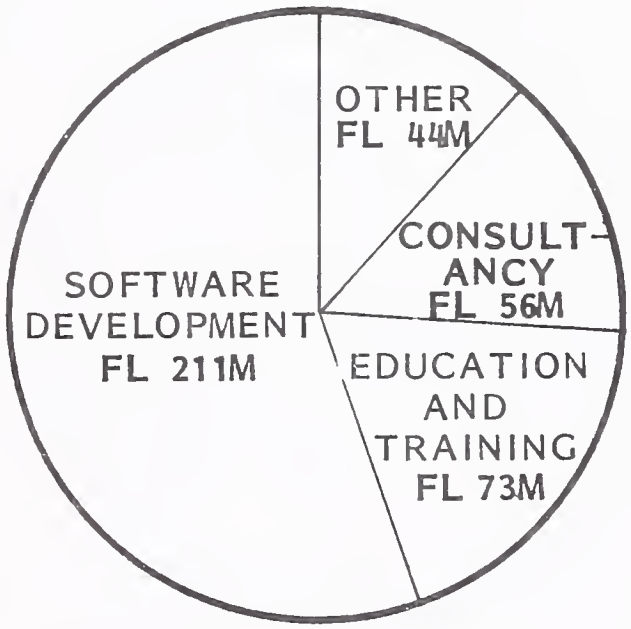
  - Systems work and support contracts for office automation.

- Turnkey systems, which are considered separately, are increasing in importance and are regarded as a true growth area.

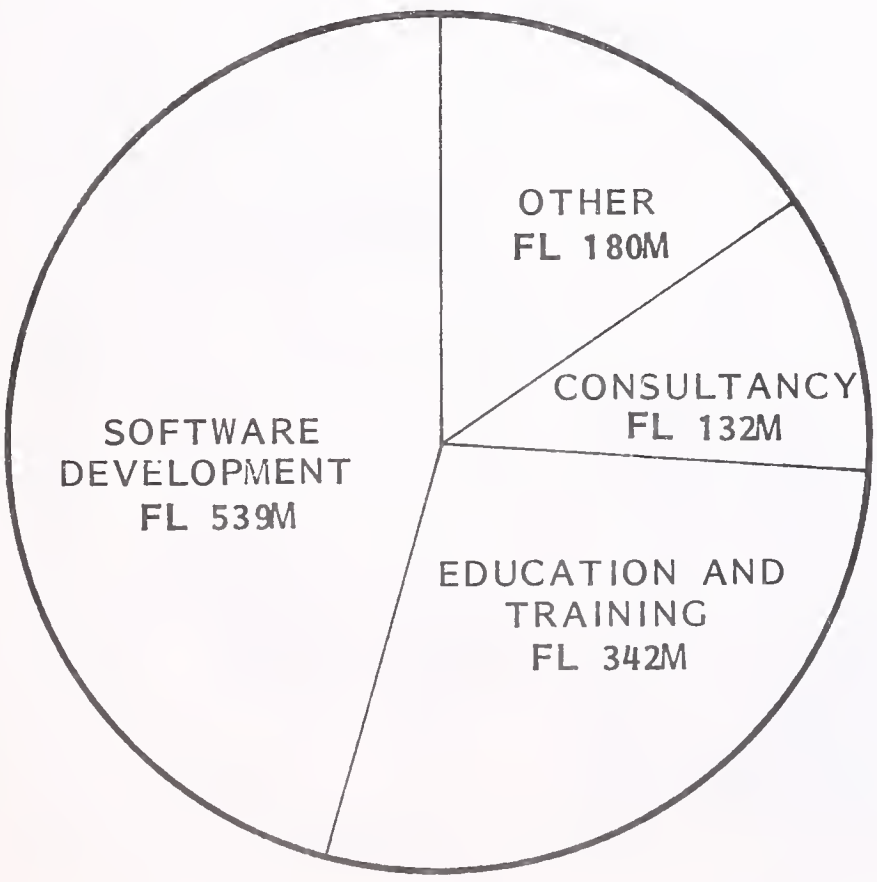
- Contract programming and consultancy services have both experienced a steady growth over the past years. Contract programming has been affected

EXHIBIT VII-1

PROFESSIONAL SERVICES MARKETS
IN THE NETHERLANDS



1979
FL 384 MILLION

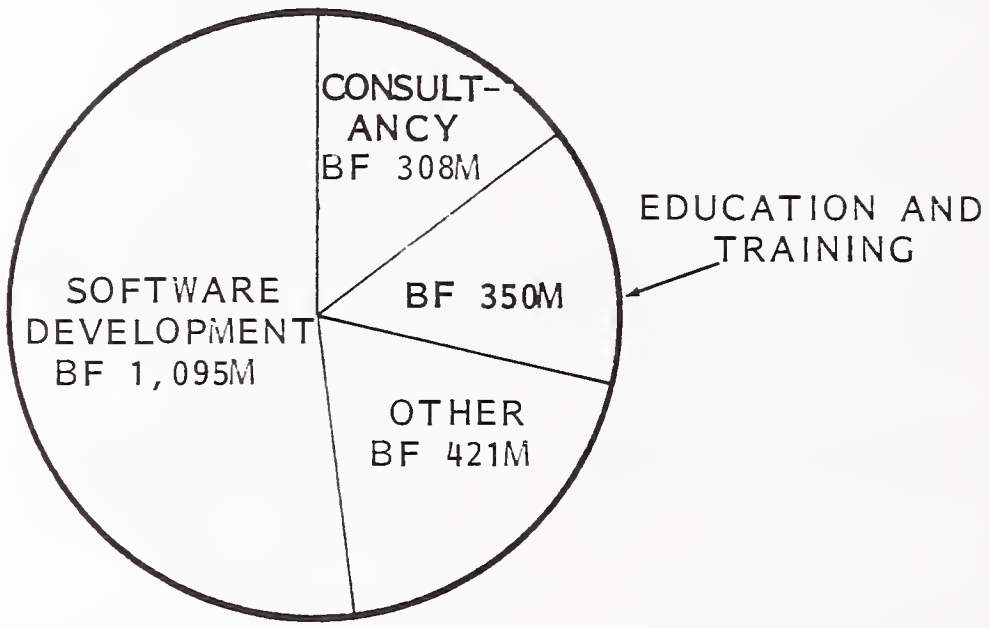


1984
FL, 1,193 MILLION

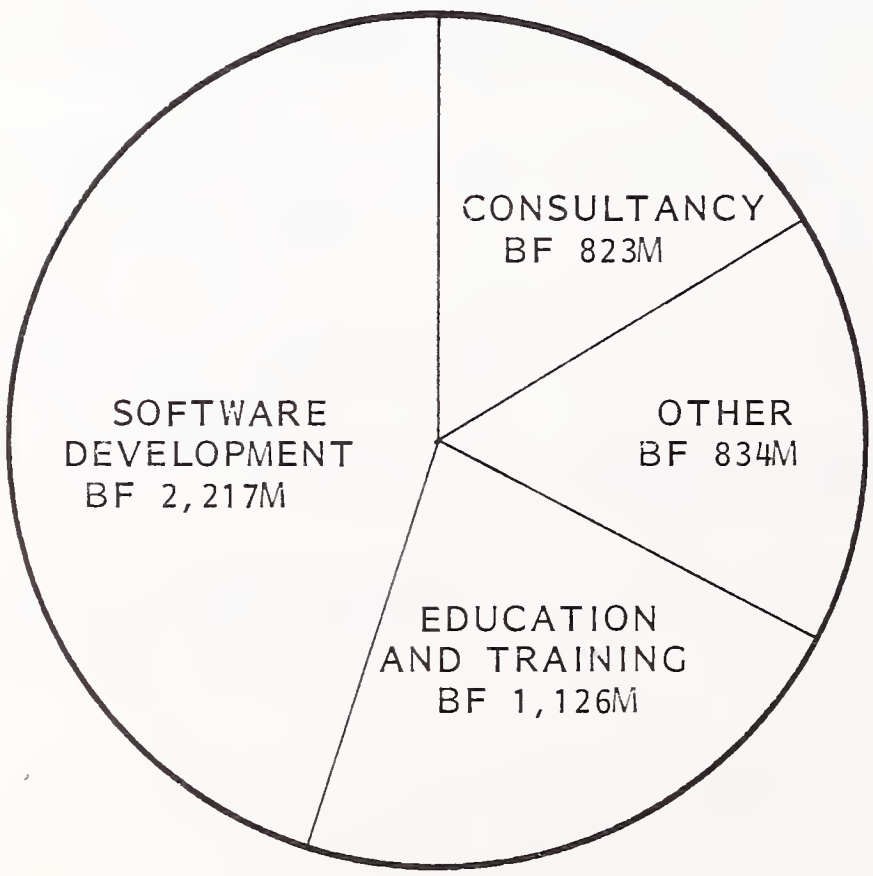
SOURCE: INPUT FORECAST.

EXHIBIT VII-2

PROFESSIONAL SERVICES MARKETS
IN BELGIUM



1979
BF 2,174 MILLION



1984
BF 5,000 MILLION

SOURCE: INPUT FORECAST.

EXHIBIT VII-3

THE BELGIAN SERVICES MARKET SIZES -
PROFESSIONAL SERVICES AND SUBSECTORS,
1978 AND 1979

TYPE OF PROFESSIONAL SERVICE	1978 (REVISED)		AAGR 1978-1979 (PERCENT)	1979		1980		AAGR 1979-1980 (PERCENT)
	BF MILLION	PERCENT		BF MILLION	PERCENT	BF MILLION	PERCENT	
CONSULTANCY	246	14%	25%	308	15%	384	15%	25%
SOFTWARE DEVELOPMENT	890	52	23	1,095	52	1,291	50	18
CONTRACT PROGRAMMING AND OTHER	334	20	26	421	20	509	20	21
EDUCATION AND TRAINING	235	14	28	350	14	374	15	25
TOTAL	1,705	100%	24%	2,174	100%	2,558	100%	21%

EXHIBIT VII-4

THE DUTCH SERVICES MARKET SIZES -
PROFESSIONAL SERVICES AND SUBSECTORS,
1978 AND 1979

TYPE OF PROFESSIONAL SERVICE	1978 (REVISED)		AAGR 1978-1979 (PERCENT)	1979		1980		AAGR 1979-1980 (PERCENT)
	FL MILLION	PERCENT		FL MILLION	PERCENT	FL MILLION	PERCENT	
CONSULTANCY	39	15%	42%	56	15%	72	14%	30%
SOFTWARE DEVELOPMENT	157	60	35	211	55	258	51	22
CONTRACT PROGRAMMING AND OTHER	26	10	69	44	11	64	13	45
EDUCATION AND TRAINING	39	15	86	73	19	110	22	50
TOTAL	261	100%	47%	384	100%	504	100%	31%

by the prevailing inflation and recession in Belgium due to impacts on user budgets. Initially, the halting or suspension of recruitment programmes has caused DP managers to go outside to keep ongoing projects on schedule. More recently they have reported cutbacks to their previous 1981 budget expectations, and the hiring of outside staff is one of the first items to go.

