

NEW PROCESSING OPPORTUNITIES IN BANKING

INPUT

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CONTENTS

	<u>Page</u>
I INTRODUCTION	1
A. Scope	1
B. Methodology	2
II EXECUTIVE SUMMARY	3
A. Overview	3
B. Findings	6
C. Recommendations	18
III MARKET ANALYSIS AND FORECAST	23
A. Introduction	23
B. Remote Computing Services	25
C. Facility Management	28
D. Batch Processing	30
IV PRESENT BANKING ENVIRONMENT	33
A. Overview Of Significant Trends	33
B. Banking's Profitability Problems	34
C. Competition	40
D. Structural Changes (Deregulation And National Banking)	45
E. Technology	53
V PRESENT AND EMERGING BANKING NEEDS	57
A. General Needs	57
1. Cost Reduction	57
2. Revenue Increase	64
B. Retail Banking	69
C. Cash Management Systems	81
D. Commercial Banking (Other Than Cash Management)	85
E. Trust- And Securities-Related	88
VI VENDOR PLANS AND ACTIVITIES	91
A. Analysis Of Present Revenue Sources	91
B. Fast-Growing Applications	98
C. Analysis Of Vendors Of Bank Processing	104
D. Profile Of Processing Service Respondents	111
E. Areas Of Opportunity	118

	<u>Page</u>
APPENDIX A: BANK RESPONDENT PROFILE	127
APPENDIX B: DEFINITIONS	129
APPENDIX C: RELATED INPUT REPORTS	145
APPENDIX D: QUESTIONNAIRES	147
INDEX	163

NEW PROCESSING OPPORTUNITIES IN BANKING

EXHIBITS

		<u>Page</u>	
II	-1	Growth Rate Of Computing Services In Banking	7
	-2	Relative Importance Of Environmental Factors	12
	-3	Range Of Vendor Services Offered By Processing Vendors	14
III	-1	Forecast Of Remote Computing Services In The Banking Industry	26
	-2	Forecast Of Facility Management In The Banking Industry	29
	-3	Forecast Of Batch Processing In The Banking Industry	31
IV	-1	Possible Trend For Bank Costs And Revenues, 1982-1987	35
	-2	Effect Of Adverse Conditions On Financial Institutions	41
	-3	Financial Competition	44
V	-1	Factors Leading To Increased Use Of Computing	58
	-2	Computing Applications Associated With Cost Reductions	63
	-3	Relative Importance Of Revenue To Banking Institutions	65
	-4	Vendors' Concern About EDP Services Offered By Banks	70
	-5	Retail Banking Needs Noted By Respondents	71
	-6	Products Of Greatest Interest To Commercial Banks	73
	-7	Areas Of Banking Where New Or Enhanced Systems Will Appear In The Future	74
	-8	Estimated Growth Of Transactions From Bank Terminals	78
	-9	Service Package Offerings (Club Accounts)	80
	-10	Features Of Cash Management Information Systems	82
	-11	Need To Offer Cash Management Systems	83
	-12	Products Sold To Corporations And Other Banks By Large Commercial Banks	86
VI	-1	Revenue From Processing By Service Mode	92
	-2	Demand For Industry-Specific Applications	94
	-3	Estimate Of Respondents' Processing Revenue Distribution By Banking Departments	99
	-4	Applications Identified As Fast-Growing	100

	<u>Page</u>
-5 Review Of Vendor Applications And Services	106
-6 Vendor Groupings	110
-7 Respondents' Processing Services	112
-8 Growth Rates Forecast By Vendors	116
-9 Customer Problems That Could Affect Business	117
B -1 Industry Sector Definitions	138

I INTRODUCTION

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A. SCOPE

- This INPUT report, part of the 1982 Information Services Industry Program, examines the use of processing services by banking institutions, commercial banks, savings institutions (savings and loan associations, mutual savings banks and other thrifts), and credit unions.
- This study analyzes the environment of the banking industry and reviews present trends and emerging needs, in order to identify new processing services opportunities for vendors.
- The report emphasizes forces affecting the banking industry, including:
 - The adverse economic climate for banking.
 - Competition from nonbanking institutions.
 - Deregulation.
 - The role of technology.
- An analysis of these forces and current and emerging needs was used to develop recommendations for vendors of processing services.

B. METHODOLOGY

- Interviews were conducted with 38 banking institutions and 17 vendors during the first quarter of 1982.
 - The interview profile for users is shown in Appendix A.
 - Vendors included six firms with over \$30 million, five firms with \$10 to \$30 million, and six firms with less than \$10 million in banking revenues.
- A summary of terms is included in Appendix B.
- INPUT clients and industry experts were also contacted for ideas and suggestions that might be used in the study.
- Information was also gathered from other INPUT studies and files. The related INPUT reports are listed in Appendix C.
- Copies of the interview questionnaires are included in Appendix D.
- Totals and growth rates were calculated from numbers before rounding. Figures were rounded to the nearest \$5 million in most cases, to eliminate any implications of a higher degree of accuracy than should be inferred from the data.

II EXECUTIVE SUMMARY

II EXECUTIVE SUMMARY

A. OVERVIEW

- Changes in the banking industry will have a significant impact on vendors of computing services.
- Processing business is shifting rapidly from one vendor to another, or to in-house computers.
 - One of the 10 largest banks in the country is considering a change from one leading vendor of cash management systems to another.
 - Wells Fargo and Crocker National Bank transferred automated teller machine (ATM) processing in-house during the last year.
- Facility management and professional services are growing rapidly.
 - Electronic Data Systems (EDS) is the largest facilities management processing company, and most of its business comes from banking.
 - Control Data Corporation (CDC) has an estimated \$30 million of credit union processing.

- Subsidiaries of banks that offer processing services are changing services for strategic and economic reasons.
 - Marquette National Bank dropped the processing services that its subsidiary, Marquette Service Corporation, provided to over 12 banking institutions.
 - Systematics and other service companies picked up work from customers who did not choose to go in-house on minicomputers.
- Several bank subsidiaries are aggressively expanding and promoting processing business.
 - The Bank of America has added an office concerned with national expansion to its processing subsidiary.
 - Mellon Bank is promoting its correspondent banking capability which features on-line terminal capabilities, remote MICR processing, and a customer information file (CIF) capability for retail accounts.
- The Mellon services can be resold by banks who are their respondents.
- Although processing services vendors are handling more applications, such as cash management and retail account processing, application requirements are still changing rapidly.
- Revenue from cash management information systems has increased over 50% during the last two years to more than \$100 million in 1981. Revenue for this application increased about 100% for Automatic Data Processing (ADP) during 1981.

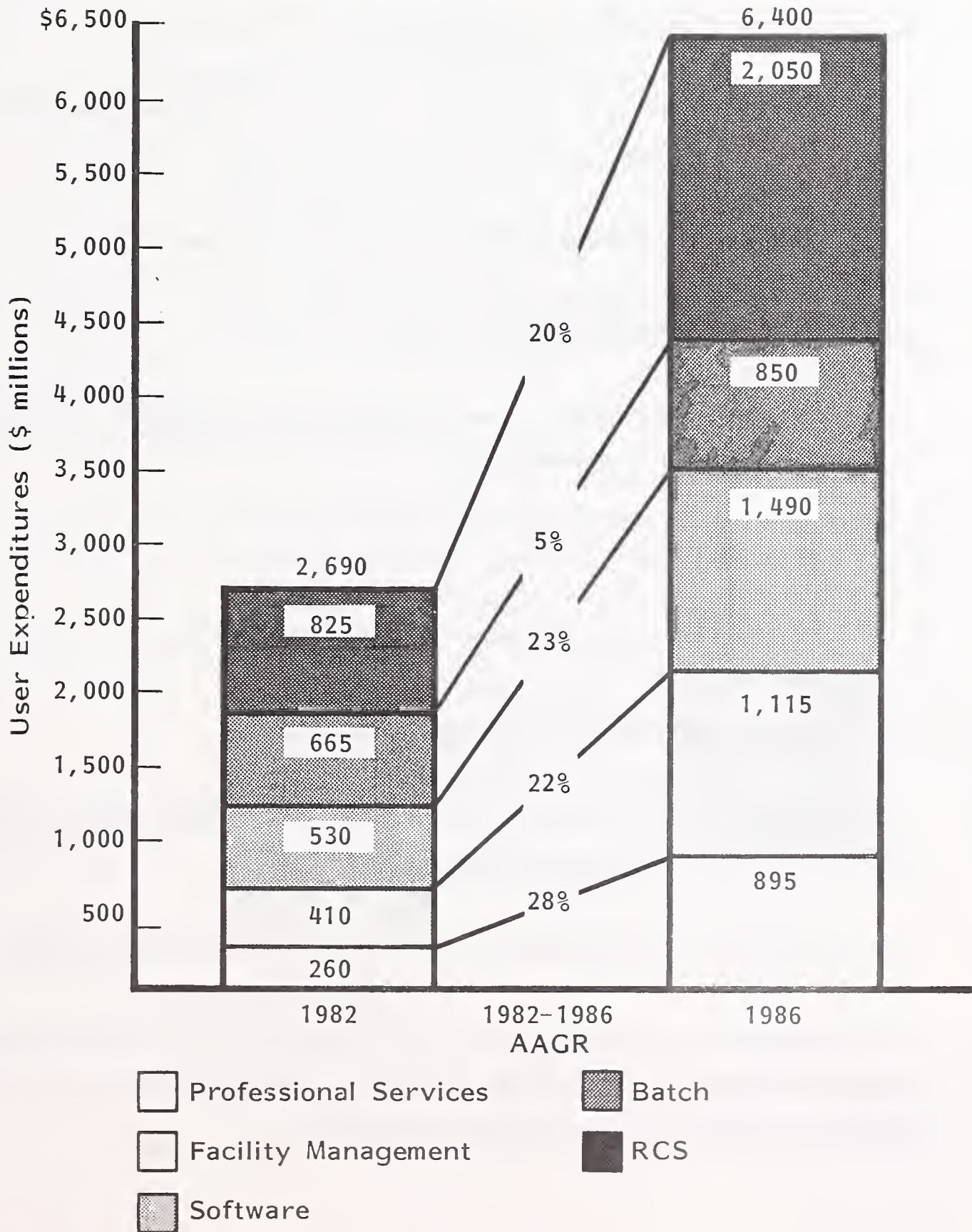
- Large commercial banks are anticipating major changes in application requirements for cash management information systems. The aim is to enable customers to review transactions automatically and cross reference them to internal accounting systems.
- Software packages and turnkey systems are now more popular in banking.
 - Anacom's Customer Integrated/Reference File (CI/RF), BANKSERV, and Continuous Integrated System (CIS) software systems have had outstanding success, and are being followed by the Corporate Banking System (CBS).
 - GEISCO has over 20 banking turnkey systems installed.
- New vendors find banks willing to try new software on mainframes, processing services, or even personal computers.
 - The British firm, Business Intelligence Service (BIS) has sold software for international banking to many U.S. banks.
 - A large New York bank is purchasing financial planning software for Wang OIS from Desktop Financial Systems Inc.
- The economic, competitive, regulatory, and technological climate that banking institutions find themselves in helps explain the sudden growth and changes in the computer service business.
- Reasons for growth and change can also be found in entrepreneurial activities of computer service vendors, bank subsidiaries, and other firms who are leading banks into new product opportunities.

B. FINDINGS

- Banking institutions will use more in-house computing and computing services over the next five years.
- Some classes of computing service will grow at much higher rates, as shown in Exhibit II-1.
- In each category in Exhibit II-1, the growth rate for banking-related (industry) applications will be higher than for functional or utility applications, except for batch processing where function-specific processing will grow the fastest.
 - The present focus on costs and profitability may cause certain functional applications such as financial modeling to increase at a faster rate.
 - Financial modeling, as well as other functional applications, will move in-house rapidly, however.
- While functional applications will become more complex, they will be more directly oriented to banking needs.
 - Financial modeling and analysis will be done with packages customized for cost accounting and financial analysis in banking. General purpose financial modeling will move in-house on mini-and microcomputers, if not on mainframe systems.
 - Payroll processing for banks will include more human resource capabilities.
- Commercial banks, savings and loans, and larger credit unions will spend more on software in order to move processing work in-house and automate manual work.

EXHIBIT II-1

GROWTH RATE OF COMPUTING SERVICES IN BANKING



- Value added processing that exploits network, DBMS, graphics, or hardware services including specialized terminals will be less likely to move in-house.
- Banks' attempts to reduce costs will mean new opportunities for processing services, particularly facility management services that make it possible to reduce the number and cost of people and equipment.
- The fastest-growing processing applications include:
 - Cash management information systems for corporations and correspondent banks.
 - ATM networks and associated processing services.
 - Pay by phone processing.
 - Processing to support card-related services (credit card and check authorization and guarantee).
 - Trust services.
 - NOW account processing for S&Ls and credit unions.
 - Facility management for credit unions.
- Cash management information systems grew over 50% during the last two years according to vendors offering the service.
- The growth rate of ATM processing during the last year was over 35%.
- Performance measurement applications are growing most rapidly among trust products offered by processing services. This application uses financial modeling and data bases of pricing information.

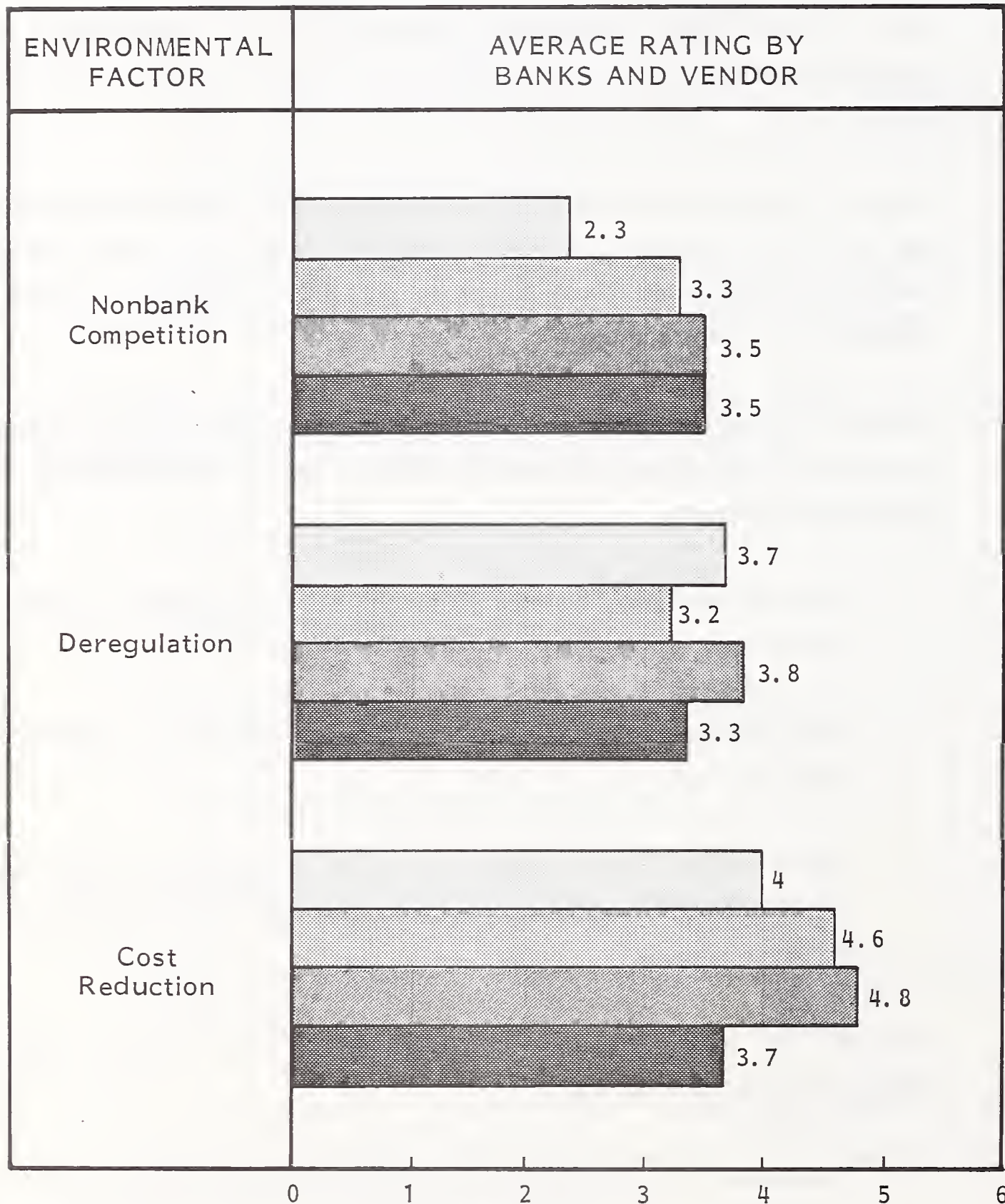
- The present needs of banking arise largely from four conditions:
 - Adverse economic conditions must be faced. Increases in costs for funds, operational equipment, space, and personnel are higher than revenue for many banking institutions, particularly savings and loan associations and mutual savings banks.
 - Competition from nonbanking firms as well as from banks is intense for depository funds, credit business, and financial services.
 - Money market funds are now the prime competitors for depository funds.
 - The Merrill Lynch Cash Management Account (CMA) and plans of Sears and other firms are making banks apprehensive.
 - Changes in regulations.
 - Interest rate ceilings (Regulation Q) will be phased out and banks will be permitted to offer new products and services and to open branches in other states.
 - Commercial banks hope there will be a change to the Glass Steagall Act so that they can offer investment banking types of services and money market mutual funds.
 - Thrifts want to expand personal loan powers and offer commercial loans.
 - Technological advances.
 - There are new developments in data communications, networks, computer terminals, and logical components in business equipment.