- Exhibit VII-4 examines the same situation in the Netherlands. The highest growth rate attributed to any of the four subsectors of the Dutch professional services market for 1978-1979 was for education and training, having an average aggregate growth rate of 86% for 1978-1979. This was mainly caused by:

  - Manufacturers who are either unbundling their training courses or lessening the amount and number of free courses offered.

  - The growth of new consultancies specializing in DP education.

- The tailored software sector was the second fastest growing subsector in professional services. It was fuelled by continued activity in the minicomputer field in the 1978-1979 period.

- The picture changed for the period 1979-1980, for it is noticeable that the average aggregate growth rates during this year for all the subsectors of professional services have declined.

- There is a relative slow-down in the growth of professional and processing services in the Netherlands in favour of software products and turnkey systems.

- One of the facets of the professional services market that was still having an effect on end user spending in 1979 was the high level of imported labour.

2. FORECASTS, 1980-1984

- In Belgium, the 1981 forecasts for the professional services market are expected to be influenced by the impact of recession and the shift of resources from manufacturing into services.

- Only in education and training is any real growth anticipated, and that is going to be at a very modest rate.

- The other sector growths will be:

  - Consultancy 24%
  - Software 18%
  - Other 18%

- The recession is expected to continue in Belgium until the end of 1982. When interest rates and inflation decline, growth rates will increase.

- Data showing the market size by year, through 1984 for each of the professional services sectors is contained in Exhibits VII-5 and VII-6 for Holland and Belgium respectively.

C. USER ATTITUDES AND THE DISPERSAL OF INTELLIGENCE

1. GENERAL ATTITUDE TOWARDS PROFESSIONAL SERVICES

- Professional services in the Netherlands are looked upon more favourably than in Belgium, where a defensive attitude is evident in some of the comments made by EDP user respondents.

THE DUTCH COMPUTER SERVICES MARKET: PROFESSIONAL SERVICES FORECASTS BY SUBSECTOR, 1980-1984

TYPE OF PROFESSIONAL SERVICE	MARKET FORECASTS IN FL MILLION								
	1978	GROWTH 1978-1979 1979	(PERCENT)	1980	1981	1982	1983	1984	AAGR (PERCENT)
CONSULTANCY	39	56	42%	72	88	101	114	132	19%
SOFTWARE DEVELOPMENT	157	211	35	258	310	365	438	539	21
CONTRACT PROGRAMMING AND OTHER	26	44	69	64	86	112	144	180	33
EDUCATION AND TRAINING	39	73	86	110	156	211	274	342	36
TOTAL	262	384	47%	504	640	789	970	1,193	25%

EXHIBIT VII-6

THE BELGIAN COMPUTER SERVICES MARKET: PROFESSIONAL SERVICES FORECASTS BY SUBSECTOR, 1980-1984

TYPE OF PROFESSIONAL SERVICE	MARKET FORECASTS IN BF MILLION								
	1978	GROWTH 1978-1979 1979	(PERCENT)	1980	1981	1982	1983	1984	AAGR (PERCENT)
CONSULTANCY	246	308	25%	384	476	572	686	823	22%
SOFTWARE DEVELOPMENT	890	1,095	23	1,291	1,520	1,753	1,997	2,217	15
CONTRACT PROGRAMMING AND OTHER	334	421	26	509	600	696	774	834	15
EDUCATION AND TRAINING	235	350	28	374	474	632	843	1,126	30
TOTAL	1,705	2,174	24%	2,558	3,070	3,653	4,300	5,000	19%

- Most DP managers claim that software development is still mainly an in-house activity.

- Only in education and training does there appear to be an unqualified recognition in Belgium of the applicability of this product or service.

- Education and training are experiencing high growth in both countries, but by 1984 they will decrease in importance.

- Along with software products, professional services are rated lower than either processing or hardware services.

  - The comments of respondents on professional services were almost equally divided between satisfied and dissatisfied users.

  - Quite a considerable number of comments were complaints about the high prices charged by professional services vendors.

- Some of the comments warned that it was essential to select suppliers carefully, and eleven stated that their use of these services was a rare or non-existent occurrence.

2. ATTITUDES TOWARDS CONSULTANCY

- Consultancy services are used more in the Netherlands than in Belgium. Consulting services received sixteen comments:

  - Favourable 4

  - Adverse 7

  - Neutral 5

- Neutral comments were often in the form of:

- 'We try not to use consultants.'

- 'We do not need consultants; we are self-sufficient.'

- Among the preferred suppliers were:

  - IBM.

  - Honeywell.

  - Volmac.

  - ICL.

3. ATTITUDES TOWARDS SOFTWARE DEVELOPMENT

- Software development (tailored software) is utilised more in the Netherlands than in Belgium. While it is not the major subsector in professional services, it collected the most mentions. This is mainly due to the fact that tailored software is used in mini-based work for end users.

- Mentions in this area were:

-	Favourable	9
-	Adverse	2
-	Neutral	4

4. ATTITUDES TOWARDS CONTRACT PROGRAMMING AND OTHER SERVICES

- Contract programming is a less marked feature in 1980 and, due to the general competitive and economic situation, the demand for people-orientated services has slowed down.

- In the Netherlands the major company specialising in the contract programming business is Volmac.

5. ATTITUDES TOWARDS EDUCATION AND TRAINING

- Education and training services are well respected among users in the Benelux countries, and most of the favourable professional services comments were based on the education and training services vendors. Thirty-eight comments were received in this sector:

-	Favourable	14
-	Neutral	20
-	Adverse	4

6. PREFERRED SUPPLIERS

- Dutch respondents named IBM, Honeywell and ICL as their preferred professional services suppliers.

- The two preferred suppliers in Belgium were IBM and ADR.

- IBM received the highest number of mentions in both countries.

- Other companies mentioned in the Netherlands were Volmac, Burroughs, Univac and CSP.

- Other Belgium suppliers mentioned were Westinghouse, Sobemap and Pye.

7. DISPERSED COMPUTING

- Education and training is greatly affected by the spread of computing into smaller work units. This drives the requirement for courses and, with the forecast of sales of micro-based products in the next five years, there is every sign of this continuing to be the most buoyant subsector outside the software products field.

- Tailored software development will be more applicable in its traditional areas of minicomputer applications, data communications and networking than in the personal computer market area where programming will be provided in product form.

- However, in leading-edge companies where office automation systems will be implemented at an experimental level, the services which only highly respected system houses and consultancies can provide will be in increasing demand as the 1980s progress.

- In Belgium and to a certain extent in the Netherlands, the market among medium and large companies is still orientated towards centrally operated and controlled data processing systems and staff, but that is changing.

- As more decentralised responsibility is achieved, the markets for application products and services will develop faster, to the detriment of project-orientated, tailor-made professional services.

D. VENDOR ISSUES AND THE IMPACTS ON PROFITABILITY

1. INTRODUCTION

- Six out of the seven Dutch vendors interviewed reported offering professional services; and four out of six Belgian vendors responded to the professional services module of the vendor issue questionnaire.

- The six Dutch vendors belonged to two categories:
  - Three of them were comprehensive services vendors.
  - The remaining three were software houses.
- As for the four Belgian respondents:
  - Two were processing services vendors.
  - One was a software house.
  - The other was a comprehensive services vendor.

2. NEW TYPES OF BUSINESS

- The growth of the hardware component of the traditional software house business was investigated, and only one out of the six Dutch professional services vendors which responded reported selling hardware as part of a turnkey system.
  - None of the remaining vendors touched turnkey projects.
  - The vendor reporting sales of hardware is a comprehensive services vendor and expects this operation to increase in the future.
- As regards the Belgian vendors, none of them reported selling hardware components or working on turnkey projects.
- Four Dutch vendors and all the Belgian vendors interviewed anticipated future markets for computer services in microprocessor-based applications.
- The directions from which the business would come for the Belgian vendors were estimated as follows:

-	From new, first-time users	27%
-	From new, experienced users	31
-	From existing accounts	42
		100%

- Only two of the Dutch respondents reported percentages obtained from new businesses/applications opened up by the microprocessors. These were as follows:

-	From new, first-time users	18%
-	From new, experienced users	30
-	From existing accounts	52
		100%

- In both cases about three quarters of new business is expected to come from the type of users with which professional services companies are used to dealing. There is very little impetus to change from their familiar direct-selling policy.

- Direct versus indirect selling is not an issue with professional services except in their software products divisions.

3. TYPES OF CONTRACT

- The three main types of contract offered by the Dutch respondents were as follows:

- Fixed price 100%
- Time and materials 83%
- Body hire 50%

- The situation with the Belgian respondents was similar:
  - Fixed price 100%
  - Time and materials 100%
  - Body hire 50%
- No other types of contract were mentioned.

4. PRODUCTIVITY, PROFITABILITY AND PRODUCT ORIENTATION

- Exhibits VII-7 and VII-8 illustrate the different emphasis placed by the Dutch and Belgian respondents on the selection of productivity techniques. Techniques have been weighted according to the grade of usage in order to arrive at a rating of importance.

- The highest rating in both countries goes to 'personal motivation', followed by items incorporated in the term 'others', which include:
  - Project management/control techniques.
  - Internal training.
  - Methodology.
  - Formalised project management.

EXHIBIT VII-7

THE DUTCH
RESPONDENTS' USAGE OF
PRODUCTIVITY TECHNIQUES

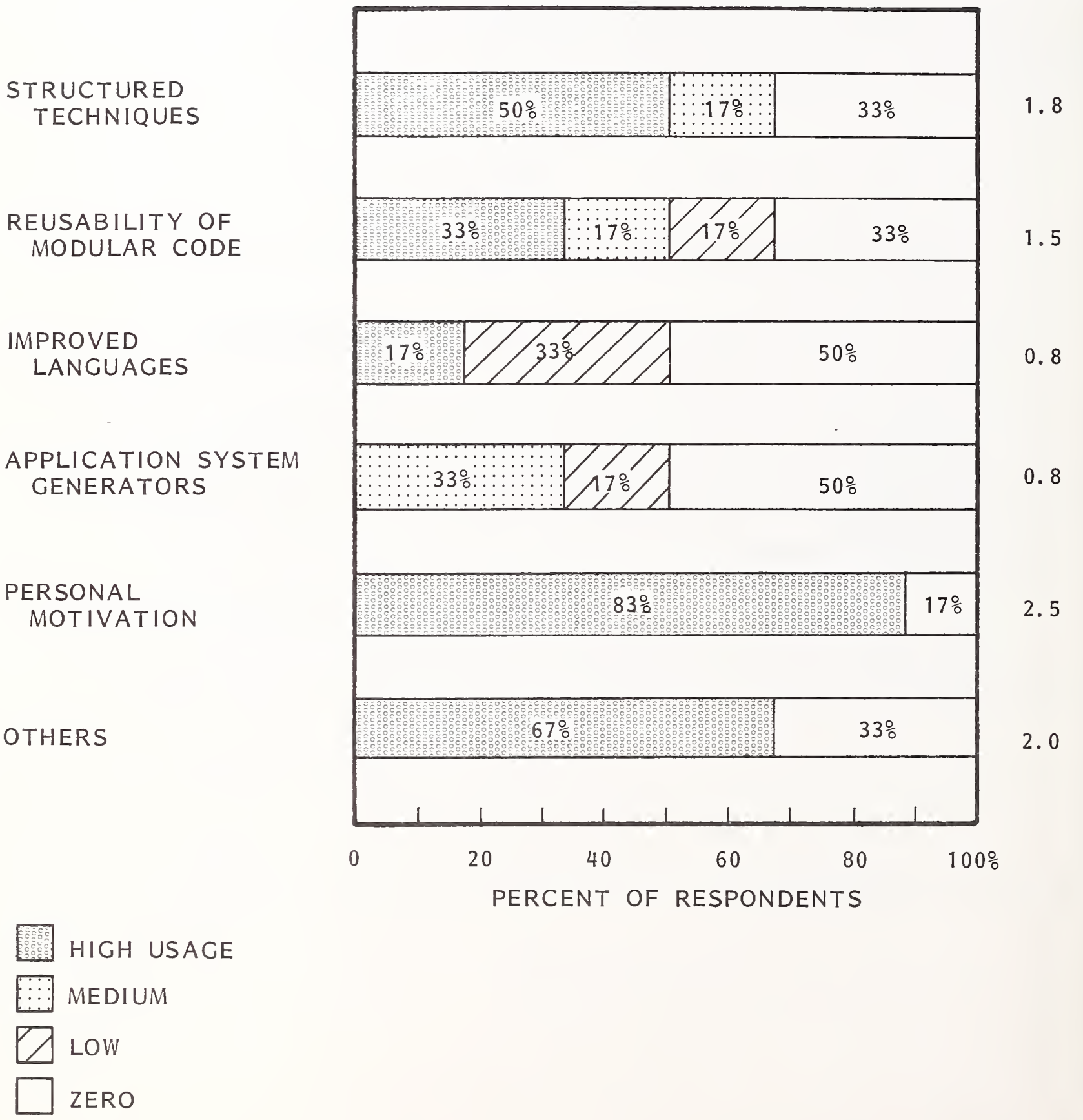
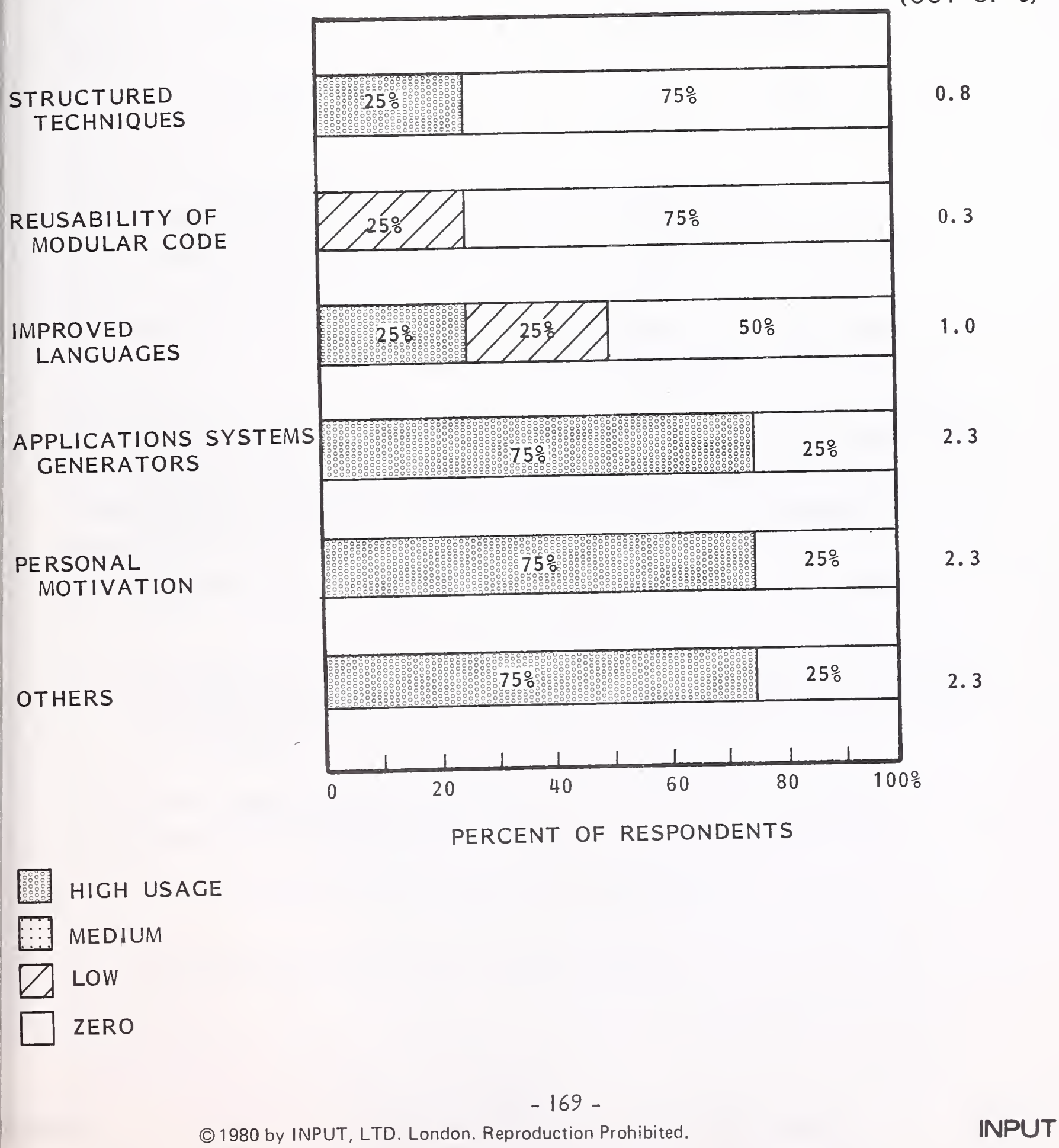


EXHIBIT VII-8

THE BELGIAN
RESPONDENTS' USAGE OF
PRODUCTIVITY TECHNIQUES



- Of the six Dutch companies that responded to the question concerning factors contributing to profits, the average split between these factors was as follows:

- Software productivity techniques	20%
- Project management methods	30
- Calibre of staff	44
- Other	6
	100%

- In both countries calibre of staff enjoys a very high emphasis and is considered as a management criterion by professional services vendors.

- The analysis also shows how far away the vendors are from applying true production engineering principles to this type of work.

- The ways in which Belgian vendors perceive themselves as becoming either more or less product-orientated vary between the limits of 15% and 50%, with an average maximum of productisation of 30%. Whereas the Dutch companies have productisation limits of between 20% and 100%, including one vendor which saw himself being fully product-orientated in five years' time; the average maximum of productisation here was 68%.

- The conclusion from this set of responses is that the professional services vendors are not gearing up to become software product factories.

- On the other hand, there are expectations of diversification into product-orientated fields, and software products are a natural first choice strategy.

5. LANGUAGES

- The breakdown of software development under the different language categories was analysed as follows:

Languages	Belgium	The Netherlands
Assembler	8%	16%
Traditional high-level; e.g., Cobol	52	77
Newer high-level; e.g., Pascal, Coral	18	5
Non-procedural	22	2
	100%	100%

- The most frequently used languages in both countries are the traditional high-level ones such as Cobol and Fortran. It is foreseeable, however, that traditional languages will lose their following slowly, and professional services houses will naturally try to avoid going in the same way as end users.

6. ACCEPTANCE TESTING

- The Dutch as well as the Belgian companies responding to this question supported all stages of acceptance testing. Weak areas concerning the Dutch vendors were:

  - Formal testing on user's site.

  - Formal specification modification procedure.

- Weak areas reported by Belgian companies were:

- Agreement with user on formal acceptance tests.

- Formal specification modification procedure.

- However, the weakest area indicated by both sets of vendors was:

  - Formal vendor's site (factory) tests.

- INPUT concludes that formalising, agreeing and controlling a specification is at a more advanced stage of acceptability than the hard practice of formalising project acceptance.

7. STAFF, SKILLS AND TRAINING

- Skills now being required by Dutch and Belgian respondents are:

  - Data communications.

  - Applications knowledge and business awareness.

  - Micro experience.

  - Technical support for the automated office.

  - Reliance on good systems design.

- The vast majority of the vendors interviewed reported that their use of freelance staff is slight and infrequent and was most common for the analyst and programmer category.

- Dutch and Belgian respondents use the different training methods in the following amounts:

Training Method	Belgium	The Netherlands
Own in-house courses	30%	65%
Manufacturer's courses	5	5
Courses from independents	10	11
On-the-job training	55	19
	100%	100%

8. CONSULTANCY TRENDS

- Consultancy trends in the Netherlands as well as in Belgium show that general implementation advice and specialist consultancy assignments are the most noticeable at present, followed by equipment selection. No clear-cut trend is visible, and all three types of work are equally in demand.

9. IMPACTS ON PROFITABILITY

- Professional services for the Dutch vendors that specialize in it are still very much the traditional skilled craft they have always been. The only exception in the Netherlands is the education and training subsector, where a great deal of packaging and productisation is going on. In Belgium, the consultancy subsector has reached a maturity level; however, education and training are picking up.

- Factors affecting profitability on which Dutch and Belgian vendors alike placed strong emphasis are:

  - Strict project management.