- These advances make many of the fast-growing new services in banks feasible.
- Processing vendors believe that they can aid banking institutions with new technology and product improvements to meet competition.
 - These vendors have been active in introducing and expanding on-line retail or consumer products such as ATM and Point of Sale (POS) units, pay by phone, and home banking.
 - Vendors have also helped domestic and international cash management and funds transfer systems developing network capabilities.
- Processing services have also aided banks to compete in the consumer financial service market through developments such as:
 - Retail customer information file.
 - NOW account processing.
 - Expanded card capabilities such as check guarantee.
 - Processing for new savings instruments.
 - Processing for consumer loans.
 - Services that can be offered to depositors or packaged with existing products.
- Noting the possibilities of deregulation, vendors have begun to look for processing opportunities in money market mutual funds, investment services, and new credit vehicles that banks might offer.

- Nevertheless, most processing vendors do not fully appreciate the emphasis which banks give to present business forces. These forces are shown in Exhibit II-2.
- Banks are more highly motivated by cost reduction than most vendors realize. On the average, vendors ranked cost reduction fourth as a reason for action by banks.
- Banks are reducing costs because forecasts show the cost of funds, operations, and personnel growing over the immediate future at a faster rate than revenues. Even banks that expect to do well are putting a premium on eliminating or limiting costs.
- The need for cost reduction has increased the interest in financial modeling as a means of studying the profitability of bank products, organizational units in banks, and customers.
 - Financial modeling systems with data base capabilities are used more widely.
 - Banks are seeking professional services to help them develop financial models as well.
 - Banks are acquiring packages from small modeling systems such as VisiCalc to large-scale systems that simulate bank profitability under various scenarios.
- Pressures for cost reductions are leading banks to consider alternative methods of production as well.
 - Processing work is being moved in-house and/or to new vendors.
 - Manual processing is being automated on mini- and microcomputers.

EXHIBIT II-2

RELATIVE IMPORTANCE OF ENVIRONMENTAL FACTORS



□ = Thrifts

■ = Large Commercial Banks

▨ = Small Commercial Banks

■ = Vendors of Processing Services

Rating: 1 = Low Importance, 5 = High Importance

- Automated and unautomated applications are being moved to turnkey systems or to facility management contracts.
- Vendors do not always anticipate the changes users are considering. Over 40% of the banking institutions contacted were reviewing possible changes to remote computing services (RCS).
- The larger and more successful vendors have developed many products and services to make them less exposed to changes in one product. A range of products can also help to defray the investment needed for marketing services to banks.
- A wide range of products and services that processing vendors offer is listed in Exhibit II-3.
- Vendors specializing in software and professional services are less likely to offer a range of services.
- Several large vendors commented that research in products and applications was necessary since some applications were always going to move in-house.
- Half the vendors contacted are also prepared to offer software and/or hardware services when customers move work in-house.
- One interesting finding is the extent to which processing firms are using or experimenting with microcomputers. (Apple II and III, TRS 80-II, TI 990/4, Rixon, etc.)
 - Microcomputers are offered as a part of hardware services by at least four large processing firms.
 - Microcomputers were being test-marketed in real estate, personal trust, cash management, and financial modeling by other firms.

EXHIBIT II-3

RANGE OF VENDOR SERVICES OFFERED BY PROCESSING VENDORS

SERVICE	EXAMPLE
Remote Processing	Remote processing of money market sweep accounts
Facility Management	Contracts to run a money transfer switch on a customer's site
Batch Processing	Credit card ticket processing
Hardware services	Intelligent terminals used for cash management
Proprietary Data Bases	Security prices supplied to banks
DBMS Capability	Ramis, Focus, IMS used remotely for personal data
Graphics Capability	Graphs of financial modeling reports
Network Services	Network use for cash management
Software Packages	Retail CIF sold by Anacomp
Turnkey Systems	GEISCO Max System for retail banks
Professional Services	Consulting to develop financial models and program them for banks
Non Computer Service Business	Money market sweep accounts

- Even though vendors are prepared to aid in a conversion to in-house processes, some banks are in such a hurry for a way to save costs that they will move processing to mini- and microcomputers before finding out if their RCS vendor offers an alternative. Two bank respondents moved RCS work in-house and without knowing that their RCS vendor could have supplied a turnkey system for that purpose.
- Small vendors, who cannot afford a range of products and services, stress application knowledge in certain banking fields.
 - One small vendor stressed real estate-related applications.
 - Another small vendor emphasized his considerable expertise in developing financial models.
- Small vendors who did not stress banking application expertise or a range of services lost revenue in banking.
- Banks are more inclined to try applications without modification than they were in the past.
 - Turnkey applications on all sizes of computers have proliferated as a result.
 - Major processing vendors and large banks are now offering software systems to banks.
- The opportunity to save costs or to introduce new products and services with low development cost are incentives for banks to try new software.
- Processing vendors and banking institutions tend to agree on which applications are most appropriate in the current banking environment. These include:

- Newer retail products including card-based services, such as ATM and POS, and pay by phone, home banking, IRA, Keogh, SEP, CD, and new savings instruments.
 - Cash management information systems.
 - Personal trust and other trust systems.
- Banks and vendors both emphasize ATM networks and switches among other retail products.
 - Interface capabilities for automatic clearing houses (ACH) debits and credits were not emphasized although industry experts strongly anticipate this need over the next five years.
 - Vendors are aiming at segments of the retail or consumer banking market with a total set of capabilities.
 - Anacomp offers a turnkey approach that will handle all aspects of on-line consumer activity and retail banking on a large-scale IBM system.
 - GEISCO offers a modular approach based on the Tandem computer for on-line retail applications.
 - EDS is now offering the ROI turnkey system for consumer banking in small institutions on an IBM System 34.
 - EDS, CDC, and Anacomp also offer facility management for consumer or retail banking operations in small banks including thrifts and credit unions.
 - ADP is adding the ability to transfer funds for investment or loan payments to its telephone bill paying service. This integrated approach is called In-Touch.

- BIS is offering a turnkey system for international banking which has attracted medium-sized and large commercial banks.
- Shear Development Corporation, SEI, and Bradford National Corporation offer turnkey systems for trust processing.
- Some processing vendors and other firms are using their knowledge of banking to plan and develop products.
 - Many of these products are directed at loan, personal and corporate trust, and consumer services business.
 - One large processing vendor has developed an approach to international banking with a general consulting firm.
- Vendors are also working on processing systems that will compete with bank services, particularly payment services.
- Banking institutions, nonbank competitors, and processing services may evolve into three classes of institutions:
 - Banks that serve multinational and large corporate firms with an array of interrelated bank products. Computer processing vendors will provide services and products to these companies.
 - Specialized financial firms that serve needs such as trust or mortgage banking or other industries such as the securities or shipping industries. Computer processing firms will serve these companies as well.
 - Low-cost financial processors handling card or ATM processing, money market funds, retail banking, or all processing for smaller banks.

C. RECOMMENDATIONS

- INPUT believes that service vendors must do more planning for products, product strategies, marketing, and relations with customers when addressing the banking market whose strategies are changing rapidly; e.g., regarding products such as cash management, money market sweeps, and accounts like the CMA.
- Products in use should be reviewed regularly with banking customers. Banks may change their objectives and then consider vendors with different products. Objectives are changing for cash management, and those vendors who are working closely with banks will be best prepared to offer the new terminal capabilities.
- In the current banking climate, decisions for sudden changes in processing may be made. For example, a number of banks will incorporate money market sweep capabilities (a new service) into retail bank operations during 1982.
- Banks discussed needs for changes and enhancements to popular products such as cash management information systems, ATM networks, and trust processing during this study. Vendors should make sure they know about these needs.
- INPUT recommends that vendors use newsletters and meetings of groups interested in certain products to stay aware of user needs and maintain contact with bank customers. For example, ADP has regular meetings of users of its cash management system.
- The needs of present or prospective banking customers should be continually analyzed and reviewed by:
 - Using surveys to anticipate new requirements.

- Establishing contacts and feedback from users and prospects that lead the industry.
- Seizing the opportunity to market additional products or to enhance products so that they could sell elsewhere. For example, one bank helped a vendor design a cash management account product that this vendor is now marketing to other banks.
- Remembering that customer needs might also be limited and involve the development of a "me too" product.
- Processing vendors should spend more time in reviewing proposed and current products and services.
 - Products should be questioned if they seem identical to an existing product, unless they can be introduced at a lower price. Some vendors now seem to be developing redundant products in cash management, for example.
 - Opportunities to change products by using data base software or intelligent terminals should be considered.
 - Product cost or profitability tracking systems run on a remote service might be converted to run on a DBMS. This could give a customer more capabilities and build a closer relationship.
 - Intelligent terminals could reduce the cost of running certain financial models or cash management systems. Vendors should consider using microcomputer software firms to develop programs for this purpose.
- Opportunities to use mini- and microcomputers in bank applications should be exploited whenever possible.

- If banks decide to move more complex applications such as money transfer or ATM interfaces in-house, RCS firms should be ready to assist them.
- Vendors should offer microcomputer systems that can be linked to other services and products. Microcomputer systems that can serve as intelligent cash management terminals for customers could also process treasury work and handle cash forecasting for bank customers.
- Microcomputer systems will be used to convert many manual applications and provide office system capabilities in banks during the next five years. RCS vendors should integrate these systems into their services. These systems can be a natural extension of RCS processing since the microsystem could serve as a terminal and also handle certain jobs locally, such as financial modeling.
- Opportunities in software products and turnkey systems should also be explored. Banks offering services are receptive to these offerings. The success of the MIDAS international system at BIS and the retail banking systems of GEISCO demonstrate this.
- Facility management is also of interest to banks since it can reduce operating costs. Processing vendors should offer this service.
- Product lines can be extended and related products can be added by acquiring small companies with products which could integrate with current products or marketing. Successful large vendors have done this at opportune moments.
- Vendors should consider marketing software products, proprietary data bases, facility management and other services through bank subsidiaries. The subsidiaries could be acquired or run as coventures with the bank.
- Planning should include speculation about products which do not yet exist, but which make sense in view of needs, changes in technology, and other successful offerings.

- A line of software products, hardware, and network services can make it easier to gain entree to banking prospects. A broad line of products can also defray marketing costs and lower the risk of losing a large percentage of business.
- Processing vendors should make sure their sales force is well informed about their whole line of products. Sales people for some of the largest vendors can only talk about RCS products to banks although their firm handles batch, facility management, software, and hardware services.
- Processing firms should monitor developments in competitive products as well.
- When vendors decide to devote some of their resources to banking institutions, they must also begin research and analysis of bank organizations as well as product planning.
- The general consulting firms invest time and contact work in developing bank customers.
 - A few large processing firms emulate their techniques.
 - Other vendors are advised to do so also.
- Contact with bank customers should reach levels of the organization where decisions are made on large commitments to services.
 - A contract for facility management work to handle processing for a product or organizational group should be one objective of such contacts.
 - Knowledge of when a bank will merge, drop work, or enter new fields can also come from this strategy. At least one vendor with a close working relationship with a bank became a provider of money market sweep capabilities to banks.

III MARKET ANALYSIS AND FORECAST

III MARKET ANALYSIS AND FORECAST

A. INTRODUCTION

- Two factors complicate the market forecast for computer processing in banking.
 - Mergers and acquisitions will occur at a high rate during the next five years in banking, particularly in the S&L industry.
 - Services will become blurred among RCS, turnkey systems, and facility management.
- The best way of dealing with bank merger or acquisition is to assume that bank activity will continue even if a specific bank operation disappears. Processing may be moved in-house as a result of mergers or it may be served from a center run by one of the banks involved.
- Consequently, the processing business of banks that might merge has not been eliminated from forecasts.
- The blurring of services being sold by processing vendors to banks will increase.

- Some processing vendors are now prepared to offer expertise in certain applications in the following service modes:
 - Remote computing.
 - Hardware services.
 - Facility management.
 - Software packages.
 - Turnkey systems on mainframes, mini- and microcomputers.
- A computer processing service could move input editing and validation and some output functions for part of an application such as cash management, trust processing, or retail operations in-house. A software package on an in-house computer or a hardware service or turnkey system would make this possible. The move would lower customer costs.
 - This could forestall moves to another vendor.
 - This could also ensure continual use of host processing for data communication, peak period or unusual processing, and access to proprietary data bases.
- Services have benefited from the interest banks are showing in small computers, particularly personal computers.
- Processing vendors are starting to include small computers in their market strategies, and will expand these efforts.
- Vendors will emphasize that they can support microcomputers and ensure that there will be hardware and software migration paths.

- Since the microcomputers can be on-line to host computers through networks, they will add to RCS revenue.

B. REMOTE COMPUTING SERVICES

- Exhibit III-I shows the most vigorous growth area of remote computing will be industry-specific applications.
- Retail banking departments will expand their uses of RCS to implement on-line terminals, ATM and POS terminals, pay by phone, home banking, and CIF applications.
- RCS firms are expected to introduce new terminals for pay by phone, home banking, and ATM use to attract banks.
 - These terminals will offer greater reliability, more user friendly features, lower costs through store and forward communications, and innovations to attract the consumer.
 - RCS firms are also expected to provide support and education with terminals, thus influencing prospects to use their services.
- RCS firms also introduce other industry-specific applications that can be integrated with on-line retail operations. For example, Telecredit is now developing applications that will generate electronic items from truncated checks.
- In commercial banking, the continued growth of cash management information systems will contribute to the growth of industry-specific RCS. Vendors will add security-related information and the ability to link to systems of other banks.

EXHIBIT III-1

FORECAST OF REMOTE COMPUTING SERVICES
IN THE BANKING INDUSTRY

TYPE OF SERVICE	1982 (\$ millions)	1983 (\$ millions)	1986 (\$ millions)	1987 (\$ millions)	AAGR 1982-1987 (percent)
Function-Specific	\$70	\$80	\$125	\$145	15%
Industry-Specific	705	865	1,535	1,820	21
Utility	45	50	75	85	13
TOTAL*	\$825	\$1,000	\$1,730	\$2,050	20%

* May not total due to rounding.

- Hardware services based on microcomputers will enable bank cash management systems to be integrated with the financial systems of corporations.
- More bank products such as funds transfer, investment of short-term funds, and zero balance accounts will be integrated with cash management.
- Some trust applications such as performance measurement will still be handled with RCS, although much other current trust work will move in-house on hardware services, facility management, or user equipment.
- Certain trust applications will be implemented on microcomputers connected to an RCS system.
 - Personal trust systems have already been developed on Apple and other personal computers by Comserv and others.
 - These computers might go on-line to the RCS system for pricing data or information on trades, and depository trust company actions.
- Many of the present function-specific RCS applications will move in-house.
 - Financial modeling systems will be moved to microcomputers as well as other in-house computers.
 - General ledger, accounts payables, accounts receivables, and even payroll are being moved to in-house computers from RCS.
- RCS vendors will add data base, statistical, and graphic features to financial modeling systems to retain business.
 - A few RCS vendors are adding software that customizes modeling systems for banks.
 - These systems then become industry-specific applications.

- RCS vendors are also offering consulting services to maintain financial modeling systems.
- Function-specific processing includes the payroll capabilities that banks use for themselves and/or for customers. These payroll systems will continue to be heavily used and banks will want to add human resource capabilities.
- Utility applications continue on RCS terminals used for other applications. This business will shrink due to the pressure to reduce expenses and the wide availability of microcomputers in banks. Small S&Ls as well as small commercial banks are starting to use personal computers.

C. FACILITY MANAGEMENT

- Facility management is growing at a faster rate than RCS or batch. It is concentrated in industry-specific applications, as shown in Exhibit III-2.
- Trust processing will continue to be an appropriate area for facility management, particularly in large commercial banks. Small commercial banks with trust departments or small trust companies are candidates for RCS.
- Consumer banking will also provide opportunities for facility management.
- The growth of credit unions will benefit facility management since many credit unions have minimal staffs.
- Branch operations and other manually intensive functions of commercial banks find it cost effective to use facility management as well.
- Bank officers note the difficulty they have in running low-cost operations when marketing functions that require such high cost overhead.

EXHIBIT III-2

FORECAST OF FACILITY MANAGEMENT
IN THE BANKING INDUSTRY

TYPE OF SERVICE	1982 (\$ millions)	1983 (\$ millions)	1986 (\$ millions)	1987 (\$ millions)	AAGR 1982-1987 (percent)
Function-Specific	0	0	0	0	0
Industry-Specific	\$410	\$505	\$915	\$1,115	22%
Utility	0	0	0	0	0
TOTAL*	\$410	\$505	\$915	\$1,115	22%

* May not total due to rounding.

D. BATCH PROCESSING

- Batch processing will continue to grow slowly, as indicated in Exhibit III-3.
- Batch applications include processing for credit cards, correspondent banks, account reconciliation, savings and time deposits, and portfolio management. Batch services will be impacted when some of these applications move in-house onto mini- and microcomputers.
- Whenever a courier service can meet the needs of small banks for applications that do not have to be on-line, batch services will offer economic advantages.
 - Some banks have tapes of securities prices and other financial information delivered to them, rather than accessed on-line.
 - This batch service will continue although delivery may eventually be on videodisk.

EXHIBIT III-3

FORECAST OF BATCH PROCESSING
IN THE BANKING INDUSTRY

TYPE OF SERVICE	1982 (\$ millions)	1983 (\$ millions)	1986 (\$ millions)	1987 (\$ millions)	AAGR 1982-1987 (percent)
Function-Specific	\$150	\$165	\$205	\$225	8%
Industry-Specific	505	525	595	615	4
Utility	7	8	1	12	12
TOTAL*	\$665	\$695	\$800	\$850	5%

* May not total due to rounding.

IV PRESENT BANKING ENVIRONMENT

IV PRESENT BANKING ENVIRONMENT

A. OVERVIEW OF SIGNIFICANT TRENDS

- The most significant trends of the last three years include:
 - Continuing economic pressures from the increasing cost of funds and operations.
 - Intensified competition among banks and from nonbanking competitors.
 - Structural changes in banking because of deregulation and the beginning of national expansion of banks.
 - The role of technology in the development of domestic and international bank network applications.
- More use of models and financial tools in asset/liability planning and the examination of interest rate risk is a result of banks' efforts to increase profitability.
- The search for middle market and small companies which are good credit prospects, the use of models to evaluate credit worthiness, the emergence of stronger marketing functions, and the search for new credit vehicles or instruments are results of intensified competition.