  - Calibre of staff.

- Acceptance testing.

- The effects on company profitability relate to the maturity of the sector and not to the newer innovations in hardware and networking technology, which in the Netherlands have certainly overtaken the industry in the last two years.

- There is no sign of a turnover to a production-line factory approach to the services and software provided, and thus the profit problems of capital-intensive business do not arise.

- The Dutch and Belgian software industries are strong according to their own standard, more so in the Netherlands than in Belgium. Profits are not declared by the majority of the Dutch companies due to private ownership. However, profits of Belgian companies are turned in by the leading companies, especially those with a good proportion of overseas work.

E. COMPETITIVE ANALYSIS

- Exhibits VII-9 and VII-10 rank the leading companies offering professional services by market share in Belgium and the Netherlands in 1979.

- In Belgium, Sobemap is the leading supplier, with 11% of the sector revenues, whereas Volmac in the Netherlands is leading with almost 17% of professional services revenues of the total market.

- For a relatively small market, Holland has in fact sponsored some significant national organisations. None of the top national companies has any serious international pretensions. They have concentrated singlemindedly on establishing their positions in their home market and developing a good understanding of the particular market sectors - geographic and industrial - within which they specialise.

EXHIBIT VII-9

PROFESSIONAL SERVICES SUPPLIER RANKING
BELGIUM - 1979

RANK	SUPPLIER	PERCENT SHARE
1	SOBEMAP	11.2%
2	CIG	7.7
3	EFFICIENT S.A.	5.9
4	STERIABEL	5.8
5	SLIGOS	4.4
6	ORDINA BENELUX	2.6
7	IBM	2.4
8	CAP/GEMINI/SOGETI	2.0
9	OSC	1.0
10	CDC	0.9
11	GEIS	0.9
12	SGAB	0.9

EXHIBIT VII-10

PROFESSIONAL SERVICES SUPPLIER RANKING
THE NETHERLANDS - 1979

RANK	SUPPLIER	PERCENT SHARE
1	VOLMAC	16.5%
2	CAP/GEMINI/SOGETI	6.0
3	CMG	5.4
4	RAET	4.3
5	ARSYCOM	3.4
6	SAMSOM	3.1
7	CDC	2.1
8	LOGICA	2.1
9	ARC	2.0
10	NOVA	1.6
11	DATA PROCESS	1.5
12	ACD	1.5
13	CENTRAL BEHEER	1.3
14	CVI	1.2
15	CCN	1.2
16	DATA LOGIE	0.8
17	EDL	0.6

- However, with a small home market it is hard for a national vendor to develop the scale necessary as a foundation for international activity.

- The only national company apparently in a position to compete on an international basis is Centraal-Beheer, which has already completed some significant acquisitions.

- The top two companies, Volmac and Centraal-Beheer, have a high concentration in the banking and general financial markets, although their emphasis differs; Volmac's is on professional services and Centraal-Beheer's is on processing services, in an effort to become a total systems company.

- The remainder of the national companies - CVI, RAET, CCN, SAMSOM and ARC - have their roots in processing services and use professional services mainly as a support activity.

- Avsycom specialises in the printing and publishing trade and is regarded as a specialist vendor in this application area.

- American companies like GEIS, ADP and CDC can claim leadership status in remote computing services and IBM in the processing services as a whole.

- On the other hand, if one treats Belgium, at least the Flemish part, as little more than an extension of their home market, then their export marketing is virtually nil. Belgium's national companies (excluding headquarters of multinationals) are not large.

- The top ten computer services companies in Belgium reflect the French dominance in that most of them are subsidiaries of French companies.

- IBM, GEIS and CDC concentrate their marketing on multinationals.

- CIG has recently developed serious international activities. All the top ten companies are involved to some extent in professional services.

APPENDIX A: DEFINITIONS

APPENDIX A: DEFINITIONS

- **Available Market** is the sum of all revenues except captive and export.

- **Captive Revenue** is taken as revenue from services sold to parent companies (in a private sector organisation) or to parent bodies/organisations (in the public sector). It is excluded from available market revenues. Revenue from associate companies in a group, or from subsidiaries on the same or lower level in a group, is not classed as captive revenue because it is usually gained in competition with other vendors.

- **Computer Services** are services provided by vendors that perform data processing using a vendor's computers or assist users to perform such functions on their own computers.

- **Distributed Data Processing (DDP)** 'Distributed processing is the deployment of programmable intelligence in order to perform data processing functions where they can be accomplished most effectively, through the electronic interconnection of computers and terminals, arranged in a telecommunications network adapted to the user's characteristics.'

- A **Distributor** purchases small business computers on an OEM basis from the manufacturer and markets them to end users. It may or may not provide turnkey systems.

- **End Users** may buy a system from the hardware supplier(s) and do their own programming, interfacing and installation. Alternately, they may buy a turnkey system from a manufacturer, systems house or hardware integrator.

- **Export Revenue** is revenue earned in one country (the 'destination') by a vendor based in another (the 'source'). Export revenues form part of the available market in the destination country, but are excluded from that of the source.

- A **Hardware Integrator** develops system interface electronics and controllers for the CPU, sensors, peripherals and other ancillary hardware components. It may also develop control systems software in addition to installing the entire system at the end users site.

- A **Minicomputer** is usually a 12-, 16- or 18-bit computer which is provided with limited applications software and support and may represent a portion of a complete larger system or network.

  - The larger minicomputers (often with 24- or 32-bit architecture) are sometimes call midicomputers or megaminis; they have the power of a small mainframe and are often used standalone for specialist applications.

- **Peripherals** include all input, output and storage devices (other than main memory) which are locally connected to the main processor and are not generally included in other categories, such as terminals.

- **Processing Modes** are of three types: facilities management, remote computing services and batch services.

  - Batch Services include data processing performed at vendors' sites on user data which has been physically transported (as opposed to electronically, by communications lines) to those sites. Data entry and data output services, such as OCR and COM processing, are also included.

- Facilities Management (FM) is the management of all or part of a user's data processing functions under a long-term (not less than one year) contract. To qualify, the contractor must directly plan and control, as well as operate, the data processing facility provided to the user on-site through communications lines, free-standing or in mixed mode. Simply providing resources, even though under a long-term contract and/or for all of a user's processing needs, does not qualify as FM.

- Remote Computing Services (RCS) are the provision of data processing to a user by means of terminals at the user's site(s) connected by a data communications network to the vendor's central computer. The three sub-modes of RCS are:

  . Data Base Enquiry, characterized by the retrieval of information from a vendor-maintained database which may be owned by the vendor or a third party.

  . Interactive (Timesharing), characterized by the interaction of the user with the system, primarily for problem solving-time-sharing, but also for data entry and transaction processing -the user is on-line to the program/files.

  . Remote Batch, where the user hands over control of a job to the vendor's computer, which schedules job execution according to priorities and resource requirements.

- **Processing Services** encompass FM, RCS and batch services. They are categorised by type of service (as distinguished from mode of delivery) bought by users, as follows:

  - General Business services are processing services for applications that are common to users across industry categories. Software is provided by the vendor; this can be a complete package, such as a payroll package, or an application 'tool', such as a budgeting model, where a

user provides much of the customising of the finished product it uses. General business processing is often repetitive and transaction-orientated.

- Scientific and Engineering services are the processing of scientific and engineering problems for users across industries. The problems usually involve the solution of mathematical equations. Processing is generally problem solving and is non-repetitive, except in the sense that the same packages or 'tools' are used to address different, but similar, problems.

- Specialty Applications services provide processing for particular functions or problems unique to an industry or industry group. The software is provided by the vendor either as a complete package or as an application 'tool' that the user employs to produce its unique solution. Specialty applications can be either business or scientific in orientation; database services, where the vendor supplies the database and controls access to it (although it may be owned by a third party), are also included under this category. Examples of specialty applications are: seismic data processing, numerically controlled machine tool software development and demand deposit accounting.

- Utility services are those where the vendor provides access to a computer and/or communications network with basic software that enables any user to develop its own problem solution or processing system. These basic tools include terminal-handling software, sorts, language compilers, database management systems, information retrieval software, scientific library routines and other systems software.

- **Professional Services** include management consulting related to EDP, systems consulting, systems design and programming, and other professional services; e.g., education and training. Services can be provided on a basis of 'time and materials', whereby the user pays for the time used of an individual on a daily or other fixed rate, or 'fixed price', where the user pays a fixed fee for a specific task or series of tasks.

- **Small Business Computer**, for the purposes of this study, is a system that is built around a Central Processing Unit (CPU), and that has the ability to utilise at least 20M bytes of disc capacity, provides multiple CRT work-stations, and offers business-orientated systems software support.

- A **Small Business Computer Manufacturer** builds its systems around a proprietary CPU and provides systems software. It may make or buy peripheral equipment and semiconductor devices. Distribution to the end user may be through its company field sales offices, a network of distributors, or both.

- **Software Products** are systems and applications packages that are sold to computer users by equipment manufacturers, independent vendors and others. They include fees for work performed by the vendor to implement a package at the user's site.

- A **Systems House** integrates hardware and software into a total turnkey system to satisfy the data processing requirements of the end user. It may also develop systems software products for license to end users.

- A **Turnkey System** is composed of hardware and software integrated into a total system designed to fulfill completely the processing requirements of one or more applications.

- **User Site Hardware Services (USHS)** is a service which consists of offering a mixed solution to a user's requirements, comprising:

  - Installation of On-Site Hardware - usually comprising a minicomputer or small mainframe at the user's site for local processing of applications best performed on a local machine.

  - Remote Computing on a vendor's mainframe for applications best suited to mainframe power.

- **Annuaire Electronique (Electronic Telephone Directory)** - This is an ambitious experiment carried out by the French Government through the DGT whose immediate object is to replace the printed telephone directory of a specific department in the North of France, Ille-et-Vilaine, by an on-line enquiry service.

- **The 'Big Four'** - The Ministry of Industry has identified four major services companies that will receive every encouragement and aid where needed to develop at home and internationally. They are CAP, CISI, GSi and SG2.

- **Creator** - This term is used to cover the function of defining and administering a database - specifically the bridge between data source and serveur.

- **Database/Data Bank** - In France there is a distinction between the two. A data bank is the repository of all data or text for a particular field. The database holds the codes, extracts and pointers to the data bank to aid in complex search processes.

- **Directly Related Processing Services** - Although not perfectly defined today, this covers revenues attributable to the serveurs for other services performed resulting from enquiries to an on-line database. These could include printing-out or otherwise distributed bulk extracts from the database, or the manipulation of private databases in direct relation to a public on-line database.

- **OLDB** - This is sometimes used as an abbreviation for the on-line database business.

- **Serveur** - This describes the company or organisation actually operating and maintaining the database. It specifically relates to the operational functions; i.e., the computer centre - as opposed to the marketing and production functions.

- **SSCI** - (Societes des Services et de Conseil en Informatique) 'Les SSCI' cover all computer service companies in France.

- **Telematique** - Another of the French 'buzz-names' coined to embrace the whole environment of computer networking. It covers data communications, Transpac, on-line data bases and videotex services. Other terms like 'bureautique' and 'informatique' have become accepted European standards.

- **Teletel** - The physical distribution medium for videotex services in France, the equivalent of Prestel in the U.K.

- **Videotex** - This is equivalent to the U.K.'s Viewdata, covering the technology and standards for access to, and distribution of, information - now a CCITT accepted standard.

- **Videotex - Teletel - The Velizy Experiment** - The second element in the French programme of educating the public in the use of videotex systems is the Teletel service in Velizy, a suburb of Paris.

  - Between 2,000 and 2,500 households in this area will be provided, free of charge, with a terminal connection to the videotex system for an 18-month period.

  - The interactive service will offer private database applications provided by some 200 suppliers using their own computers, and a local database implemented and managed by the PTT through Videotel, the official Teletel serveur.

APPENDIX B: CAMP UPDATE QUESTIONNAIRE

COMPANY ANALYSIS AND MONITORING PROGRAMME

Interviewer
Tele-phone ☐ Post ☐ Interview ☐
Date ☐☐ ☐☐ ☐☐
Respondant _____
Title _____

1. FIRMENDATEN

FIRMENNAME/HAUPTBÜRO	NIEDERLASSUNGEN/ZWEIGSTELLEN
Firmenname _____	
Adresse _____	
_____	
_____	
_____	
Tel. Nr. _____ Telex: _____	

GESCHÄFTSFÜHRER UND FÜHRUNGSKRÄFTE

Geschäfts-leiter:	Name	Titel
Andere Führungs-kräfte	Name	Titel
	Name	Titel
	Name	Titel
	Name	Titel

EIGENTÜMER UND TOCHTERGESELLSCHAFTEN

Datum der Geschäftsgründung.....

Firmenart: Privat ☐ AG ☐ Tochtergesellschaft ☐

Hauptgesellschafter		Niederlassungen	
Firmenname.....	☐ %	Firma.....	☐ %
Firmenname.....	☐ %	Firma.....	☐ %
Firmenname.....	☐ %	Firma.....	☐ %
Firmenname.....	☐ %	Firma.....	☐ %

2.(a) GESCHÄFTSÜBERSICHT

TOTALUMSATZ	JAHRESSCHLUSS ...../...../.....					
LAND	Vorletztes Jahr 1978		Letztes Jahr 1979		Dieses Jahr (Geschätzt) 1980	
	Ums.	Gefang—en (%)	Ums.	Gefang—en (%)	Ums.	Gefang—en (%)
Deutschland						
Europa ohne Deutschland						
Ausserhalb Europa						
Von denen:— U.S.A.						
Mitte—Osten						
Irland						

ZUWACHS %	
Letztes Jahr /Vorletzten Jahr	Dieses Jahr/ Letzten Jahr (Geschätzt)

2. (b) UMSATZQUELLEN

GLIEDERUNG DES INLÄNDISCHEN UMSATZES (PROZENTWEISE)			
DIENSTART		% LETZTES JAHR	% IN 2 JAHREN
FERNVERARBEITUNGSDIENSTE:	Timesharing		
	Batchfernverarbeitung		
BATCHVERARBEITUNG (einschl. Datenvorbereitung)			
FACILITIES MANAGEMENT			
MINICOMPUTER BEI KUNDEN MIT INSTALLIERTEM DATENNETZANSCHLUSS (Terminalmiete eingeschlossen)	(ON-SITE COMPUTING)		
SOFTWARE PRODUKTE:	Anwendungssoftware		
	Industrie-bestimmt		
	Funktion-bestimmt		
	Systemesoftware		
SOFTWARE WARTUNG			
(Verträge für Wartungsunterstützung— Standard Software Produkte)			
PROFESSIONALDIENSTE:	Beratung		
	Spezialsoftware Entwicklung		
	Ausbildung/Training		
	Projektmanagement		
	Ausmietung von kurzfristigen Facharbeitern		
SCHLÜSSELSYSTEME:	Industrie-bestimmt		
	Funktion-bestimmt		
HARDWARE WARTUNG			
SONSTIGE DIENSTE (bitte benennen)			

3. COMPUTER HARDWARE GELIEFERT. Bitte beschreiben Sie bei Name, Modell und Anzahl, die Hardware die Sie geliefert haben, und die Hauptfunktion der Einrichtung.

TYPEN ZENTRALEINHEIT	ANZAHL GELIEFERT	HAUPTFUNKTION PRODUKTION	ENTWICKLUNG	KOMMUNIKATION
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐

TERMINALS
(Modelle und Anzahl)

Anzahl der Terminal Plätze	
MINIS/MIKROS	Anzahl geliefert während 1979
	Durchschnittspreis per Anlage

4. SPRACHEN. Bitte geben Sie an die Programmiersprachen die Sie benutzen, und die auch von Ihren Mitarbeitern volkommenst beherrscht werden.

. . . . . .

. . . . . .

5. AKTIV VERKAUFTE HAUPTPRODUKTE UND DIENSTE. Bitte beschreiben Sie bei Namen und Anwendungen die Produkte und Dienste die Sie momentan am Meisten verkaufen. Wie werden Sie diese weiter entwickeln und/oder ersetzen?

6. INDUSTRIE FACHKENNTNISSE. Bitte zeigen Sie an den Prozentanteil Ihres Fachkenntniss Einkommens von Industriebestimmten Produkten in den folgenden Industriegebieten.

	%	( )		%	( )
Landwirtschaft/Fischen/Bergbau			Grosshandel/Vertrieb		
Lebensmittel/Getränke/Tabak			Einzelhandel/Restaurants/Hotels		
Textilien/Kleider/Schuhe			Transport und Lager		
Holzwaren/Möbel Hersteller			Mitteilungsdienste/Rundfunk		
Papier/Druck/Verlage			Finanzierung/Banken		
Öl/Chemikalien/Kohle/Plastik			Versicherung		
Metallfreie Mineralprodukte			Immobilien/Geschäftsdienste		
Metall Grundindustrie			Zentralregierung		
Metallverarbeitungsindustrie			Länder- u. Gemeinde Verwaltung		
Andere Hersteller			Einziehungswesen/Forschung/Medizin		
Elektrizität/Gas/Wasser			Internationale Körperschaften		
Bauindustrie			Andere (als Beispiel, Freizeit)		

7. ANWENDUNGSGEBIETE Geben Sie bitte an, auf welche Anwendungen Sie sich spezialisieren, und in Prozenten, den Umsatz in jedem Bereich.

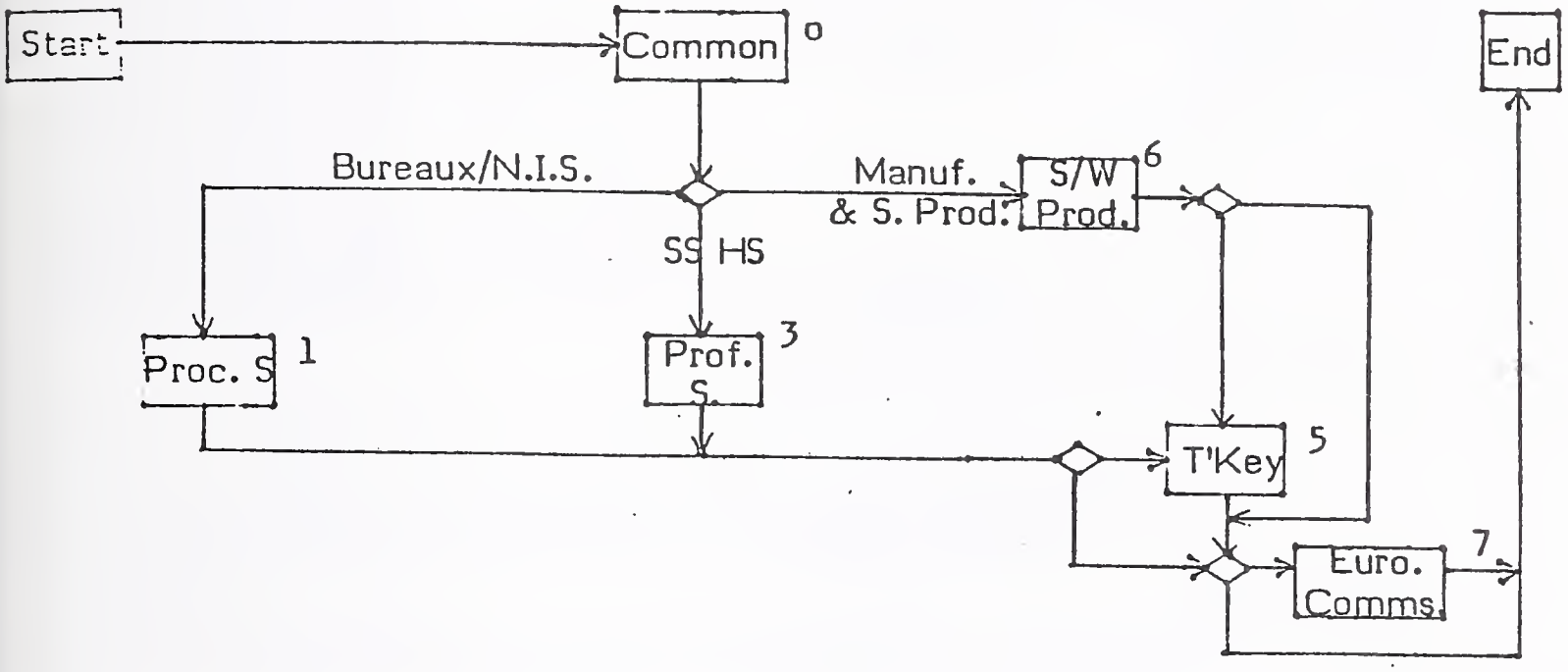
	%	( )		%	( )
Industrie/Überwachungskontrollsysteme			Rechenschaftslegung/Kosten/ Bücherprüfung		
Technik/Entwerfung/Entwicklung			Finanzielle Analyse/Planung		
Bestellungsverfahren/Einkauf/Verkauf			Akten/Aktiva/Kassenkonto		
Produktion/Lagerbestand Kontrollen			Büroautomatisierung/Verwaltung		
Vertrieb/Transport			Datenbankdienste/Bibliothek		
Marketing/Verkauf			Data/Stimme/Text– Übermittlung		
Bezahlung/Gehälter/Belegschaft			Systeme/O&M Entwicklung/DV		