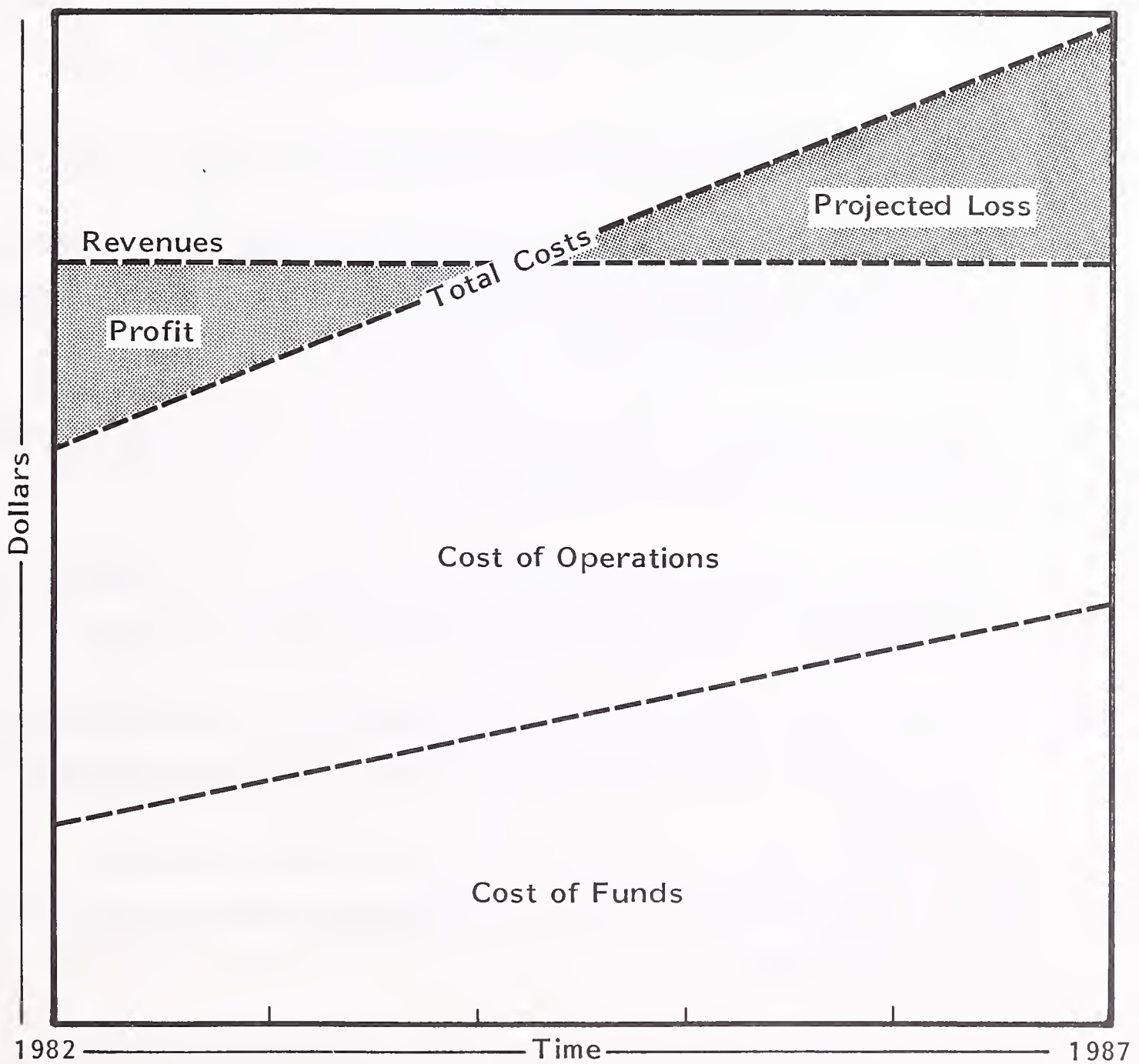
- Technological advances have permitted the significant expansion of international operations and systems over the last three years.
- New technology is allowing new forms of correspondent banking to emerge.

B. BANKING'S PROFITABILITY PROBLEMS

- The fundamental profit problems in the banking industry are shown in Exhibit IV-1.
 - The cost of funds and operations (specifically, personnel, equipment, and space) is increasing.
 - Revenue is not increasing substantially due to competition.
- If current trends for costs and revenues are projected through 1986, the banking industry will operate at a loss.
- These trends will be offset for some banking institutions by:
 - New sources of revenues. Computer service vendors should actively suggest and develop these sources.
 - Reduced costs of operations. Processing vendors can help lower costs at some institutions.
 - Elimination of products and services where they appear to be uneconomic. Processing vendors should determine if they reduce costs enough to make the product viable.
 - Mergers and dissolutions.

EXHIBIT IV-1

POSSIBLE* TREND FOR BANK
COSTS AND REVENUES, 1982-1987



* This exhibit is conceptual and not based on actual data.

- Inflation produced a favorable environment for banking for most of the last decade.
 - Until 1980, Regulation Q provided that banks could pay 5.25%-5.5% (thrifts could pay the higher rate) on savings accounts and no interest on checking accounts except for NOW accounts in the Northeast and at credit unions (share draft accounts).
 - The spread between the cost of money at that rate and the return on loans, investments, and other uses was high throughout the 1970s. It was still worth over \$25 billion to commercial banks in 1980.
 - Commercial banking enjoyed high profits during the 1970s as a result.
- By 1980 deposits had begun to flow out of savings banks to money market funds or to consumption. The U.S. had the lowest rate of savings among industrialized nations in 1980.
- The banking industry used higher rate notes (certificates of deposit, 30-month certificates) to try to retain deposits.
- The cost of deposits became higher than the return on mortgage portfolios for many savings institutions because of the higher rate certificates.
- In early 1982, regulators took steps to provide higher rate savings instruments and expanded powers (commercial loans, money market funds) to thrift institutions.
 - Those savings instruments may help thrifts attract money to cover new mortgages.
 - This does not relieve thrifts from supporting older mortgages at low rates.

- New savings instruments will encourage depositors to move from lower interest accounts to higher interest accounts and will increase losses at thrifts.
- Many thrifts can only be saved by mergers or new governmental supports.
 - Four hundred thirty-three S&Ls were merged with other institutions during the last two years.
 - Industry experts expect 25% of the remaining S&Ls to disappear (through mergers) by 1984.
 - About 400 may run out of capital through absorbing losses by the end of 1982.
- The Federal Home Loan Bank Board has described withdrawals at the S&Ls and 400 mutual savings banks as a "quiet run". The rate could exhaust resources at these thrift organizations by the end of 1982.
- The net worth of the 3,800 (approximate) federally insured S&Ls dropped \$864 million in January 1982.
- The Federal Savings and Loan Insurance Corporation (FSLIC) has assisted some mergers by funding the difference between the rate of the mortgage portfolio and the cost of funds for merged institutions. This costly effort may not continue because the FSLIC has limited resources.
- Commercial banks, bank holding companies, and thrifts have not yet gone into mergers because legislation to change the McFadden and Bank Holding Company Acts has not been passed.
- Commercial banks and thrifts could have merged intrastate, but only one such merger took place through the first quarter of 1982.

- Most thrifts do not offer a net acquisition advantage to a commercial bank, as a top official of a mutual savings bank pointed out to INPUT.
- The prospect of obtaining a group of well-placed branches in another state could motivate commercial banks to acquire some thrifts.
- Many thrifts will be left without any option except for bankruptcy or federal aid.
 - On average, thrifts are paying over 11.5% interest to attract deposits and earning about 10% on their mortgages and other assets.
 - When the low-rate mortgage portfolio runs off, some thrifts may recover if they adjust their business to the high cost of funds, increasing costs of operation, and other current risks in banking.
- The cost of deposits will continue to rise as rate restrictions are phased out through 1986.
- Money market funds will probably maintain their advantage over banking institutions since their operating costs are less. They do not have to support branch operations or as much computer equipment. One executive vice president of operations at a regional bank complained that he had to compete with mail services.
- Operating costs of banks have to cover not only automation and data communication but also traditional organization and operation.
 - Inflation is driving the cost of these items steadily higher.
 - Even drastic cutbacks in operating expense may not narrow the spread between the cost and use of funds enough for some banks to survive.

- Certain regional banks are more susceptible to the cost pressures due to their large retail branch operations and drop in correspondent business from smaller institutions.
- Many commercial banks and particularly large regional banks are cutting back their branch operations and using ATMs and minibranches in supermarkets and other stores to lower branch costs.
- Vendors should seek opportunities to replace branch operations of banks and offer network services to support ATM and POS units.
- Commercial banks are also trying to earn fee income with new services to offset the increase in operating costs.
 - Bank One in Columbus, Ohio, has been noteworthy in generating fees from its sale of services to the Merrill Lynch CMA (it also handles nine other brokerage firms).
 - First Interstate will seek more fees by franchising its debit card services.
- In addition, banks now have to pay fees to the Federal Reserve and accept more stringent limits on availability of funds.
- The competition for credit has narrowed the spread between the cost of funds and the return on loans. More risky loans are being booked and security analysts are concerned about the adequacy of reserves set aside to cover losses.
- The profit decline has had an impact on the equity ratio of commercial banks. This ratio dropped by a factor of three between 1958 and 1981. This drop increases the possibility that loan losses could cause a bank to fail.

- Exhibit IV-2 summarizes the adverse conditions that banking institutions now face.
- The adverse conditions will not affect banks of over \$1 billion as severely as smaller banks and weak regionals. The smaller banks and thrifts will require much more aid to withstand current pressures.
- Vendors may find opportunities to offer a combined processing service to a group of small banks in one area.

C. COMPETITION

- Competition is severe for funds, the uses of funds for credit, and for financial services provided by the banking industry in the past.
- Money market funds are the chief competition for funds. In the year between mid-1980 and mid-1981, over 50% of the balances in savings accounts in banks were withdrawn for deposit in money market funds, according to Federal Reserve information.
- Most of the money market funds are offered by brokerage firms, but insurance companies, a mail order and retail sales firm (Sears), and other firms are also offering these funds.
- Insurance companies are proposing variable rate annuities, IRA accounts, money market funds, and insurance offerings that combine investment capabilities to compete for funds.
- A variety of simple pension plans also enables insurance companies to compete for corporate pension business with the trust departments of banks.

EXHIBIT IV-2

EFFECT OF ADVERSE CONDITIONS ON FINANCIAL INSTITUTIONS

ADVERSE CONDITION	CLASS OF INSTITUTION			
	COMMERCIAL BANKS ABOVE \$1 BILLION IN ASSETS	COMMERCIAL BANKS \$500 MILLION-\$1 BILLION	COMMERCIAL BANKS <500 MILLION	THRIFTS
Drain of Cheap Deposits	M	M	H	H
Cost of Funds	H	H	H	H
Branch Operation Expense*	M	H	H	H
Operations/Personnel Cost Increase	H	H	H	M
Commercial Loan Business More Competitive	H	H	H	-
Personal Loan Business More Competitive	M	H	H	H
Mortgage Portfolio at Low Rates	L	L	M	H
Equity Ratio	H	H	H	L
Federal Pricing	M	H	H	M

Key: H = High, M = Medium, L = Low

* Unit banking states are an exception.

- The Sears money market fund will combine a low-cost money market note with the use of checks to withdraw funds.
 - Sears will initiate a massive mail campaign to holders of Sears cards and Allstate customers.
 - This represents 92 million prospects. At least 30 million will be contacted in 1982.
- A subsidiary of National Steel Corp. acquired two large eastern S&Ls.
- Other large firms are planning to buy thrifts or accept funds for deposit.
- Processing services could initiate more financial services as well. EDS, Bradford, and SEI have taken such steps.
- Some money market funds and other financial products deprive banks of short-term and long-term funds by offering a checking capability for withdrawal of funds.
- Merrill Lynch popularized checking as a method of withdrawing funds. Merrill Lynch also provides customers checks to write loans with securities on deposit as collateral.
- Paine Webber and other brokers will join Merrill Lynch in offering a cash management account to customers.
 - Some brokerage houses will offer processing services the opportunity to aid them in developing competitive products.
 - SEI and Bradford have developed their own versions of the CMA which are being offered to banks.

- Merrill Lynch also arranges real estate mortgages and resells the mortgages to investors.
- Some of banking's competitors for funds, credit business, and financial services by businesses are shown in Exhibit IV-3.
- Competition for credit to business firms is severe as well.
- There is much greater use of commercial paper to raise funds.
 - Since other corporations buy commercial paper, corporations are borrowing funds from each other, in effect.
 - Some money funds also purchase commercial paper with money invested by individuals. In this way, corporations are borrowing funds from individuals.
- Banks are also competing with more foreign banks and individuals for credit business.
- The market share of corporate credit for domestic banks has declined steadily according to Federal Reserve data. In 1967, commercial paper, foreign banks, and other sources accounted for about 57% of outstanding corporate credit. In 1980, these sources provided about 77% of corporate credit needs.
- Competition is so severe that banks are exploring even riskier markets for credit.
 - Risk-prone foreign governments and companies have received attention.
 - Many banks have identified the middle market, or firms with \$5 million to \$100 million of annual sales as a target.

EXHIBIT IV-3

FINANCIAL COMPETITION

COMPANY	SERVICES
GE	<ul style="list-style-type: none"> ● Lends to businesses and individuals ● Offers commercial and residential real estate loans, equipment leasing, and passbook thrift through a subsidiary ● Writes insurance and finances purchases of a wide range of goods
National Steel	<ul style="list-style-type: none"> ● Owns seventh largest publicly held Savings and Loan ● Takes deposits, makes loans, gives mortgages, and engages in real estate development
Household Finance	<ul style="list-style-type: none"> ● Serves a significant percentage of U.S. families ● Takes deposits, does commercial and consumer financing, mortgages, and insurance
Fidelity Group	<ul style="list-style-type: none"> ● Operates a full-service bank under a state charter ● Manages pooled accounts for pension funds
Merrill Lynch	<ul style="list-style-type: none"> ● Leads in corporate investment banking ● Offers demand checking on accounts totaling billions of dollars (CMA) ● Sells and finances real estate ● Sponsors a major credit card
Prudential	<ul style="list-style-type: none"> ● Manages the biggest real estate investment pool in the U.S. ● Offers stock market investments packaged with insurance
Shearson American Express	<ul style="list-style-type: none"> ● Provides credit cards to 10 million members ● Has international banking business with assets of \$6 billion ● Acquired a huge brokerage and investment banking firm that owns a mortgage bank ● Acquired a money management firm which owns a commercial bank ● Will offer a competitive product to Merrill Lynch's CMA
Sears	<ul style="list-style-type: none"> ● Owns insurance and mortgage companies ● Has 23 million card holders ● Offers NOW accounts ● Plans the expansion of real estate and merchant bank operations ● Offers a low-priced money market investment with NOW checking account

- Banks have also initiated studies to identify firms with sales between \$500,000 and \$5 million that could be credit prospects.
- The intense drive for credit business offers new opportunities for processing vendors.
 - New or improved financial models are needed to uncover credit opportunities and to assess the level of risk of each.
 - Where credit exposure to one client is sizable, systems are needed to track and reevaluate the conditions of the client regularly.
 - New processing techniques are also needed to allow contact officers at banks to initiate loan arrangements with less paperwork.
- The fluctuations of interest rates make it more difficult for banks to protect themselves against losses.

D. STRUCTURAL CHANGES (DEREGULATION AND NATIONAL BANKING)

- The major changes in rules, or structure, which will probably occur during this decade include:
 - Removal of the ceiling on the interest rates which banks can offer (Regulation Q).
 - Removal of restrictions on banking business (for example, restrictions that prohibit thrifts from offering commercial loans). Processing services should target certain thrifts as prospects for support of credit and other new products.

- Revocation or changes to the McFadden and Bank Holding Company Acts which prohibit banks and bank holding companies from engaging in national banking.
- Changes to the Glass Steagall Act, which does not permit banks to compete in security industry activities such as:
 - Comingling funds in a money market mutual fund.
 - Underwriting revenue bonds or corporate debt.
- Imposition of prices for Federal Reserve services.
- Reduction of float time (availability schedule).
- To some extent, changes in the regulations and legislation governing banking will allow banking institutions to compete on better terms with nonbanking firms.
- These changes, if they come about, will also reflect the reality of the present environment.
 - In view of current inflation rates, many savers will not use savings accounts with low rates.
 - Means of engaging in national banking will be found, particularly by nonbanking institutions.
- The Monetary Control Act of 1980 provided that the limitations of Regulation Q on interest be phased out by 1980. Thrifts are still trying to maintain their advantage in rates over commercial banks and will try to have this act modified.

- Higher interest will allow banks to compete with money market funds and other competitors to attract funds.
- Banks would probably have to offer services to compete since their costs will be higher and the rates that they offer will be lower than those of money market funds. Processing vendors can help them to reduce costs and offer features to make their products competitive.
- Changes to the Glass Steagall Act may allow banks to comingle funds and offer money market mutual funds.
- However, means have been found of offering money market rates on part of the balance of depository funds (money market sweep).
- Deregulation plans are stalled by the conflicting interest of competitive institutions.
 - S&Ls want to keep interest rate advantages, but gain unrestricted powers to make commercial loans.
 - Commercial banks fight expanded powers for thrifts until the interest rate advantage is phased out.
 - Small commercial banks, particularly those entrenched in a community, fight deregulation in general.
 - Money market funds are now lobbying to keep banks out of their business.
- Over 50% of the banks with assets over \$1 billion contacted during this study had planning officers or committees devoted to national strategies.

- Before changes in legislation permit national banking, some large commercial banks have taken steps to support a national strategy or to extend their national presence; the steps include:
 - Development and expansion of communication networks to deliver domestic and international products.
 - Establishment of offices in other states.
 - Promotion of certain product capabilities on a national basis.
- Although these steps generally support revenue objectives, in many cases, a national strategy has helped to justify them.
- RCS vendors with network capabilities could aid banks with nationwide plans.
 - Network linkages or components could complete national plans.
 - Facility management could support networks.
 - Consultants could give planning aid to develop networks.
- During the last four years, at least 10 of the largest domestic commercial banks have initiated communication projects to integrate and expand domestic and international networks.
- Four respondents to this study with assets above \$5 billion described network projects that address:
 - International voice and data.
 - National voice.

- National data.
- Local voice and data.
- The objectives of these projects were:
 - Preparation for increased electronic delivery of services (such as cash management, wholesale transaction advices, receive and deliver notices, generated voice output) to corporations.
 - Preparation to use new facilities from satellite channels to radio sidebands.
 - Expansion of operations with affiliated banks (owned or correspondent) on a national and international basis.
 - Integration of a large number of incompatible communications capabilities.
 - Cost reduction over the next decade.
 - Preparation to bypass AT&T lines if costs escalate.
- Many banks will turn to computer service vendors to achieve their objectives.
- These services will expand the abilities of large banks to take deposits, make loans, and provide financial services throughout the country.
 - INPUT recommends that computer service vendors prepare to provide nationwide processing support for banks.
 - Vendors will enable many banks to offer services in new regions.

- The development of these network capabilities will also permit international banking operations to be linked to new domestic affiliates. Small banks are seeking connections to international services to support their local corporate clients.
- These networks projects are not being planned or coordinated fully in most banks.
- Separate delivery services for certain products have been developed by the banks or RCS vendors.
- Product opportunities require the rapid development of network capabilities.
 - Large-scale network projects make it difficult to meet new cash management, ATM, electronic advice, and other needs quickly.
 - Vendors are being called on for these opportunities.
 - Vendors should seek opportunities to meet the needs of on-line projects where the MIS staff is engaged in large-scale network projects.
- Major commercial banks are opening more offices in other states.
- Banks have expanded their offices in other states by acquiring finance companies, and by taking advantage of the Edge and Financial Center Development Acts.
 - The Edge Act, which allows out-of-state, full-service branches for international business, has 40 bank corporations and bank holding companies as participants.
 - The Edge Act was modified in March 1982 to allow portfolio and management advice to be provided. The Federal Reserve estimates that 20 Edge Act participants will offer these services. Vendors should

promote remote portfolio management and decision support systems for these offices.

- Regulation Y is also being amended to allow bank holding companies to provide management advice to thrifts and credit unions. Again, vendors should let holding companies know that they can support systems that provide management advice.
- The Financial Center Development Act allows holding companies to open offices in states that are willing.
- These activities will expand nationwide communication and processing and serve as a prelude to national banking.
- Vendors should develop strategies for these new opportunities for communication and processing.
- National strategies motivate many large commercial banks to offer services and products on a national basis.
- For some large commercial banks, this activity has developed from services to correspondent banks and business firms. For example, Bank of America, which offers processing services through a subsidiary, has an office of national strategy in the subsidiary.
- Other banks emphasize electronic products through their strategic or planning offices, which can link a network of banks and support a regional or national strategy.
 - Cash management systems, POS and ATM capabilities, pay by phone, and other services are part of these strategies.
 - Chase Manhattan Bank supports a NOW account product called share drafts for credit unions and some thrift institutions, which truncates

NOW account checks and sends electronic items to customer offices throughout the country. Eight hundred thousand items are now handled per day.

- Citibank combines network and traditional services in the offerings by the Financial and Information Services Group (FISG) to thrifts, credit unions, and commercial banks below \$500 million in assets.
 - FISG has 26 processing centers, as well as microcomputer turnkey offerings such as the Moneyfacts system, which allow a subscribing bank to provide financial and accounting services to individuals and small companies for a fee. There are over 20 installations of Moneyfacts computer systems at banks. These systems could communicate with Citibank.
 - First of Chicago, Wells Fargo in San Francisco, and a number of other large banks are also providing services which both generate income and establish national capabilities.
- Several large commercial banks are also planning to offer software packages as part of their national strategies.
 - These offerings would be sold to other banks on their own merits, as an economical method of gaining the means to handle on-line applications.
 - These software packages would also facilitate future linkage and/or distributed processing with the offeror.
- RCS vendors should prepare processing services and software packages that would support a regional or national strategy for a bank.

E. TECHNOLOGY

- Automation means both benefits and challenges to banking institutions.
- Automation provides banks with the means of reducing costs. Banks must keep up with automation if other banks or nonbanking competitors have installed new computing and communications equipment to lower their costs.
- Technological change has made it possible to help individuals and organizations to:
 - Obtain credit and money more rapidly.
 - Move money more quickly for payment or investment.
 - Obtain immediate information on financial transactions.
 - These services attract customers to banks.
 - When banks offer or upgrade these services, competitors must consider offering them.
 - There is a challenge in determining when to initiate competition based on technology. Computer service firms that are more up-to-date on technology can assist banks in exploiting the technology.
- New services can reduce the profitability of accounts.
 - Depositors learn how to reduce balances more rapidly.
 - Nonbank competitors are learning that technology allows this to happen. Merrill Lynch has found that its CMA service caused a drop in balances that remain in customer accounts.

- Customers used to leave balances in accounts between trades. Now they write checks to reduce these balances.
 - Expensive credit must now be obtained in place of these free balances.
- New computing systems have enabled banks to handle steady increases in checks, money transfers, and securities-related transaction volume without greatly expanding personnel costs.
- Developments in computing and communications systems have also made possible many improvements in banking such as:
 - Same-day settlement of Clearing House Interbank Payments Systems and Federal Reserve Wire transactions.
 - Expansion of electronic debits and credits through ACH.
 - Introduction and expansion of credit card usage, ATM, POS, terminals, and pay by phone systems.
 - Truncated checking and the use of electronic transfers (although many banks are resisting these developments, credit unions' secure drafts and Merrill Lynch CMA checks prove it can be successful).
- Networks of banking services have spread across the country and around the world since the late 1960s.
- Domestic and international cash management systems have spread through the United States, Europe, and the Far East. These systems can:
 - Provide information on the status of transactions and balances in payment, money transfer, and securities-related accounts and activities.

- Allow customers to initiate transfer of funds domestically and internationally.
- Include information on exchanges and interest rates.
- Network capabilities also facilitate trading in foreign exchange and international placing and taking of funds.
- Domestically, ATM use has grown significantly. About 25,000 units will be installed by the end of 1982.
- The growth and interconnection of regional networks will soon make it possible for a bank customer using a debit or access card to obtain funds anywhere in the country.
- ATM units in the walls of banks relieve teller lines, and units in shopping centers and other locations provide access to money 24 hours a day.
- In California, many ATMs are located on corporate premises for users' convenience.
- The new capabilities have encouraged further automation.
 - The use of ATM, POS, pay by phone, and home banking requires that computing systems keep more up-to-date information on account balances.
 - More sophisticated account processing is also needed to support the development of cash management systems.
- Several computer service firms have developed systems to meet these needs. GEISCO (the MAX system) and Anacomp (the CIS system) both give on-line account updates. Other computer services with retail banking products should consider how they, too, can meet these needs.

- Banking institutions now realize that system improvements and new hardware and software will be recurring needs. Banks will have to continue to spend for new technology and techniques.
- INPUT recommends that computer service vendors emphasize the new technology they can implement quickly for product delivery systems.
 - Vendors can supply the network capabilities and user site hardware services for new remote services for cash management or trust processing.
 - Vendors can also supply software, professional services, and turnkey systems to help banks offer new on-line retail services, cash management accounts for individuals, or other new services.

V PRESENT AND EMERGING BANKING NEEDS

V PRESENT AND EMERGING BANKING NEEDS

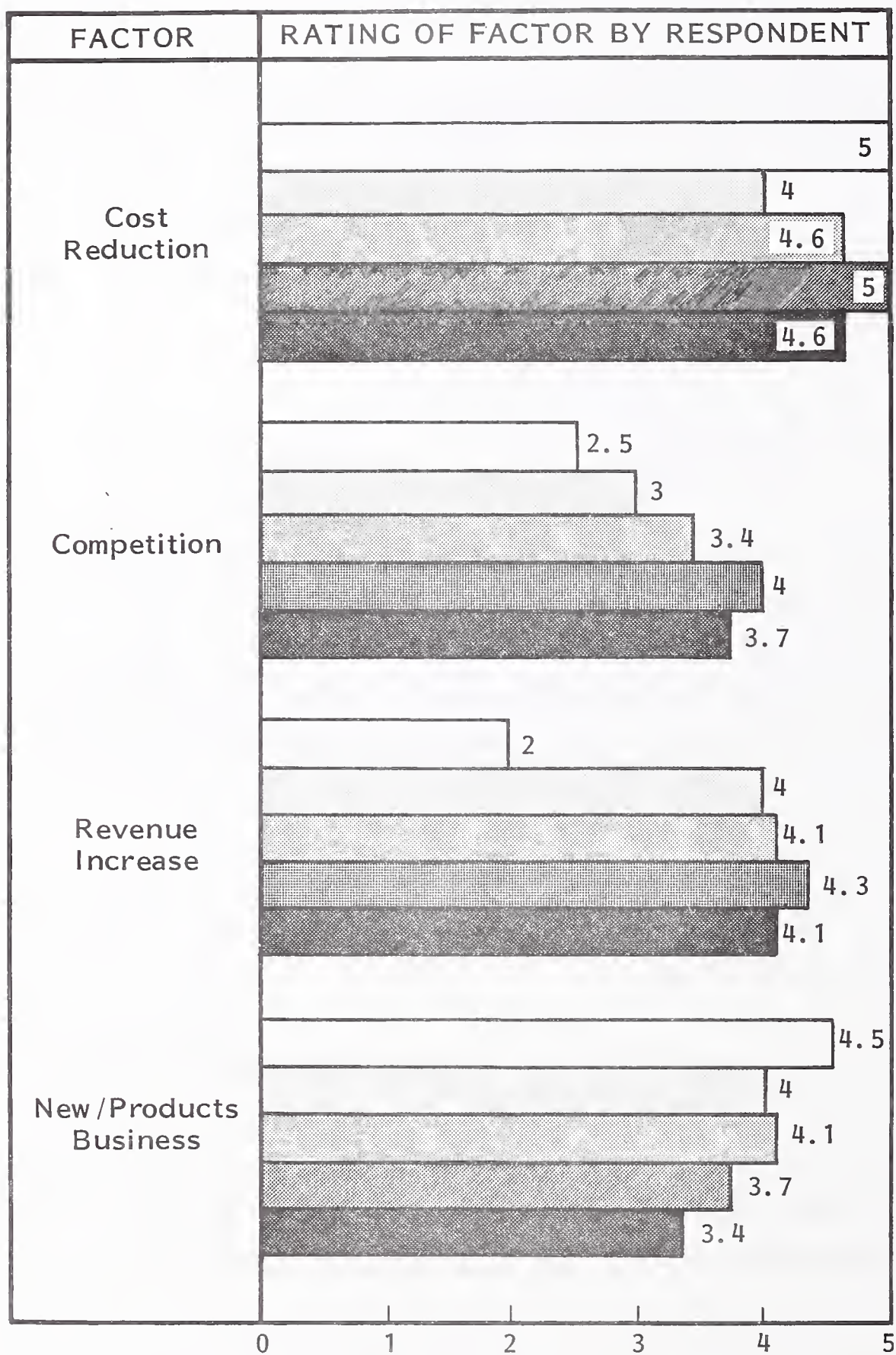
A. GENERAL NEEDS

I. COST REDUCTION

- Respondent banks expect that certain needs will lead them to use computing more. Those needs are shown in Exhibit V-1.
- Deregulation and new technology did not rank as high as the needs shown, although all classes of banking institutions also recognized them.
- Cost reduction will have the greatest impact.
 - This factor led other factors for all sizes of commercial banks and credit unions.
 - This is not surprising in view of the economic situation described in Chapter IV-B.
- Cost reduction will have the greatest effect on banks with between \$500 million and \$1 billion in assets, according to Exhibit V-1.

EXHIBIT V-1

FACTORS LEADING TO INCREASED USE OF COMPUTING



= Credit Union
 = Mid-Sized Commercial
 = Thrift
 = Commercial Bank with Assets >\$1 Billion
 = Commercial Bank with Assets <\$500 Million

Rating: 1 = Low Importance, 3 = Medium Importance, 5 = High Importance.

- Many of the banks between \$500 million and \$1 billion are regional banks which have been important as links between big money center banks and the many small community-based commercial banks.
 - The service provided by these regional banks has become less profitable because costs have increased and business from small banks has fallen off.
 - These regional banks have also supported costly branch operations.
- Regional banks such as Girard in Philadelphia have lowered costs by reducing branch operations.
- Other regional banks such as Bank One (processing CMA and similar products for Merrill Lynch and eight other brokers) and First Tennessee (national check processing through overnight courier services) have emphasized revenue through new products at least as much as cost reduction.
 - Computer service vendors should introduce banks to new processing opportunities.
 - Vendors can help banks respond to new products offered by nonbank competitors such as the CMA.
- Industry experts and executives of many banks argue that revenues from new products alone will not overcome present economic conditions.
- Many banks realize that they must reduce costs to survive, let alone compete with new banks.
- Some banks are trying minibranches, such as a person or booth at a market or department store, in addition to unattended ATMs.

- Processing services, including facility management, offer a way to reduce costs as well.
- Processing without value added features such as networks, hardware services, or data bases will not offer economy to large banks in general.
 - Many banks are trying to reduce costs by moving such work in-house.
 - Over 50% of bank respondents mentioned activities or plans to move work in-house.
- Almost one-third of bank respondents said hardware and software packages from processing vendors had helped them move work in-house.
- Small commercial banks, thrifts, and credit unions can reduce costs with processing services. Some small banks will consider mini- and microcomputers too.
- Many credit unions must depend on processing services since they have only a few part-time workers. Although credit unions are quite conscious of costs too, they will change processing services before using small computers.
- Credit union contacts wished for more competition to use their services to bring processing costs down. Vendors of retail bank processing services should investigate opportunities to compete for credit union accounts.
- In some situations facility management may be more successful than processing services. Personnel and overhead costs can be reduced by replacing an entire operation or offering a new product with a facility management service.
- Banking institutions are more willing to consider computer services, and particularly software packages, than they have been because they must lower costs.

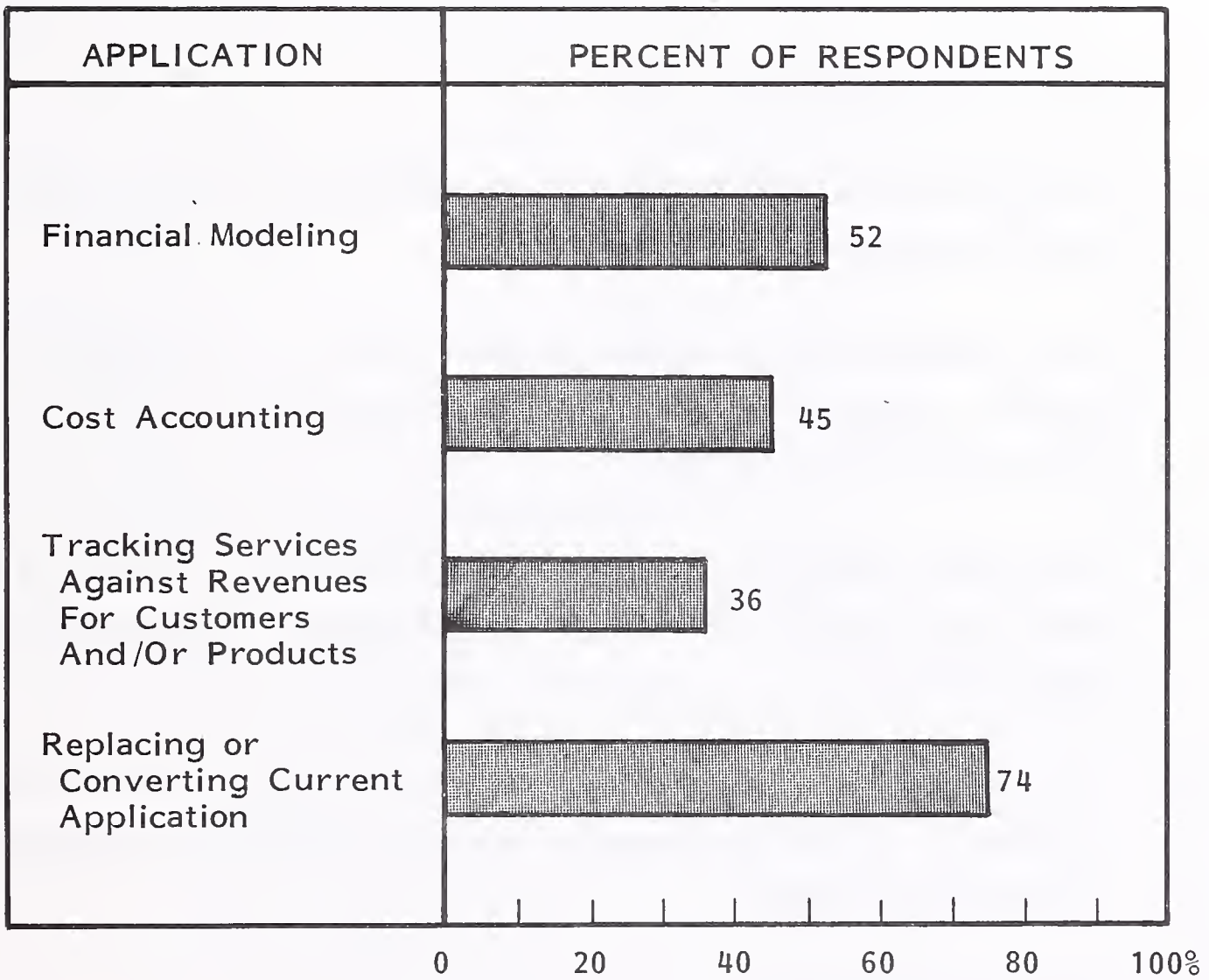
- Besides reducing costs, software packages and processing services can also provide an economic means of meeting competition.
- These recent successes show that bankers are more willing to use software packages and turnkey systems:
 - The MAX software offered by GEISCO on Tandem computers.
 - The international banking software (MIDAS) sold by BIS.
 - The sale of CI/RF and other packages by Anacomp.
 - The front office system which is sold by ISC Systems Corporation on a microcomputer.
- Elimination of products and services can also reduce costs.
 - Morgan Guaranty and Chase Manhattan banks have eliminated lockbox processing since competitors now offer a lower-cost product.
 - Equitable Life sells excess time in New York on its lockbox capability at a low cost. It sorts checks by bank and presents them to banks in a cash letter. This can also make checks available earlier.
- Branch processing, correspondent banking, and trust services have been transferred by some banks to RCS firms during the last decade.
- Some banks are investigating the division of processing into two or more groups serving different classes of clients. A bank might separate check processing for international, broker, or certain industry accounts from other processing.
- IN bank in Providence, RI, has separated the retail processing for a group of accounts that have money market sweep capabilities from other retail

accounts. The trust department manages the retail processing for these accounts.