APPENDIX C: VENDOR ATTITUDES QUESTIONNAIRE

MAS/EUROPE 1980 VENDOR QUESTIONNAIRE

QUESTIONNAIRE MODULE FLOW BY VENDOR TYPE

Q. 0. Please indicate (✓ box) modules applicable to your business:



M 0. COMMON ISSUES

Q. 1. Are you placing emphasis in product development (applications) more into cross-industry (X) products or industry speciality (IS) products or is it about equal? [X] [IS] [=]

What will %age split be in 2 yrs. [ ] [ ]

What will %age split be in 5 yrs. [ ] [ ]

Comments

Q. 2. Is your average revenue per customer declining (so leading to increased unit sales cost)? [YES] [NO]

Q. 3. Do your strategic plans take into account the possibilities of:

- continuing inflation (if so please specify how) [YES] [NO]
- continued recession (if so, specify impact) [YES] [NO]

Q. 4. Is staff shortage a real or perceived obstacle to your growth? Real / Perc. / No

If so, in which grades (please rate impact High, Medium, Low)

- Sales	H	M	L
- Sales support	H	M	L
- Software professionals	H	M	L
- Operations staff	H	M	L
- Tech. Support/Engineers	H	M	L
- Managerial	H	M	L
- Other	H	M	L

Q. 5. Which are your three most serious competitors?

a. ---------- b. ---------- c. ----------

M 1. PROCESSING SERVICES (Bureaux, Data Prep, COM & OCR Services)

Q. 10. Defining "real new business" as revenue from new accounts nett of price increases and lost accounts rev., is the rate of growth of your "real new business" slowing down? YES NO Est. [ ] %

- will it be doing so in 2 years time? YES NO Est. [ ] %

Comments

Q. 11. Is in-house DDP impacting your large coy. user-base? YES NO No. of Lost A/cs. [ ] %

If so, is it mostly migration to:

- Stand-alone mini equipment [ ] %
- Connection to in-house networks [ ] %
- Batch processing on central in-house mainframes [ ] %

Comments

Q. 12. Are you finding that new types of user e.g. small businessmen, professionals, dept. heads prefer a mini/micro-based solution YES NO

If so, in what %age of new account prospects do you estimate you lose to:

- another processing bureau Est. [ ] %
- in-house equipment - mini/micro Est. [ ] %
- in-house equipment - mainframe Est. [ ] %

Comments

Q. 13. U.S.H.S. (User Site Hardware Services) - is it the answer to the processing bureau's growth? - (please rate its capabilities High, Medium or Low) H,M,L

- now (i.e. is it happening) [ ]
- in 2 years time [ ]
- in 5 years time [ ]

Comments
(Check H/W. module)

Q. 14. F.M. (Facilities Management) - is/will there be a need for bureaux to offer complete packaged contracts including, hardware, operators, education, software etc.

- now YES NO
- in 2 years time YES NO
- in 5 years time YES NO

Comments

Q.15. Is your business more costly to obtain than in the past? YES NO

If so, please, give an approximate annual %age increase per unit sale [ ] %

Q.16. Are you considering retailing your services through 3rd-parties? (please also give %age annual rev. thus retailed)

- already do YES NO Est. [ ] %
- will in 2 years time YES NO Est. [ ] %

Comments

Q.17. What pricing elements do you use?

- Computer Resource Unit (CRU) YES NO
- Filespace Unit YES NO
- Connect time YES NO
- Printer Usage YES NO
- Other (please specify) ..... YES NO

Comments

Q.18. Do you use Fixed Capacity Pricing Techniques YES NO

	AIM	ACTUAL
If so, what %ages of C.P.U. do you aim to/actually load in this way	[ ] %	[ ] %

Q.19. Which pricing method do you use?

- Historical Cost-plus YES NO
- Market value YES NO
- Other (please specify) ..... YES NO

Comments

Q.20. Over how many accounts/sales do you normally expect to recover software procurement/development costs

- applications packages [ ]
- utilities [ ]

Q.21. What %ages of your software do you obtain from the sources below:

	Use Manuf'er's	Buy	Build
- system software	[ ]	[ ]	[ ]
- applications	[ ]	[ ]	[ ]
- utilities	[ ]	[ ]	[ ]

Comments

Q. 22. To what extent have your recent profits been bolstered by external or temporary factors e.g. by:

- already depreciated equipment	High	Med	Low	effect
- falling hardware costs	H	M	L	
- price increases matching inflation	H	M	L	
- Other (please specify)	H	M	L	

Comments

Q. 23. As a team, do you feel you spend too much time on day-to-day profit management to the detriment of:

- medium term planning (next 2 years)	YES	NO
- longer-term planning (next 5 years)	YES	NO

Comments

Q. 24. May we have a copy of your current services tariff structure/price list. If YES, please send to INPUT's Piccadilly office. YES NO

M 3. PROFESSIONAL SERVICES

Q. 30. To what extent has hardware revenue contributed to your recent growth? ☐ %

Comment

Q. 31. Will the computer services sector get its fair share of new business/applications opened up by the microprocessor? YES NO

If so, will it be mainly from: (please also give estim. % of new business likely to be gained.

- new accounts (first-time users) YES NO Est. ☐ %
- new accounts (established users) YES NO Est. ☐ %
- existing accounts YES NO Est. ☐ %

Comments

Q. 32. What types of contract do you offer:

- Fixed price YES NO
- Time and materials YES NO
- Body hire YES NO
- Other (please specify) ..... YES NO

Comments

Q. 33. What productivity aids/methods do you employ: (Rate usage High, Medium, Low)

- Structured techniques e.g. M. Jackson H M L
- Reusability of modular code H M L
- Improved languages H M L
- Application system generators e.g. H M L
- Personal motivation H M L
- Other (please specify) ..... H M L

Comments

Q. 34. What factors contribute to your profitability

Cont. %

- Software productivity techniques ☐
- Project management methods ☐
- Calibre of your staff ☐
- Other (specify) ..... ☐

100%

Comment

Q. 35. Do you see your company becoming fully product-orientated?

in 2yrs 5yrs Never

(Please also give estim. max. rev. % achievable from products Max. ☐ %

If so, would you trade-off end-user orientation for productisation? YES NO

Comment

Q. 36. What approximate %ages of your software is developed using the following languages:

- Assembler ☐ %
- Traditional high-level - COBOL, FORTRAN, BASIC, ALGOL 60, RPG ☐ %
- Newer high-level e.g. - PL1, CORAL 66, RTL2, PASCAL, APL, ☐ %
- Non-Procedural e.g. Query languages, non-host DBMS ☐ %
- Other (please specify) ..... ☐ %

100%

Q. 37. What types of system acceptance testing do you enforce?

- Agree spec. in writing with user YES NO
- Design acceptance tests jointly with user YES NO
- Get user to agree to a formal set of acceptance tests YES NO
- Undertake formal 'factory' tests on your site YES NO
- Undertake formal tests on user's site YES NO
- Enforce formal spec. modification procedure YES NO

Q. 38. What changes in skill requirements are you noticing - particularly for the new decentralised applications - DBMS, DDP (Data Comms), Office Automation?

Q. 39. Do you employ freelance staff (or subcontract work out) in any of the following grades?

	Sometimes	Often	Never
- Specialist consultants	☐	☐	☐
- Analysts & programmers	☐	☐	☐
- Operators	☐	☐	☐
- Other	☐	☐	☐

Q. 40. How do you train your staff - (please also give approx. %age usage of training method)

- Your own courses — YES NO [ ] %
- Manufacturers' courses — YES NO [ ] %
- Courses from Independent training companies — YES NO [ ] %
- 'On the job' training — YES NO [ ] %

Q. 41. What trends in consultancy assignments are you noticing? - towards:

- general implementation advice — YES NO
- equipment selection — YES NO
- specialist e.g. performance measurement — YES NO
- Other ..... — YES NO

Comments

CATALOG NO. M E 0 6 [ ] [ ]

M 5. HARDWARE SERVICES (Turnkey, Integrators, Distributors, TPM - Third Party Maintenance)

Q. 50. Do you provide your own hardware/engineering facilities?
If so, are they used for:

	YES	NO
- Manufacture	YES	NO
- Integration	YES	NO
- Commissioning	YES	NO
- Maintenance	YES	NO
- Other	YES	NO

Q. 51. Do you have a policy of vertical integration of systems? (i.e. make as much as poss. yourself of a product line) YES NO

	In-house	Bought-in
What is %age breakdown of systems cost between 'made in-house' and 'bought in'?	[ ]	[ ] %

Q. 52. Do you differentiate between working and investment capital? YES NO

Comments

Q. 53. Do you provide up-front investment for system cost components?

	YES	NO
- Software products - system	YES	NO
- Software products - application	YES	NO
- Hardware systems, pre-sale stock of	YES	NO
- Spares stock	YES	NO
- Other	YES	NO

OMIT Q. 54 IF ANSWERED MODULE (PROF. SERVICES)

Q. 54. What types of system acceptance testing do you enforce?

	YES	NO
- Agree spec. in writing with user	YES	NO
- Design acceptance tests jointly with user	YES	NO
- Get user to agree to a formal set of acceptance tests	YES	NO
- Undertake formal 'factory' tests on your site	YES	NO
- Undertake formal tests on user's site	YES	NO
- Enforce formal spec. modification procedure	YES	NO

Q. 55. Do you offer warranty? and for what period on:

			Mths	Days
- hardware	YES	NO	[ ]	[ ]
- software	YES	NO	[ ]	[ ]

CATALOG NO. M E 0 6 [ ] [ ]

M 6. SOFTWARE PRODUCTS

Q. 60. Which are your three most heavily used products?

Approx. No of installations

1 ..... [ ]

2 ..... [ ]

3 ..... [ ]

Q. 61. Do you expect to experience the same high annual growth rates for your products as at present (20 - 30%):

- in 2 years time? YES NO Est. [ ] %
- in 5 years time? YES NO Est. [ ] %

Q. 62. Is profitability impacted by this fast expansion? YES NO

Q. 63. Over how many systems/sales do you normally expect to recover software development costs?

- systems software [ ]
- applications packages [ ]
- utilities [ ]