- A processing service or turnkey system might handle one or more classes of accounts.
- Check truncation is an opportunity to reduce costs that has not been received well in banking.
 - Reluctance to change and pressures from some account holders have been deterrents.
 - The success of credit union share drafts, the Merrill Lynch CMA checks, and other programs with nonreturn of checks has increased interest in this capability.
 - The decision of the Federal Reserve to encourage electronic transfers by increasing costs for paper check clearing over costs for electronic check clearing (ECC) should further encourage electronic truncation. ATM, pay by phone, and home banking will be attractive as methods of reducing paper checks.
 - Improvement of systems that scan, transmit, store, and print images of part or all of a check together with payment (MICR) data will play a role in check truncation systems as well. Both banks and processing vendors are experimenting with these systems.
- Besides searching for ways to lower product system costs, banks are also paying greater attention to computing applications that analyze costs and allocate them to products and customers being served, as shown in Exhibit V-2.
 - These applications usually offer data base, statistical, and accounting capabilities.

EXHIBIT V-2

COMPUTING APPLICATIONS ASSOCIATED WITH
COST REDUCTIONS



- Graphical capabilities are being included in newer systems.
- RCS firms and vendors of software for mini- and microcomputers feel the increased need for financial modeling and related applications. An ADP banking office noted the use of more financial modeling capabilities in banking.
- Corporate Management Systems (CMS), a New York- and Denver-based RCS firm, believes that banks are using more complex models to examine costs and profitability. Highly-trained model developers generate both RCS and professional service business for CMS.
- In addition to more powerful modeling capabilities, the use of simple financial reporting packages is climbing.
- The increasing use of VisiCalc in banks attests to the interest in financial analysis. Research by INPUT suggests that VisiCalc is the most popular software package in banking.
- A software package for Apple II microcomputers which analyzes profitability (with a price tag of \$1,000) has just been announced by Pacific Bancorporation Data Systems, Inc.
- Vendors must do more than just offer packages for financial analysis and modeling. Experienced personnel, courses, or instruction manuals must be available (at a charge).

2. REVENUE INCREASE

- There is obviously another general need in banking besides cost analysis and reduction. That is the generation of more revenue.
- As Exhibit V-3 illustrates, respondent commercial banks and credit unions did not list revenue as their greatest need.

EXHIBIT V-3

RELATIVE IMPORTANCE OF REVENUE
TO BANKING INSTITUTIONS

CLASS OF INSTITUTION	HOW IMPORTANT REVENUE IS TO CLASS OF INSTITUTION
Credit Union	Ranks 9th
Thrift	Ranks 1st
Commercial Banks Below \$500 Million in Assets	Ranks 4th
Commercial Banks \$500 Million to \$1 Billion in Assets	Ranks 2nd
Commercial Banks Above \$1 Billion in Assets	Ranks 2nd

- Credit unions, as cooperative institutions, are not dedicated to revenue.
- Large commercial banks are more conscious of revenue needs than small ones.
- Industry analysts feel that large commercial banks' business attitudes are more suited to succeeding in the current economic scene.
- Thrift institutions are most aware of revenue as a need, perhaps because their average current revenue is less than their average cost of funds.
- Thrifts are pressing to expand consumer loan capabilities and introduce commercial loans. As a result, in January, the Federal Home Loan Bank Board granted commercial loan capabilities to thrifts.
 - Thrifts are not prepared to process these new types of loans. They will call upon banks and processing services for assistance.
 - Vendors of commercial loan packages and processing services should seek out thrifts planning to offer commercial loans. They can tailor their products to the needs of the thrift institution.
- Banks and vendors are considering developments that would improve the processing of credit in general. These include:
 - Streamlining and simplifying the entire process for offering, concluding, and processing consumer loans. This includes methods of scoring credit, setting up loans, collecting payments, and insuring business.
 - Designing systems to initiate commercial loan agreements with less procedural work.
 - Developing systems for handling credit and loans in certain industries.

- MCAUTO has recently developed a loan system for the freight industry.
 - Other systems have been designed for real estate developers and farm owners.
- Processing firms and entrepreneurs are developing financial instruments that can be based on credit but sold in various financial markets to investors.
- Processing firms will be active with help and support for new developments in credit.
- Processing firms should stay in contact with banks and financial firms that are introducing new financial instruments. They can help develop and support such products.
- Processing firms will continue to help banks to generate fee income for new products such as ATMs, pay by phone, and cash management.
- Banks can offer fee-based services in new areas of business that may be promising.
 - The Moneyfacts system, developed by Citicorp on a microcomputer, allows a bank to sell accounting, general ledger, accounts receivable and payable, and other work to individuals and small businesses in its area for a relatively low fee.
 - This service, now installed at about 25 banks, also helps to sell checking and other bank services.
- The sale of Moneyfacts systems, the sale of franchised cash management systems by Chase Manhattan and Chemical Bank (through GEISCO), and the sale of a franchised ATM system by First Interstate show that banks can sell

processing services on a bulk or wholesale basis to increase revenue and profits.

- A senior officer of a prominent midwestern bank questions whether these fee-based services can help banks to survive and particularly generate increases in revenue. He believes that credit and financial-based services associated with banking are more critical. However, he feels that these network-based services can help to defray costs, particularly the costs of automation and networks which banks require.
- Banks continue to sell more traditional data processing services. Twenty-four percent of banking respondents offered EDP services to other companies including:
 - General ledger and accounting services.
 - Financial modeling.
 - Cash management.
 - NOW and check processing.
 - Installment and mortgage loans.
 - Cash letters.
 - FDIC data.
 - Proof of deposit.
 - Support of other timesharing firms.
- Several of the largest commercial banks are also offering turnkey systems.

- In the belief that timesharing will decline, one bank is emphasizing turnkey systems.
- One major bank also plans to market software packages for mainframe computers.
- Vendors still regard computer service offerings by banks as a problem, as shown in Exhibit V-4.
- This concern will probably grow since the strategies of some banks would link customers to banks through the delivery of EDP services. This may be a natural evolution of banking services.

B. RETAIL BANKING

- Respondents' needs in retail, or consumer, banking are reflected in Exhibit V-5.
- Retail bankers recognize the need to hold depositors.
 - Thrifts, as well as the retail departments of commercial banks, feel this need.
 - Credit unions hold depositors more easily since they can offer money market rates, and they also have the group spirit of a cooperative institution. Money market rates are offered through the services of an investment bank.
- The large commercial banks are more selective about deposits they are trying to hold.

EXHIBIT V-4

VENDORS' CONCERN ABOUT EDP SERVICES OFFERED BY BANKS

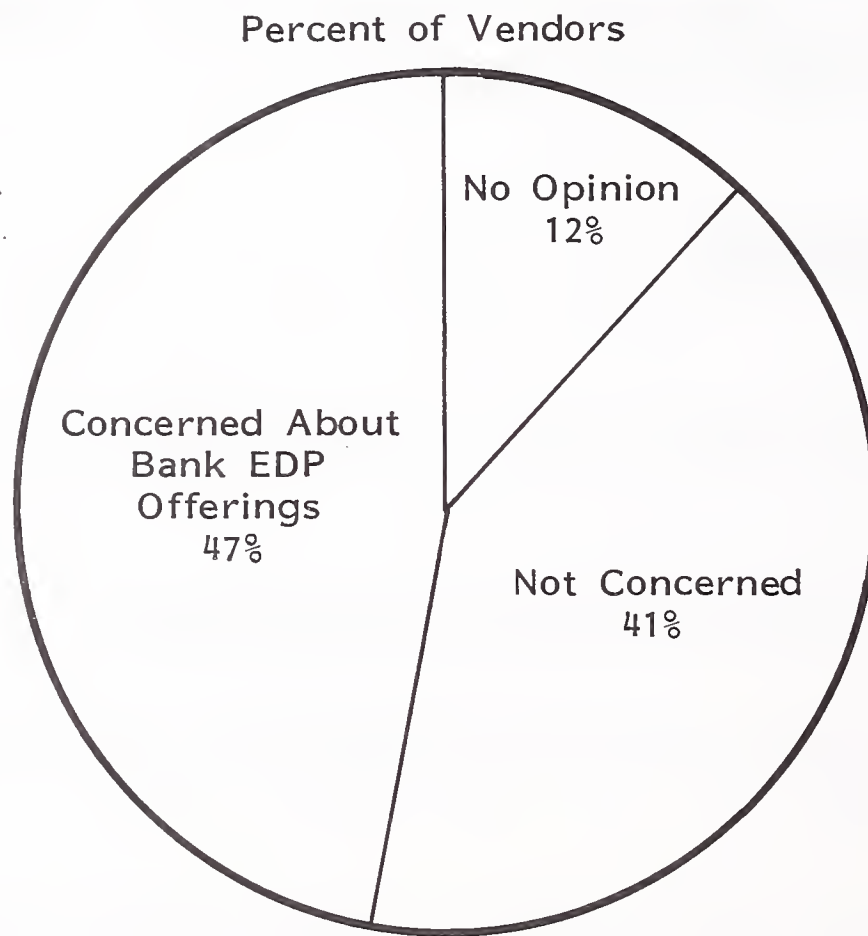


EXHIBIT V-5

RETAIL BANKING NEEDS NOTED BY RESPONDENTS

BANKING NEED	THRIFTS	SMALL COMMERCIAL BANKS	LARGE COMMERCIAL BANKS
Services to Hold Depositors	H	H	H
Higher Rate Notes	H	H	H
Reduction of Costs	H	H	H
Support for New Products	M	H	M
Means of Charging More Fees	M	H	H
Automatic Transfer Between Accounts	M	M	L
CIF Type of Capability	M	H	M

H = High need

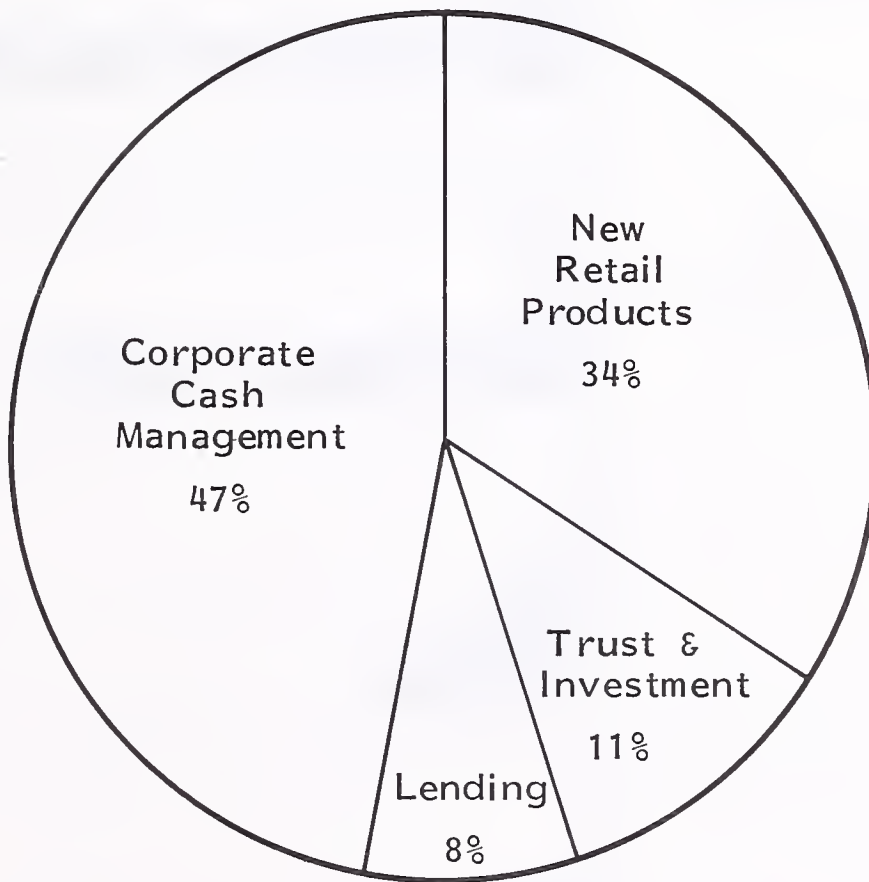
M = Medium need

L = Low need

- More large banks are making service charges on small savings or checking account balances.
- Charges and fees are structured to motivate customers to increase the number of accounts and deposits they have with a bank (relationship management).
- Large commercial banks also try to serve only high net worth individuals rather than all accounts.
- Until commercial banks and thrifts can offer higher interest rates, through money market mutual funds or money market sweeps offered by a processing service, deposits will probably continue to drain.
- Money market sweep capabilities are being planned or introduced by Bradford, Federated, SEI, First Interstate, MasterCard, and processing services to compete with money market funds.
- New instruments such as a 91-day certificate based on 13-week treasury bills will be introduced to offer higher interest as well.
- Banks try to offer a range of services to hold or attract depositors.
 - New retail products providing these services rank second only to corporate cash management as an interest of commercial banks, as shown in Exhibit V-6.
 - Since they do not serve corporate customers to any extent, thrift institutions rank these services as their highest need.
- Thrift institutions and large commercial banks both anticipate that new or enhanced systems will serve retail needs, as shown in Exhibit V-7. This exhibit shows that thrift institutions offer an opportunity for vendors who can meet retail banking needs.

EXHIBIT V-6

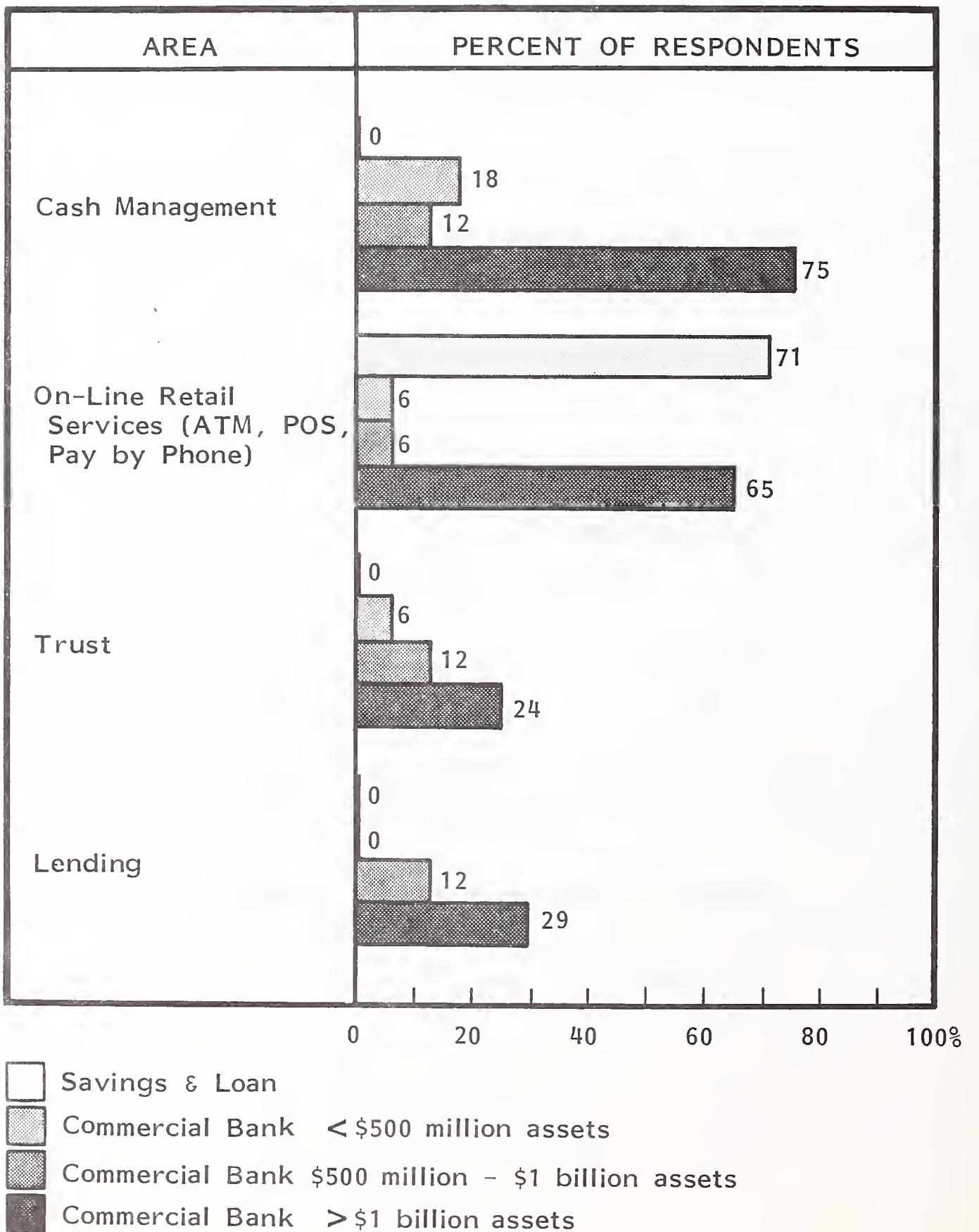
PRODUCTS OF GREATEST INTEREST
TO COMMERCIAL BANKS



Percent of Commercial Bank Respondents

EXHIBIT V-7

AREAS OF BANKING WHERE NEW OR ENHANCED SYSTEMS
WILL APPEAR IN THE FUTURE



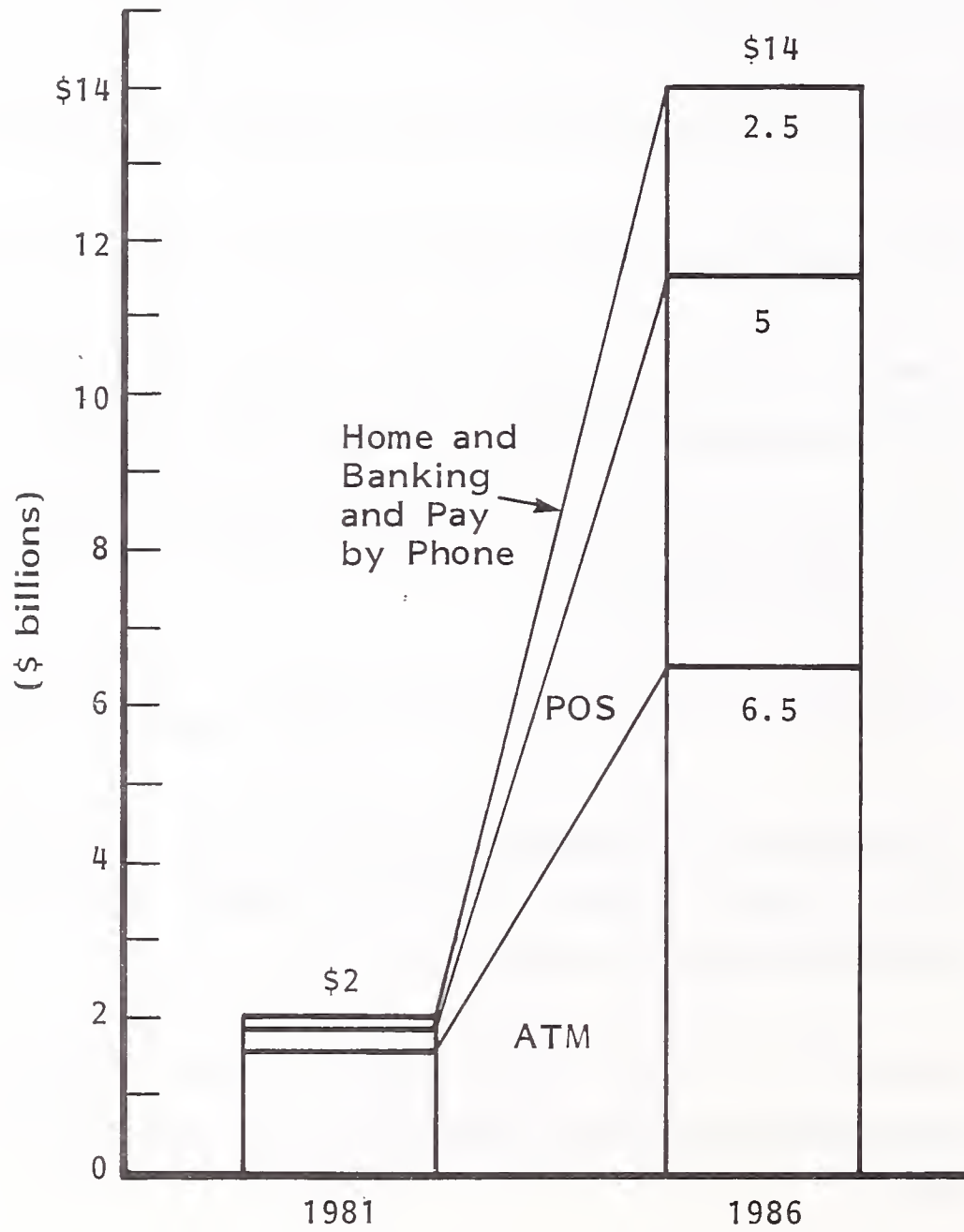
- Thrift institutions offer many customer services and even entertainment to hold customers. Thrift institutions introduced the snake line to teller windows rather than a queue at each window.
- Banks refer to the following as new retail products:
 - NOW accounts.
 - IRA and Keogh.
 - Money market notes.
 - ATM.
 - Pay by phone.
 - Home banking.
 - Credit card.
 - Check authorization and guarantee cards.
- They are distinguished from older products such as savings and checking accounts, consumer loans, insurance, and travelers' checks.
- The new products can be divided into classes:
 - Higher-return savings or investments for the individual.
 - Products that simplify making payments or obtaining funds.
- Some of these products have grown rapidly.

- NOW account processing has expanded from the credit union and Massachusetts pilot of the 1970s to the whole country.
- Commercial banks as well as thrifts offer NOW accounts with overdraft lines (personal credit lines). Transfers to and from these accounts and means of offering higher rates are being added or considered. For example, credit unions offer money market rates.
- Savings offerings have expanded to include IRA, Keogh, all-savers certificates, CDs, money market notes, and short-term certificates.
- The use of plastic cards for credit, debit, and other transactions/authorizations has changed the banking industry.
- ATM use has grown from one cash dispensing machine at First Pennsylvania Bank in 1968 to an estimated 25,000 machines to be installed by the end of 1982.
- About 3,500 of the banks using ATMs belong to one of the 100 regional networks that now exist.
- Processing vendors have helped expand the new retail products.
 - A.O. Smith, ADP, Kranzley & Company, and Sun Information Systems have been active in the expansion of ATM systems.
 - Canada Systems Group and EDS have provided processing capabilities for new savings notes.
 - National Data Corporation (NDC), Tymshare, and Telecredit have supplemented credit card processing by banks and bank card organizations.
 - ADP and Telecredit have been expanding pay by phone use.

- Computer service firms have not only been involved in the introduction of these new retail services, but they have also provided on-line systems for retail banks to use the new products. Anacomp (CIS) and GEISCO (MAX) systems have both addressed the need for on-line posting, accounting, and inquiries.
- A forecast of the growth of on-line transactions from ATM, POS, pay by phone, and home banking units is shown in Exhibit V-8.
- The increase is projected because certain needs are expected to arise:
 - New switching capacity to handle local, regional, and national traffic.
 - Greater security to prevent fraud. According to ABA reports, 4% of banks with installed ATMs experienced fraud in 1980.
 - Experiments with chips and optical storage on cards to provide greater security and reliability.
 - Measures of reliability for ATM and other terminal operation.
 - Research on the profitability of ATM and other terminal operations (e.g., a model is needed to evaluate the profit and loss of ATMs by such characteristics as location).
 - Research on the use of new terminals. Several vendors are investigating or testing store and forward terminals for ATM and pay by phone use.
- Another need, which is shown in Exhibit V-5, is for CIF capabilities, introduced in corporate banking in the last decade.

EXHIBIT V-8

ESTIMATED GROWTH OF TRANSACTIONS FROM BANK TERMINALS



- This capability allows a bank to access all accounts and information relevant to a customer's business. Better marketing, service, and cost control normally result.
- The increase in bank products, particularly on-line products, now available to an individual, as well as the desire to hold customers, motivate retail banking to offer CIF capabilities.
- Many software vendors and processing services offer this product.
- The CI/RF package offered by Anacomp leads all other bank software in total revenue.
- Small commercial banks and thrifts expressed interest in a package of services and education such as those offered by Financial Information Services Inc. (F.I.S.I.), Madison Financial, and an INA subsidiary, which they felt would help to hold retail deposits at lower interest rates.
 - The price for these services is \$2 to \$5 monthly per account (F.I.S.I. has a \$3 charge).
 - F.I.S.I. provides services to three million accounts at 2,100 banking institutions.
- Citicorp offers a package of services like those of F.I.S.I., and several other large commercial banks are considering such services.
- Services included in these packages are listed in Exhibit V-9.
- Vendors and banks will add new processing products to the basic services they have introduced.

EXHIBIT V-9

SERVICE PACKAGE OFFERINGS
(CLUB ACCOUNTS)

- Identification card for check cashing and/or POS and ATM use
- Information package on NOW and checking accounts
- Free (no charge) travelers' checks and safe deposit box use
- Travel and accidental death insurance
- Education on IRA and other savings services
- Discounts on car rental, shopping, etc.
- Newsletter

C. CASH MANAGEMENT SYSTEMS

- Although cash management systems provide information on balances and transactions to banks and vendors, many commercial banking products are included in this general category.
- Just as the retail products discussed in Section V-B help to hold depositors' accounts and encourage credit business for individuals, corporate cash management systems help to hold corporate business.
- These products can have the same drawback. Customers with rapid information on balances can easily draw down or transfer funds.
- The features of cash management information systems in vendor and bank offerings are listed in Exhibit V-10.
- Although these systems were developed by large commercial banks, small banks are now interested in them to attract or hold corporate clients.
- Exhibit V-11 shows how much different-sized banks need to offer a cash management service. Larger banks have the greatest need since they use these systems to compete for corporate business.
- Some small commercial banks need a simpler or limited approach in cash management systems.
- In general, medium-sized commercial banks are less concerned than commercial banks of between \$100 and \$500 million in assets about cash management systems, possibly because the products being introduced by vendors and large commercial banks are meeting their needs.

EXHIBIT V-10

FEATURES OF CASH MANAGEMENT INFORMATION SYSTEMS

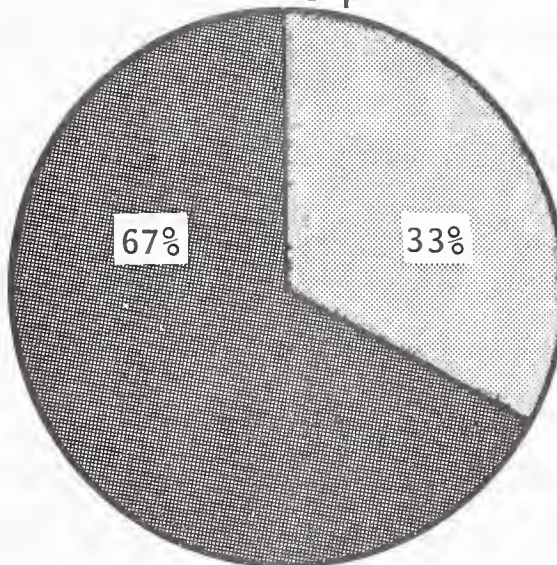
INFORMATION
<ul style="list-style-type: none">● Detail on debits and credits for payments and security transactions, yesterday and/or today (for certain items)● Advice for certain transactions (e.g. money transfer or foreign exchange)● Balances from one or a group of banks that serve a corporation● Target balance adjustments● Details on product processing (e.g., for zero balance, lockbox)● Historical reports on payments or schedules● Scheduled changes in security accounts (e.g., for next 30 days)● Transaction prices
ACTIONS
<ul style="list-style-type: none">● Ability to display or select information on the basis of amount● Transaction input for money transfer or depository transfer check● Data exchange with other banks or other bank systems● Adjustments between accounts and/or investment of net amounts● Investment of calculated or target amounts
INPUT
<ul style="list-style-type: none">● Touch tone, terminal, high speed, voice, special terminal
OUTPUT
<ul style="list-style-type: none">● Terminal, TWX/telex, printer generated voice, high speed

EXHIBIT V-11

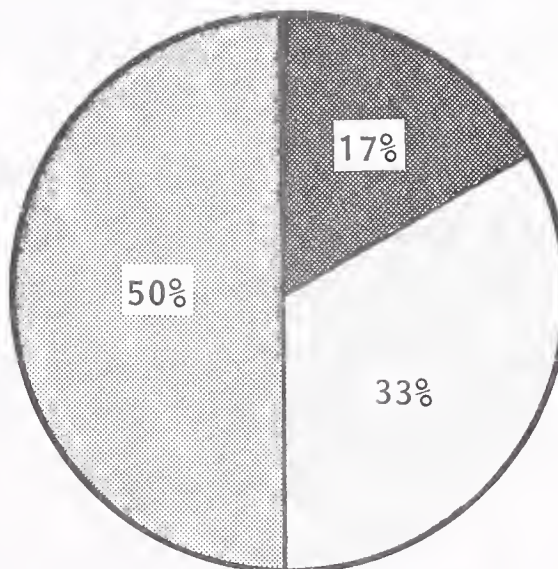
NEED TO OFFER CASH MANAGEMENT SYSTEMS

Percent of Respondents

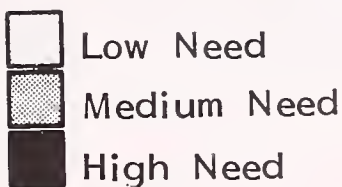
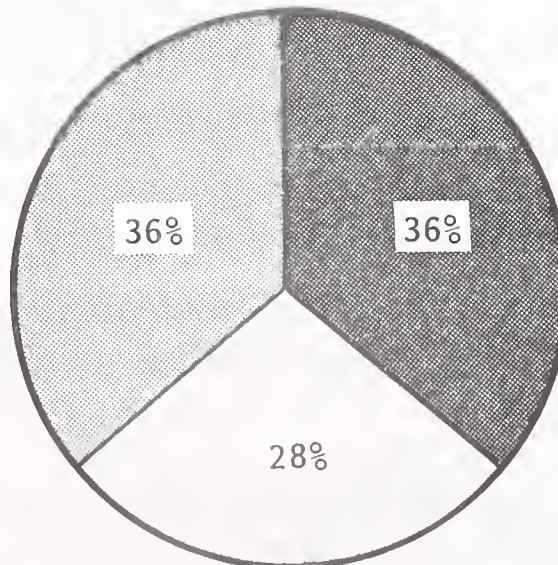
Large
Commercial Banks
>\$1 Billion Assets



Mid-Sized
Commercial Banks
\$500 Million-\$1 Billion Assets



Small
Commercial Banks
\$100 Million-\$500 Million Assets



- Large commercial banks, particularly money center banks, want to expand their systems to include more of the features listed in Exhibit V-10, particularly security-based, net adjustment, and investment features.
- The largest commercial banks are also becoming aware of new needs by using these systems.
- Although many new vendors and banks are developing cash management systems similar to those in existence, changes may have to be made in these systems.
- The senior vice president of a midwestern bank predicted that cash management systems, as they exist today, will not be used in two years. He pointed out that many users cannot react quickly to the transaction information displayed by current systems.
- American Express uses a model to determine responses to cash management information.
- Several large banks are planning to use intelligent terminals (microcomputers) with their systems.
 - Users will be able to cross-reference cash management information from banks to their own financial systems with these computers.
 - The computers could be used to review forecasts and targets and help users make decisions.
- Several banks are reviewing a treasury workstation (microcomputer) developed by a small firm to meet this need.
- Ultimately, many cash management decisions may be automatically initiated by user computers linked to cash management systems of banks. Only exceptional situations would then be reviewed by treasurers.

- Two banks marketing services on a franchise basis indicated plans to forward some or all cash management items to a microcomputer on the customer's premises. There, programs could aid a customer to:
 - Determine what details should be displayed.
 - Relate customer accounting codes to bank information.
 - Act automatically on cash forecasts, company financial activity, and bank transaction information.
- Vendors of cash management systems must be prepared to meet this development.
 - Research on new competitive offerings may be needed.
 - Some customers may be willing to try out a pilot project of such a system.

D. COMMERCIAL BANKING (OTHER THAN CASH MANAGEMENT)

- Commercial banking usually covers products and services developed for corporations, governmental organizations, and correspondent banks.
 - These products are sometimes called wholesale, cash management, or operational products.
 - Products developed for the individual consumer are referred to as retail products.
- The operational products sold to corporations and other banks by large commercial banks who participated in this study are listed in Exhibit V-12.

EXHIBIT V-12

PRODUCTS SOLD TO CORPORATIONS AND OTHER BANKS
BY LARGE COMMERCIAL BANKS

MENTIONED SERVICES	RESPONDENTS' AVERAGE DEGREE OF USE
Wire Transfers	High
Depository Transfer Checks	High
Zero Balance Accounts	High
Controlled Disbursement	High
Preauthorized Drafts	High
EFTS Direct Deposits	Low
EFTS Corporate to Corporate	Low
Payable Through Drafts	Low
Account Reconciliation	High
Check Truncation Safekeeping	Low
Wholesale Lockbox	High
Retail Lockbox	Low
Automatic Overnight Investing	Low
Money Market Trading	Low
Custody Accounting	Low
Commercial Paper	Low
Portfolio Analysis	Low
Cash Forecasting	Medium
Interest Rate Forecasting	Low
Money Market Rate Information	Low

Customers' use of these products is based on estimates of product management personnel at 44% of the large banks.

- Wire transfer and products involved in cash management services such as depository transfer checks, zero balance accounts, and controlled disbursements rank high. These are the basic services of the large commercial banks.
- Preauthorized drafts have become increasingly popular, due to the cost of mail and improvement of the service. Processing vendors should look for banks who should be offering this service, but are reluctant to start.
- Wire transfers and depository transfer checks, interest forecasts, money market rates and portfolio information, and automatic investing are available in some cash management systems.
- The products listed in Exhibit V-12 are offered to corporations to support credit business more than to generate profits in themselves. Commercial banks analyze the cost of these services versus account earnings from fees, interest, and balances to make sure that accounts are profitable.
- RCS services have supported commercial services from banks and developed systems to examine costs. Costs are important to banks at present, and more complex systems are being sought.
- Some of the services listed in Exhibit V-9 as well as trust and DDA account processing, payroll, and other processing have been provided to correspondent banks by large commercial banks. Cash management systems, credit training, FDIC information, and other new products were added in the late 1970s.
- Due to questions of profitability, commercial banks have been less interested in correspondent banks in recent years. Computer service firms such as Sun Information Services, ADP, and Anacomp have begun to take over these services from banks.