Q. 64. Is your new business more costly to obtain than in the past? YES NO

If so, please, give an approximate annual %age increase per unit sale [ ] %

Q. 65.&66. INDEPENDENTS ONLY

Q. 65. Manufacturers software appears less expensive than independents.

Do you use their pricing as a guide to your own? YES NO

If so, what factor of difference between the two do you consider the market will tolerate? + [ ] %

Comments

Q. 66. Do you anticipate increased competition from IBM's and other manufacturers' products?

- Short-term i.e. next 2 years YES NO
- Long-term i.e. next 5 years YES NO

If so, how will you counter it. _____

Q. 67. May we have a copy of your current price list?
If YES, please send to INPUT's Piccadilly office. YES NO

Q. 68. Support/servicing activities are crucial to productivity? Do you use or are you planning to use:

- phone-in support centres Use Plan No
- remote diagnosis/fixing on-line Use Plan No

If neither, how else do you expect to contain escalating personnel costs

M 7. EUROPEAN COMMUNICATIONS ENVIRONMENT

Q. 70. Do you see your growth prospects adversely affected by PTT monopoly positions?

- short-term i.e. over next 2 years — YES / NO
- long-term i.e. over next 5 years — YES / NO

Q. 71. Which aspects impact your business most:
(please rate severity of impact High, Medium, Low, Negative (i.e. good for you)

	H,M,L,N
- Tariff increases	
- Provision of leased lines degraded (i.e. nos., quality, servicing etc. poorer)	
- Trans-border data flow obstructed by legislation or restrictive practices	
- Network connections more rigorously/legalistically vetted	
- Increased competition from Public Data Networks (Transpac etc.)	
- Increased competition from PTT as services suppliers (e.g. N.D.P.S.)	
- Viewdata and videotext applications	
- Other (please specify)	

Comments

Q. 72. If your answer to Q. 70 was YES in either part, what are your strategic plans to offset the loss of business?

- to diversify into other areas — YES / NO
- try to improve your own competitive edge — YES / NO
- Other (please specify) ..... — YES / NO

Comments

Q. 73. Do you expect to enhance your product range within the next 2 or 5 years by adding one or more of the following services to your repertoire:

Yes within	2yrs	5yrs	No	Already Do
- addition of a network to your bureau centres				
- use of Public Data Networks (PDNs) to offer added-value services				
- offering Viewdata type services				
- use of Euronet for supply of Database services				
- offering Database services by some other means				

Comments

Q.74. Do you see opportunities for computer services in connection with 'Office of the Future' business communications?

If so, in connection with:

- User-site word-processing centres/networks YES NO
- Electronic mail YES NO
- Facsimile/telecopier YES NO
- Image processing systems/CRT graphics YES NO
- Multi-function equipment e.g. intelligent PABX YES NO

Comments

APPENDIX D: USER PANEL QUESTIONNAIRE

CATALOG NO. EU80 (1)

FRAGEBOGEN FÜR EDV BENÜTZER

A. ALLGEMEINE AUSKÜNFTE

1. Hauptgeschäftstäftstätigung _____

2. Industrie Kennziffer _____ (2)

3. Anzahl der gesamten Belegschaft _____ (3)

4. Anzahl der EDV Angestellten _____ (4)

5. Jahresumsatz DM _____ m (6)

6. Aktiva DM _____ m (7)

7. Falls Sie andere Grössenmassstäbe benützen, können Sie diese bitte angeben _____ (8)

8. Betreffen sich die Angaben auf:
   ☐ Tochtergesellschaft/Niederlassung, oder
   ☐ Dachgesellschaft (9)

10. Im Falle einer Tochtergesellschaft/Niederlassung, wie gross ist die Dachgesellschaft?

    DM _____ m _____ (10)

B. EDV PLÄNE

11. Was sind Ihre Hauptziele und Prioritäten innerhalb der nächsten drei Jahre in Reihenfolge der Wicktigkeit? Bitte bewerten Sie Ihre Prioritäten für jedes Jahr in der Reihenfolge 1 bis 5 (1 = der wichstigste Punkt).

KATEGORIE (11–61)	RANGORDNUNG		
	1980	1981	1982
Anwendungsumänderungen	(11)	(12)	(13)
Entwicklung von neuer Batchsysteme	(14)	(15)	(16)
Einrichtung von On-line Systeme	(17)	(18)	(19)
DBMS Entwicklung und Einrichtung	(20)	(21)	(22)
Entwicklung/Einrichtung von Datennetzen	(23)	(24)	(25)
Neue Mainframe Einrichtung	(26)	(27)	(28)
Minicomputer Einrichtung	(29)	(30)	(31)
Peripherien Einrichtung	(32)	(33)	(34)
Änderung von Betriebssystemen	(35)	(36)	(37)
Zentralisierung der EDV Kontrolle	(38)	(39)	(40)
Dezentralisierung der EDV Kontrolle	(41)	(42)	(43)
Entwicklung von weittragenden EDV Pläne	(44)	(45)	(46)
Entwicklungs- und Umänderungstermine einzuhalten	(47)	(48)	(49)
Verbesserung der Leistungsfähigkeit des EDV Personals	(50)	(51)	(52)
Eingliederung der Büroautomatisierung mit EDV	(53)	(54)	(55)
Sonstiges (bitte kurz beschreiben und nach Prioritätsrang angeben)			
_____	(56)	(57)	(58)
_____	(59)	(60)	(61)

12. Beeinflüssen die Möglichkeiten eines Geschäftsrückgang ihr Budget?

Ja ☐ Nein ☐ (62)

13. Falls ja, mit welchen Prozentsatz____% (63), und in welchen Gebieten werden Sie das Budget reduzieren?_____

_____ (64)

C. EDV PROBLEME

14. Welche sind die bedeutendsten Probleme die Sie in 1980 ersehen?
(nach Rangordnung der Wichtigkeit von 1 zu 5)
(1 = der dringendste Punkt).

KATEGORIE	RANGORDNUNG 1980	
Personal Ergänzung		(65)
Übermässige Systementwicklungszeiten		(66)
Personal Ausbildung		(67)
Mangelhaftes EDV Budget		(68)
Mangel an allgemeinen Geschäftsverständnissen		(69)
Verbesserung von Datenmitteilungseinrichtungen		(70)
Ungenügende Beteiligung der EDV Benutzer mit Systeme/Anwendungen		(71)
Mangelhafte Hardware Instandhaltung		(72)
Mangelhafte Software Systeme		(73)
Operationsverbesserungen		(75)
Planung und Kontrolleverbesserungen		(77)
Sonstige Probleme (bitte nach Prioritätsrang angeben)_____		(74)
_____		(76)
_____		(78)

D. EDV ANWENDUNGEN

15. Welche neue Anwendungen werden Sie noch während des Jahres 1980 entwickeln oder kaufen? Was sind die Operationsmethoden und die Bedeutung die Sie auf Ihre Gesamtentwicklung haben? (Bitte bewerten Sie die wichtigsten Anwendungen nach Rangordnung, 1 = besonders wichtig, usw.) Zeigen Sie auch an mit einem Häckchen die schon laufenden Anwendungsgebiete in der Kolonne "Laufend".

ANWENDUNGSGEBIETE	NEU–ENTWICKLUNG RANGORDNUNG		OPERATIONS–METHODE (V) IM HAUS	OPERATIONS–METHODE (V) AUSSER HAUS		QUELLE (V) IM HAUS	QUELLE (V) AUSSER HAUS		LAUFEND	
Industrielle/Produktionssteuersysteme		(79)			(80)			(81)		(82)
Technik/Entwerfung/Forschung		(83)			(84)			(85)		(86)
Bestellungseingang/Fakturierung/ Einkauf/Verkauf		(87)			(88)			(89)		(90)
Produktion/Lagerhaltung		(91)			(92)			(93)		(94)
Versand/Transport		(95)			(96)			(97)		(98)
Marketing/Verkauf		(99)			(100)			(101)		(102)
Lohn/Gehalt/Personalwesen		(103)			(104)			(115)		(106)
Rechenschaft/Finanz		(107)			(108)			(109)		(110)
Sonstiges (bitte beschreiben)		(111)			(112)			(113)		(114)
		(115)			(116)			(117)		(118)
		(119)			(120)			(121)		(122)

E. EDV BUDGET

16. Wie hoch ist Ihr EDV Budget für 1980? (DM_____) (124)

17. Sind Datenübertragungen, Softwareprodukte, Arbeitsausbildungen und Materialen eingeschlossen?

Ja ☐ Nein ☐ (125)

18. Falls NEIN, welche von diesen Gebieten sind nicht eingeschlossen?

_____ (126)

19. Wurde Ihr Budget von der andauernden Inflation beeinflusst?

Ja ☐ Nein ☐ (127)

20. Falls ja, um wieviel Prozent? ____% (128)

21. In welchen Gebieten?_____ (129)

22. Könnten Sie bitte die Einteilungen Ihres 1980 EDV Budget angeben und diesbezüglich eine Aufspaltung zwischen Zentral- und aussenliegenden Anlagen anzeigen: auch die für 1981 erwartete Erhöhung/Verringerung der Einteilungen.

BUDGET KATEGORIEN	1980 Gesamtes Budget			Erwartete Änderung im Jahre 1981		
	(DM)	% Zentral	% Fern	Zuwachs %	Rückgang %	
Personal (einschl. Rekrutierung, Ausbildung, usw.)	(130)	(131)	(132)			(133)
Zentraleinheit	(134)	(135)	(136)			(137)
Peripherien	(138)	(139)	(140)			(141)
Minicomputer	(142)	(143)	(144)			(145)
Terminals	(146)	(147)	(148)			(149)
Datenmitteilungs- hardware/software	(150)	(151)	(152)			(153)
Software (Einkauf oder Lease)	(154)	(155)	(156)			(157)
Verkäufer Wartungsdiensten	(158)	(159)	(160)			(161)
Dienstleistungen (äusserlich)	(162)	(163)	(164)			(165)
Bereitstellungen und andere_____	(166)	(167)	(168)			(169)

23. Gibt es in Ihrem Budget Ausgaben für Schlüsselsysteme, die Hardware- und Anwendungssoftware "gebrauchsfertig" verbinden?