- Vendors should review selected services at banks and prepare proposals to take them over. Services that are only marginally profitable to a bank could be more profitable to vendors. Pay by phone, preauthorized debit and credit, and general accounting and billing for customers would be candidates.
- All services being performed by bank customers should be reviewed by processing vendors.
- Many large banks' interest in correspondent services has reawakened during the last two years.
 - Correspondent banks need aid with international services, new electronic products such as ATMs, and pay by phone.
 - Correspondent banks may provide a way to develop a national banking network.
- Commercial banks may need processing services to supply correspondent services economically.

E. TRUST- AND SECURITIES-RELATED

- As shown in Exhibit V-7, commercial banks anticipate new system developments in trust processing.
- Although less growth is anticipated in this area than in retail banking and cash management products, product planning people at over 50% of large banks expect certain trust applications to expand significantly.
- Application needs that were mentioned by these banks include:

- Expanding capabilities for customers and correspondent banks to relate their record-keeping to bank record-keeping.
 - Improving interfaces for trust and custody customers with high trade volumes.
 - Offering more types of trust services to personal trust customers.
 - Providing new personal trust and investment or asset management systems for individuals. This includes systems that will permit investment of surplus funds in the money market or in equities.
- Banks are investigating intelligent terminals for the second need discussed above. The intelligent terminals or microcomputers would be connected to the trust processing system of the bank or to a security-based cash management information system.
 - High trade volumes are now transmitted from tape to tape or to a mini that is connected on a DDP to the trust processing system.
 - Some banks wanted CPU-to-CPU transmission.
 - Individuals are now demanding from their banks the same trust accounting features of corporate trust accounts such as:
 - Portfolio management.
 - Tax and cash flow reporting.
 - Performance measurement.
 - Liquidity analysis.

- These capabilities can be added to trust software or provided through mini-and microcomputers.
- Banks and vendors providing trust services are experimenting with small computers that could be located in a branch or personal trust area, on-line to a large trust system.
- New personal trust, asset, or investment management systems are popular in some banks.
- There is a desire to act as a custodian for more assets including real estate, precious metals, coins, and collectibles.
- Individuals also want credit lines on assets that can be drawn by checks just as Merrill Lynch does with the CMA.
- Asset conversion of this type is a developing feature of banking.
- Vendors of personal finance accounts similar to the CMA account of Merrill Lynch should include features that will address the emerging needs mentioned in this section.
 - Portfolio analysis and reporting on the performance of an account and its cash flow during a month are particularly desirable.
 - Liquidity analysis and credit usage against assets are also important.
- INPUT believes that the most important feature to add to personal finance or cash management accounts will be the ability to respond to a schedule of instructions on investment and payment. This will allow customers to invest surplus funds in different ways according to market conditions rather than just in a money group.

VI VENDOR PLANS AND ACTIVITIES

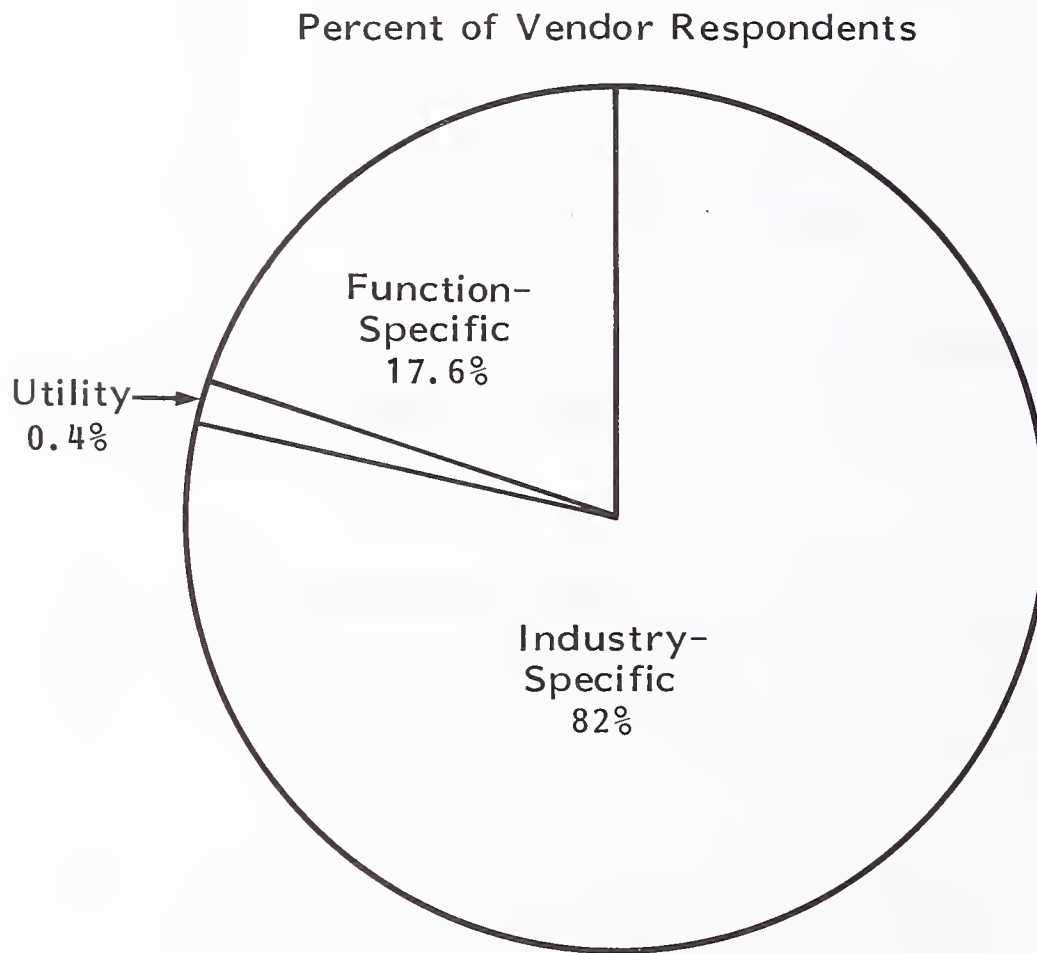
VI VENDOR PLANS AND ACTIVITIES

A. ANALYSIS OF PRESENT REVENUE SOURCES

- Exhibit VI-1 illustrates that industry-specific applications contribute most of the revenue of respondents to this study.
- Certain function-specific applications contribute revenue as well. These applications include payroll, general ledger, accounting, and financial modeling.
- Payroll and general ledger accounting, including payables and receivables, are handled on a batch and a remote batch basis for small commercial banks. Commercial banks resell these same services to clients as automated customer services.
- ADP is a major processor of these functional applications, but there are other vendors.
- The major functional application in large commercial banks is financial modeling and reporting systems which are supplied by GEISCO, ADP, IDC, and other vendors.

EXHIBIT VI-1

REVENUE FROM PROCESSING BY SERVICE MODE



17 Vendor Respondents

- Small commercial banks are becoming more interested in this application too, due to their concern with cost reduction and profitability of products, organizational units, and customer services.
- Software packages on mainframe, mini- and microcomputers are bringing some of this work in-house.
 - Banks are using VisiCalc, Magicalc, Micro-finance, and other packages to replace RCS in financial analysis and reporting work.
 - A financial modeling package developed for a Wang 015 by Desktop Financial, Inc. will bring financial modeling in-house at one large commercial bank.
- Some vendors use consulting support and linkages to large data bases to build revenue from these applications.
- Proprietary data bases of security prices, interest rates, econometric data, information on companies, and FDIC data are sources of functional revenue that are less likely to go in-house. Telstat, IDC, GEISCO, ADP, and Tymshare are vendors of proprietary data base capability.
- Demand for industry-specific applications varied in different organizational areas of financial institutions, as shown in Exhibit VI-2.
- Retail or consumer banking functions for a commercial or thrift branch or a credit union office might use one or more vendor services to support teller terminals, account posting, customer information files, CIF, and platform operations.
 - ADP provides RCS for these functions.
 - EDS and CDC offer facility management services for this area of banking.

EXHIBIT VI-2

DEMAND FOR INDUSTRY-SPECIFIC APPLICATIONS

BANKING AREA	DEMAND FOR SERVICE		
	THRIFT AND CU	SMALL COMMERCIAL BANK	LARGE COMMERCIAL BANK
● Retail			
- Branch Operation and Administration	M	M	L
- Account Processing	M	M	L
- Savings Notes and Certificates	M	M	L
- ATM, POS, Pay by Phone, Home Banking	H	M	M
- Credit Card Processing	M	M	H
- Consumer Lending	M	M	L
- Retail Customer Information File (CIF)	M	H	H
● Commercial or Wholesale			
- Cash Management	-	M	H
- Funds Transfer	-	M	H
- Operations Products	-	M	M
- Correspondent Banking	-	L	M
- Lending	-	M	M
● International Banking	-	L	H
● Money Market/Treasury	-	L	M
● Trust and Investment			
- Reporting	-	L	M
- Master Trust	-	L	M
- Performance	-	L	H
- Employee Benefits	-	L	M
- Personal Trust	-	L	M
- Portfolio Management	-	L	M

Key: H = High, M = Medium, L = Low

- = Not applicable to these institutions

- GEISCO, Anacomp, EDS, and ISC offer turnkey systems with a wide range of capabilities, from the microcomputer system of ISC to the large-scale system of Anacomp.
- Many software packages are now available to handle these functions as well.
- The CIF function is important in retail or consumer banking applications since it allows information about customers to be integrated. Banks can then analyze a retail relationship just as they would a corporate relationship.
- Customers that have large CDs might be rewarded with reductions in charges on checking or NOW accounts.
- When retail CIF packages have addressed this need, sales have increased.
- Turnkey systems also offer CIF capabilities.
- The more complex turnkey systems of Anacomp and GEISCO also integrate on-line transaction activity so that transfers between different accounts can be initiated from ATM or MTM (manned teller machine) units.
- The need for CIF and integrated retail banking will encourage retail departments in commercial banks to consider on-line computing systems.
- Processing work may move in-house as a result.
- Some retail or consumer banking departments will utilize network services for ATM, POS, pay by phone, and home banking.
- EDS, ADP, Tymshare, Telecredit, and many other vendors and banks offer these new products.
- GEISCO plans to develop ATM capability as well.

- Other industry-specific products for retail banking will grow independently of turnkey systems and software packages.
- Processing for time deposit and savings notes will continue for commercial banks and thrifts. Canada Systems Group is known for processing these products in the U.S. as well as in Canada.
- Consumer loan processing for examining the credit worthiness of loan applicants and initiating loan business will increase.
 - Systematics and University Computing Corporation (UCC) are two processors of consumer loans.
 - Bank vendors such as Citishare have been developing systems for loan initiation.
- Credit card processing will grow as well. Tymshare, First Data Resources, and NDC are large processors in this field.
- The commercial or wholesale banking departments provide the largest share of industry-specific revenue to processing vendors.
- The major application in wholesale banking is cash management information systems which are provided by GEISCO, National Data Corporation (NDC), Chase-Econometrics/Interactive Data Corporation (IDC), ADP, and several other vendors.
- Cash management expenditures are projected to reach over \$130 million in 1982. This revenue will come from funds transfer and other operational products packaged with cash management.
- Wholesale banking products such as account reconciliation, and zero balance are also processed separately by GEISCO, ADP, and other vendors.

- International banking is a source of processing revenue for several vendors. For example, Tymshare has a comprehensive system, IBIS, which handles loans, DDA, foreign exchange, and funding.
- Correspondent banking services continue to bring revenue to bank vendors such as Mellon.
- Sun and Systematics are vendors in correspondent bank processing as well.
 - Sun emphasizes processing services for correspondent banking as well as for trust departments.
 - Their revenues in the trust area are divided between customer reporting, master trust, performance monitoring, and employee benefit applications.
- IDC, Bradford, and SEI offer performance monitoring, which requires data bases of security prices and financial modeling.
- Bradford and SEI are the major processors in trust business.
 - Comshare offers personal trust processing as well, with a system on an Apple III computer to handle this application in small commercial banks and trust companies. The Apple can be on-line to Comshare for security prices and for large-scale processing.
 - Trust processing will continue to grow in banks with small trust portfolios. SEI offers minicomputer-based trust processing with RCS and facility management modes to meet the needs of large and small trust departments.
 - Bradford offers trust processing including securities activities (buy, sell, receive, and deliver), and all plans of processing that can be

delivered via RCS, facility management, or batch processing to large and small trust departments.

- An estimate of revenue distribution by department within banking is shown for processing vendors in Exhibit VI-3.
- This estimate addresses all types of computing services since many vendor respondents felt that their revenue strategies were flexible.
- These vendors would be willing to sell processing services, turnkey systems, or software products.
- Vendors feel that retail-related computer service revenue will grow faster than revenue from other areas.
- One vendor with high revenue from commercial banking estimated that retail-related revenues would amount to 50% of the total in 1986. This vendor felt that growth of ATM networks, card based services, relationship management of retail accounts, and investment services for individuals would surpass the growth of commercial business from cash management and international banking.
- INPUT believes that revenue from processing related to retail banking will grow more rapidly than revenue from other applications, although it will probably not exceed revenue from other areas during the next five years.
- Vendors with successful but limited retail computer services should consider extending their base of retail products.

B. FAST-GROWING APPLICATIONS

- The applications which vendors identified as fast-growing are listed in Exhibit VI-4.

EXHIBIT VI-3

ESTIMATE OF RESPONDENTS' PROCESSING REVENUE
DISTRIBUTION BY BANKING DEPARTMENTS

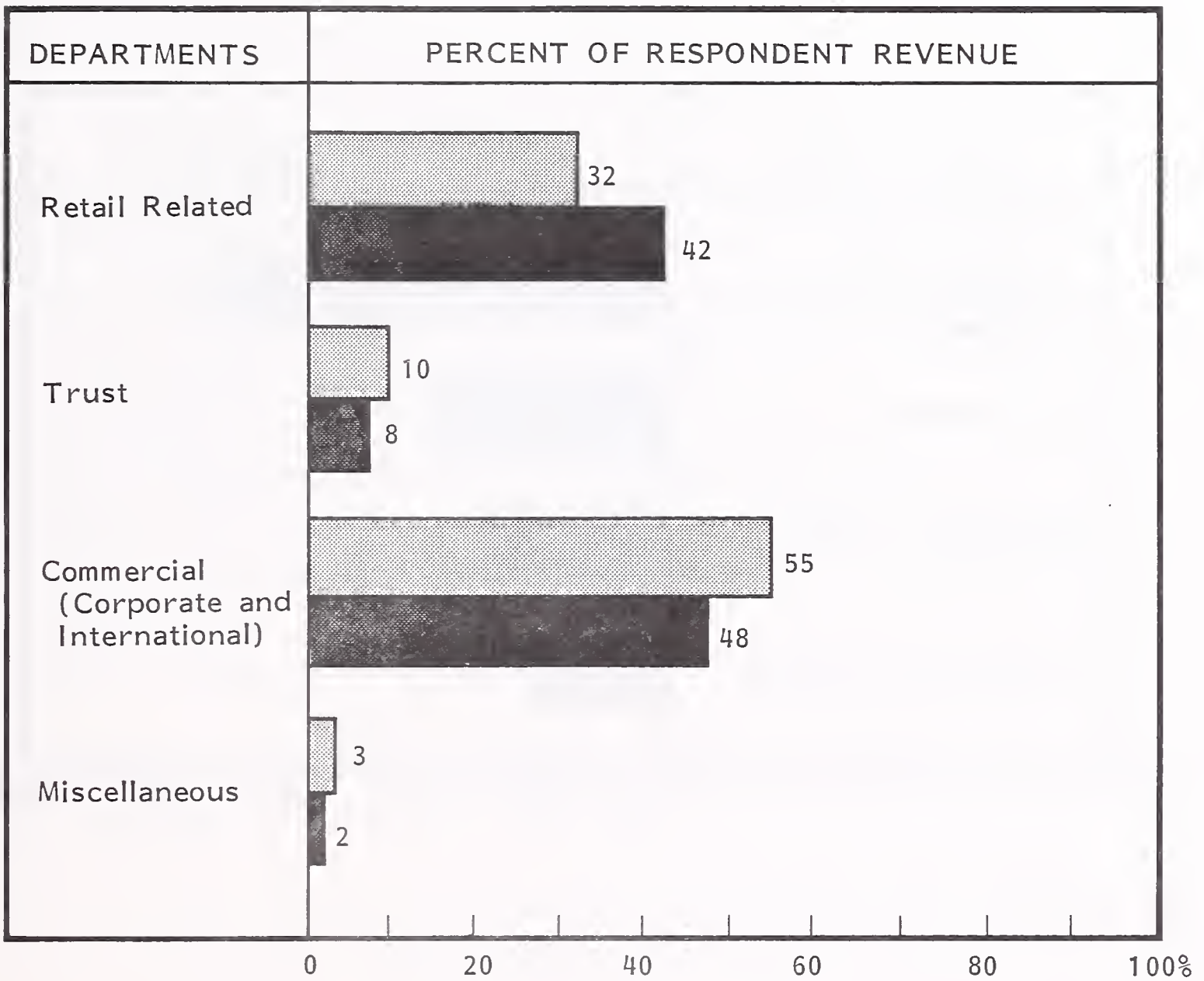
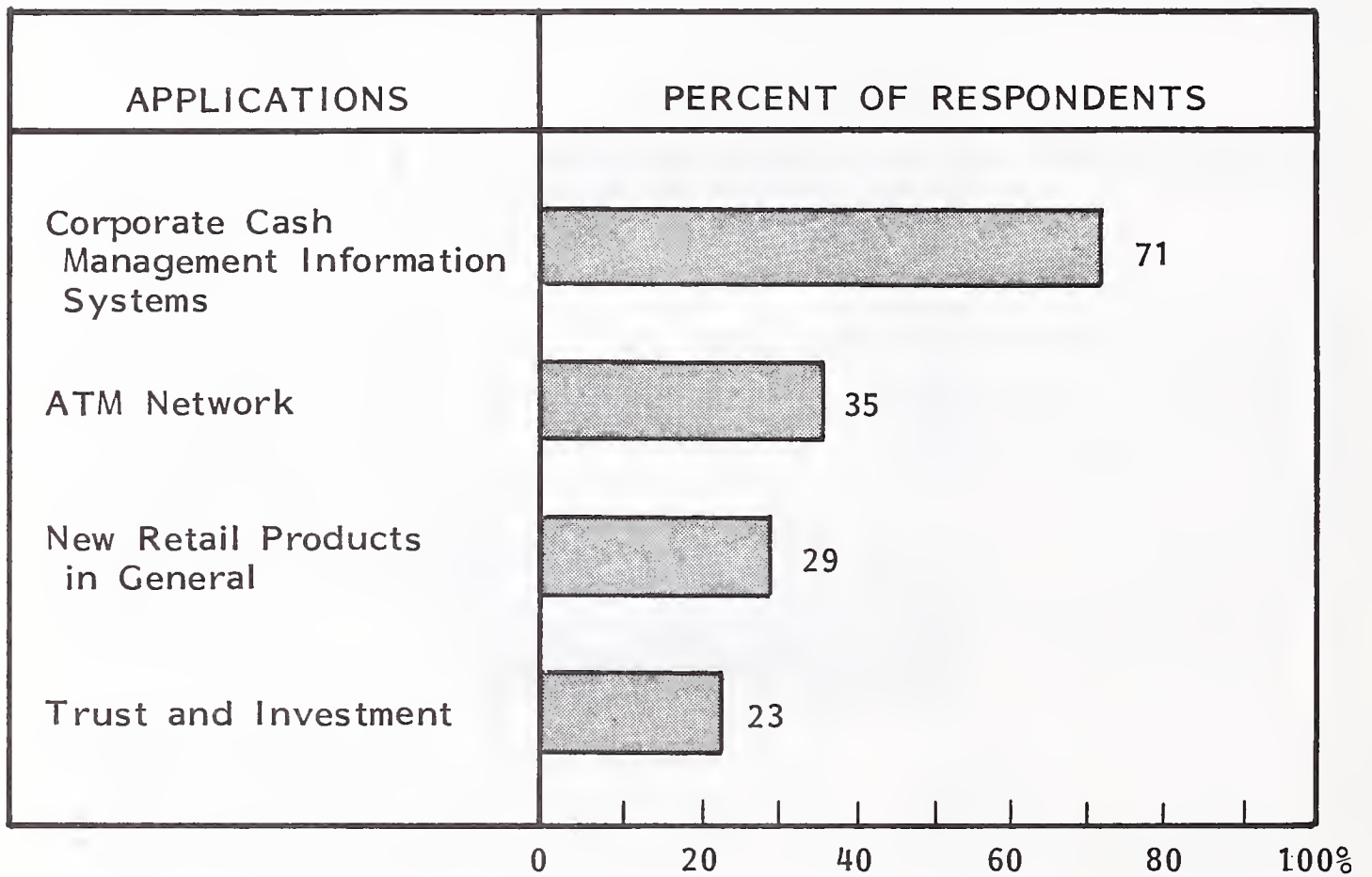