Ja ☐ Nein ☐ (170)

Wenn ja, wieviel wird für solche Systeme ausgegeben? (DM _____) (171)

F. EDV HARDWARE

24. Bitte zeigen Sie an, die Anzahl allgemeiner Systeme, Zentral— und fern, die eingerichtet oder bestellt sind.

LIEFERANT	SERIE/MODELLE	ANZAHL INSTALLIERT	ANZAHL BESTELLT	ANZAHL BEI DER HAUPTVERW.	ANZAHL BEI ZWEIGSTELLEN
IBM	303X; 370/158-168	_____(172)	_____(173)	_____(174)	_____(175)
	4300	_____(176)	_____(177)	_____(178)	_____(179)
	8100/3790	_____(180)	_____(181)	_____(182)	_____(183)
	Other 370 & 360	_____(184)	_____(185)	_____(186)	_____(187)
	System 3, 32, 34, 38	_____(188)	_____(189)	_____(190)	_____(191)
	Other e.g. Series 1	_____(192)	_____(193)	_____(194)	_____(195)

Falls der Lieferant nicht IBM ist, bitte geben Sie an den:

NAMEN DER LIEFERANT	MODELLE	ANZAHL INSTALLIERT	ANZAHL BESTELLT	ANZAHL BEI DER HAUPTVERW.	ANZAHL BEI ZWEIGSTELLEN
_____(196)	_____(197)	_____(198)	_____(199)	_____(200)	_____(201)
_____(202)	_____(203)	_____(204)	_____(205)	_____(206)	_____(207)
_____(208)	_____(209)	_____(210)	_____(211)	_____(212)	_____(213)

25. Bitte geben Sie an, wieviele der folgenden Geräte schon benützt werden und welche Sie planen zu bestellen.

IN BENÜTZUNG	KEINE PLÄNE	BEABSICHTIGT	ANZAHL ANLAGEN	ERWARTETER ZUWACHS % 1980-1981
a) Minicomputers	☐	(214)_____(215)	_____(216)	_____(217)
b) Mikrocomputers/Persönliche Computers	☐	(218)_____(219)	_____(220)	_____(221)
c) Intelligente Terminals	☐	(222) _____(223)	_____(224)	_____(225)
d) Nicht—intelligente terminals	☐	(226)_____(227)	_____(228)	_____(229)

Wie wird die Wahl des Lieferanten und der Gebrauch der Folgenden von der EDV-Abteilung Kontrolliert?

(i) Minicomputers _____(230)

(ii) Microcomputers _____(231)

G. ALLGEMEINE BERATUNG

	Jetzt	Bis 1985
26. Ziehen Sie vor, dass der Preis der Beratung bei dem Software Einkauf:		
– mit dem Softwarepreis eingeschlossen ist	☐	☐
– auf einer Sonderrechnung erscheint	☐	☐
27. Wenn die Beratung in dem Softwarepreis mit eingeschlossen ist, soll die Beratung:		
– allgemein sein (um die System- installierung zu fördern)	☐	☐
– sich spezifisch auf das Produkt beziehen	☐	☐
28. Wenn die Beratung auf einer Sonderrechnung erscheint, soll diese Beratung das Folgende umfassen:		
– Technische Assistenz bei der Softwareeinrichtung	☐	☐
– Annehmenshilfe für Systembenützer	☐	☐

Software Entwicklung

29. Bei der Entwicklung individueller Software, würden Sie vorziehen, eine äusserliche Beratung zu benützen:		
– für das ganze Projektmanagement und die Entwicklung	☐	☐
– für zusätzliche Personal unter Ihrer Aufsicht	☐	☐

Anwendungspakete

30. Bei der Einrichtung von Anwendungspaketen, würden Sie vorziehen, eine äusserliche Beratung zu benützen:		
– für die ganze Anwendungsinstallierung	☐	☐
– Für zusätzliche Personal unter Ihrer Aufsicht	☐	☐

Sonstige Software Dienstleistungen

31. Haben Sie noch andere Vorzüge für Software Dienstleistungen? Haben Sie Bedarf an andere Software Dienstleistungen?

Bitte kurz beschreiben_____

32. Es gibt viele verschiedene Ebenen der Software Wartung und Unterstützung, die von Software Lieferanten verfügbar sind.

Bitte geben Sie den Prioritätsrang an, von den folgenden vorgeschlagenen Software–Wartungs–Vertragsdienstmöglichkeiten, für heute und auch für die Zukunft (z.B. 1 = höchstes Preferenz, 5 = wenigstes).

EBENEN	Jetzt	Bis 1985
(i) Voller Update-dienst mit On-Site Reparierungs, und Vorbeugungswartung.	☐	☐
(ii) Voller Update-dienst mit ferner Reparierungs– und Vorbeugungswartung (Fernsprechunterstützung).	☐	☐
(iii) Voller Update–dienst, selbstinstallierung, keine Unterstützung.	☐	☐
(iv) Selbstwahl Update-dienst, Selbstinstallierung, keine Unterstützung.	☐	☐
(v) Sonstige Ebenen.	☐	☐

H. ZUFRIEDENHEIT MIT DIENST– UND SOFTWARELEISTUNGEN; UND ZUKÜNFTIGE NÜTZUNG

33. Bitte die Zufriedenheitsebenen (Hoch, Mittel, Niedrig) mit verschiedenen Gebrauchswachstum/Rückgang über den nächsten zwei Jahren auftzen.

DIENST/SYSTEM	ZUFRIEDENHEIT (nur 1 ankreuzen)				VERÄNDERUNG 1980/1981	
	Nicht gebraucht	Hoch	Mittel	Niedrig	Zuwachs %	Ruckgang %
Äusserlich:-						
Timesharing	_____ (243)	____(244)	____(245)	____(246)	_____(247)	_____(248)
Batchfernverarbeitung	_____ (249)	____(250)	____(251)	____(252)	_____(253)	_____(254)
Batchverarbeitung	_____ (255)	____(256)	____(257)	____(258)	_____(259)	_____(266)
Facilities Management	_____ (261)	____(262)	____(263)	____(264)	_____(265)	_____(272)
Schlüsselsysteme	_____ (267)	____(268)	____(269)	____(270)	_____(271)	_____(278)
Wartung (Hardware)	_____ (273)	____(274)	____(275)	____(276)	_____(277)	_____(284)
Wartung (Software)						
Systemsoftwareprodukte	_____ (279)	____(280)	____(281)	____(282)	_____(283)	_____(284)
Anwendungssoftware–produkte	_____ (285)	____(286)	____(287)	____(288)	_____(289)	_____(290)
Dienstleistungen:-						
Beratung	_____ (291)	____(292)	____(293)	____(294)	_____(295)	_____(296)
Softwareentwicklung	_____ (297)	____(298)	____(299)	____(300)	_____(301)	_____(302)
Ausbildung/Training	_____ (303)	____(304)	____(305)	____(306)	_____(307)	_____(308)

H. ZUFRIEDENHEIT MIT DIENST–UND SOFTWARELEISTUNGEN; UND ZUKÜNFTIGE NÜTZUNG : 2

33. An Ihrer eigenen Erfahrung von Dienstleistungslieferanten, geben Sie bitte an, Ihre Meinung von den Obengenannten unter den folgenden vier (4) Kategorien (wenn nicht angewendet, bitte "N/A" einsetzen).

(i) Verarbeitung (ausser Haus)_____ (309)

(ii) Schlüsselsysteme_____ (310)

(iii) Softwareprodukte_____ (311)

(iv) Beratung, Software Entwicklungsdienst, Ausbildung _____

_____ (312)

34. Bitte nennen Sie die drei (3) Dienstgesellschaften die Sie vorziehen, in denselben Kategorien. Wenn nicht angewendet, bitte "N/A" einsetzen.

DIENST	Erste Preferenz	Zweite Preferenz	Dritte Preferenz
Verarbeitung (ausser Haus)	(313)	(314)	(315)
Schlüsselsysteme	(316)	(317)	(318)
Softwareprodukte	(319)	(320)	(321)
Beratung, usw.	(322)	(323)	(324)

I. COMPUTERDIENSTLEISTUNGEN– UND SOFTWARE AUSGABEN AUSSER HAUS

36. Benützt Ihre Firma Computerdienstleistungen ausser Haus, die nicht durch die EDV Abteilung kontrolliert sind?

JA ☐ NEIN ☐ (232)

37. Wenn JA, wie hoch waren die Kosten dieser sämtlichen Dienstleistungen, die Sie im Jahre 1979 ausgaben? (DM _____) (233)

38. Welchen Zuwachs– oder Rückgangsprozente erwarten Sie zwischen den Jahren 1979 und 1980: _____% (234); und zwischen 1980 und 1981 _____% (235)

39. Welche Abteilungen nützen diese Dienstleistungen?

Finanz	_____%	(236)
Direktion/Verwaltung	_____%	(237)
Personal Abteilung	_____%	(238)
Forschung u.Entwicklung/ Ingenierwesen	_____%	(239)
Operation/Herstellung	_____%	(240)
Marketing/Verkauf	_____%	(241)
Andere (bitte benennen) _____	_____%	(242)

J. BURO DER ZUKUNFT

40. Bitte anzeigen, welche von den folgenden Mitteilungsdienstleistungen und Büroautomatisierungsfacilitäten jetzt, oder in der Zukunft benützt werden; auch wenn die EDV–Verwaltung dafür verantwortlich ist.

KATEGORIE	STATUS PLÄNE						EDV. VERANTWORTLICHKEIT					
	JETZT IM GE–BRAUCH	1980 BIS 1982	1983 BIS 1985	NICHT GEPLANT	NICHT BEKANNT		EDV ABT. HEUTE VERANT-WORTLICH	1980 BIS 1982	1983 BIS 1985	NICHT GEPLANT	NICHT BEKANNT	
DATENMITTEILUNGEN						(325)						(326)
• Dial up						(327)						(328)
• Verbindung unter "Lease"						(329)						(330)
• Paketnetz						(331)						(332)
• Telex												
DATABASE DIENSTLEISTUNGEN						(333)						(334)
• Prestel (Bildschirmtext)						(335)						(336)
• Euronet						(337)						(338)
• Eigenes Viewdata						(339)						(340)
BÜROAUTOMATISIERUNG												
• Elektronische Post						(341)						(342)
• Textverarbeitung						(343)						(344)
• Bildverarbeitung						(345)						(346)
• Telekopier/Facsimile						(347)						(348)
• CRT Graphik						(349)						(350)

41. Welche Forschungen oder Informationen würden Ihren Entwicklungsarbeiten am Besten fördern? Ihre Antwort auf dieser Frage wird INPUT helfen, diese Entwicklung im Gang zu setzen.