EXHIBIT VI-4

APPLICATIONS IDENTIFIED AS FAST-GROWING



- Vendors did not identify all such applications for competitive reasons.
- Cash management information systems are expected to grow rapidly by most vendors. Respondents expect the revenue to grow at an AAGR of over 30%.
- Vendors found it harder to estimate the growth of ATM revenue because there are so many vendors and new capabilities for network interconnection.
- Twenty-three percent of vendors expect retail processing in general to grow rapidly.
- Trust processing is also expected to grow rapidly by 23% of vendors. These vendors expect the AAGR for trust processing to increase by 35%.
- INPUT estimates that the rates for applications that vendors identified as fast-growing are:
 - Cash management information systems - 30% AAGR.
 - Retail processing - 40% AAGR.
 - Trust and investment - 35% AAGR.
- Vendors confirm their expectations that these applications will grow by planning to offer products in these areas.
 - Some vendors do not seem to be addressing the product differentiation that will be required to obtain market share.
 - Vendors may not be considering the complexity of processing or the changing requirements of these applications.

- For instance, cash management is a set of applications providing:
 - Information for a bank customer on balances, transactions, pending transactions, and operational products. It is gathered within the bank and from other banks.
 - General information on services and interest rates.
 - The capability of initiating transactions, particularly funds transfer.
- Banks are trying to implement several changes in cash management.
 - One addresses the capabilities now included in some systems, such as a linkage between payments and security information systems, and automatic investment of funds.
 - The second addresses a new approach to cash management to enable corporations to relate information from banks to their own cash forecasting and financial information. This will lessen the burden of responding to the volume of messages on current systems.
- The major vendors of cash management are GEISCO, IDC, NDC, and ADP. They have about 90% of present available revenue.
- In addition, CDC, Computer Sciences Corp (CSC), United Information Systems (UIS), Citishare, and other vendors offer this application.
- Some banks offer their own internally developed systems while other banks offer a system supplied by a third party under their own label.
- Cash management systems must exchange information with each other.
- One large bank expects only four or five different systems to survive.

- ATM services are emphasized by a number of vendors including EDS, Anacomp, GE, ADP, American Management Systems, Scientific Time Sharing Corporation (STSC), Canada Systems Group, Boeing Computer Services, and Telecredit.
- Many other vendors and banks offer or plan to offer ATM services as well.
- Offering ATM network service can lead banks to consider other services and their total retail strategy.
- Large banks must consider on-line requirements for POS, pay by phone, home banking, and check authorization together with ATM operation. A few banks are planning other types of electronic debits, credits, and advices that would be added to network traffic also.
- On-line activity from retail bank products, together with teller transactions and ACH transactions, creates a need for integrated on-line retail banking.
- The variety of retail services, including savings products, means that banks need a customer information system to measure the activity and profitability of customers.
 - Very active customers may not have enough deposits in their accounts to be profitable.
 - Charges may have to be increased to make accounts profitable.
- It is not surprising that some of the vendors offering ATM service have developed CIF and/or retail banking systems.
- Trust processing also involves interrelated products.
 - *highlighted by hand* Bradford, SEI, and Shear provide a broad set of applications in trust, and let opportunities in this area suggest new products.

- SEI has followed this principle in their recent, very successful offer of a money market fund.
- Although these firms are positive about the growth of trust processing services, their outlook should be reviewed carefully by vendors who offer a more limited set of products.
- Other processors with trust applications include Sun Information Services, Comshare, IDC, and EDS. These processors offer products in other areas of banking as well.
- INPUT recommends that vendors with trust processing services either offer a wide range of services or determine that their processing is not vulnerable to competition from large trust processors.
- A new and growing application involves the use of several outside investment advisory services to manage sections of one total portfolio that a bank has in custody. The bank has to prepare reports to monitor the investment performance of each section. Vendors who have access to a data base of equity prices, together with portfolio management and financial modeling software, can offer an application to simplify this task for banks.
- Comshare, Telstat, and several smaller vendors are also investigating the use of microcomputers with their RCS service to handle portfolio management and personal trust at small banks. The computers would go on-line to the RCS for pricing data.

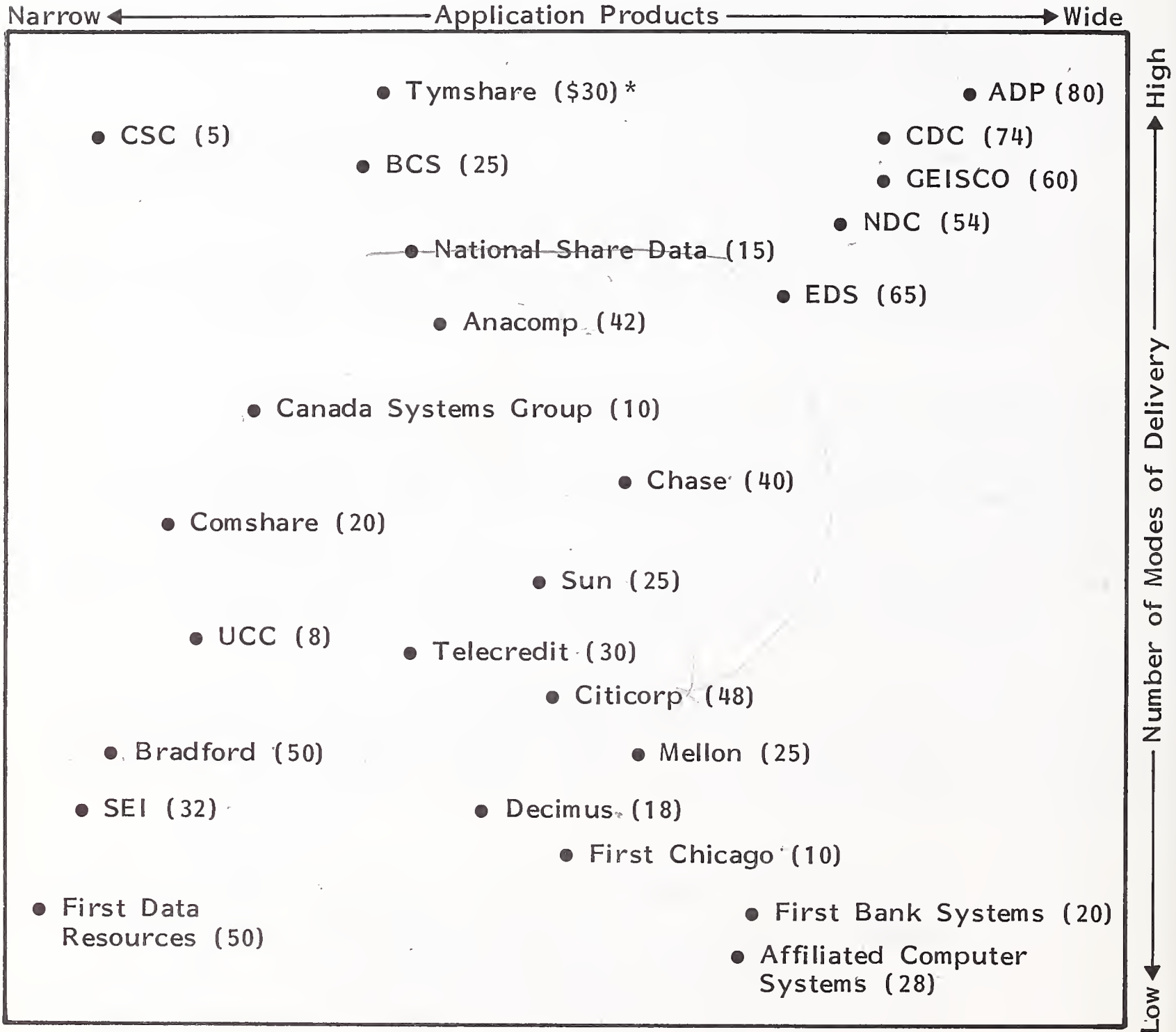
C. ANALYSIS OF VENDORS OF BANK PROCESSING

- Vendors of bank processing services can be reviewed by comparing the range of applications they offer to banks with the range of modes of delivery available.

- This review is shown in Exhibit VI-5 for the vendors of processing services with high aggregate revenue from banking.
- A group of vendors with smaller levels of revenue is included in the chart to aid analysis.
- This exhibit does not locate the most profitable vendors. It merely provides a means for comparison of the range of business.
- This exhibit shows that most vendors with high revenue from banking have a wide range of service capabilities and applications (the upper right quadrant).
- The vendors with large revenue from cash management tend to be in the upper right quadrant too.
- Bank vendors tend to fall in the middle-lower area of the exhibit.
- Several vendors such as Sun and Telecredit are close to the banking vendors.
- Bank vendors have processing services that are not housed with the processing department or subsidiary of the bank.
 - Citicorp supplies retail processing services and turnkey systems to small banks and credit unions. Revenue from this is not aggregated with Citishare.
 - Chase Manhattan supplies processing services for NOW accounts to credit unions and S&Ls. This adds about \$10 million to IDC revenue.
 - Bank of America has an ATM service for other banks separate from its processing company.
- The location of processing vendors in Exhibit VI-5 is based on an INPUT estimate of the range of applications and other services offered to banks.

EXHIBIT VI-5

REVIEW OF VENDOR APPLICATIONS AND SERVICES



* Figures in parentheses are estimates of 1981 revenues in \$ millions.

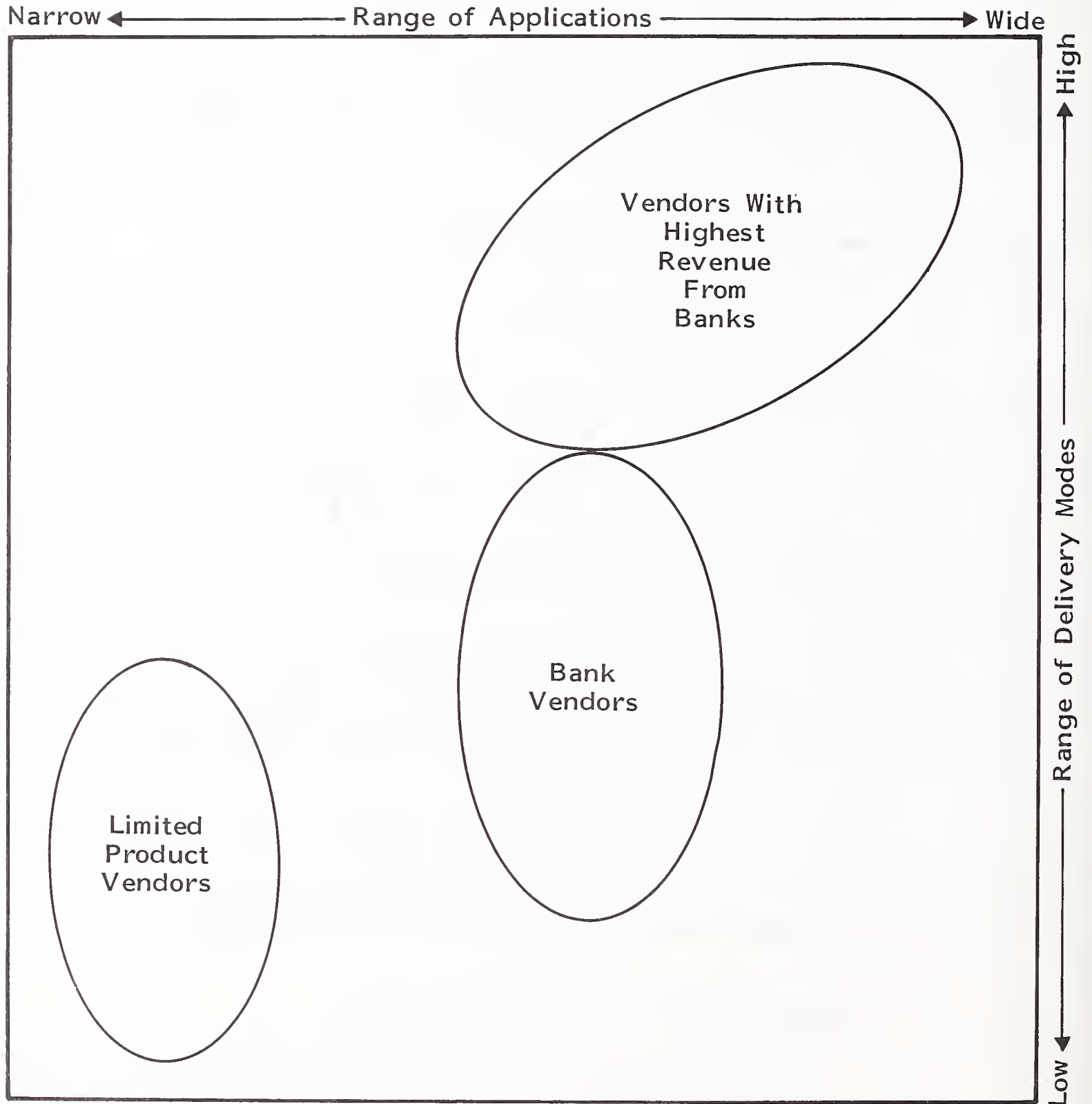
- Companies that offered extensive expertise within one application area, such as trust, were put in the narrow side of the range.
- The placement of firms in this exhibit will be explained by reviewing their characteristics.
- ADP has a broad range of bank processing applications included retail, corporate, international, correspondent bank, automated customer services, and government banking. ADP also offers payroll and general ledger processing for banks' internal use.
- ADP has RCS, facility management, and batch processing services as well as packet networks, hardware services, proprietary data bases, and graphics capabilities used by banks.
- GEISCO has a concentration of processing applications in the corporate, correspondent bank, and international areas of banks, but has retail expertise (MAX turnkey) as well.
- GEISCO does not offer facility management and batch processing, but it provides user site hardware services, proprietary data bases, extensive network capabilities, and graphics for bank users.
- The processing applications of EDS are extensive in the retail area, with a wide range of services to commercial banks, S&Ls, and credit unions.
- EDS chiefly offers facility management and batch processing.
 - EDS also provides limited trust and commercial processing.
 - A facility management division offers on-line ATM, CIF, and data entry applications.

- EDS also has software packages and a turnkey system for small retail banks.
- NDC offers RCS, batch, and facility management processing, a network (through Rapidata), and proprietary data bases to banking clients.
 - Through its cash management applications, NDC (including Rapidata) sells processing services to international, corporate, and correspondent banks.
 - NDC also offers general applications such as financial modeling to many banking departments as well as ATM services and other retail applications.
- Tymshare offers retail products (including credit card processing), an extensive international banking system, and selected services in other areas of banking.
- Tymshare sells RCS and batch processing, user site hardware services, packet communication, applications software, and proprietary data bases to banks.
- CDC includes RCS, batch processing, network capabilities, hardware services, proprietary data bases, and professional services among the products banks use.
 - CDC offers processing services from several different offices to the retail, corporate, international, and money market departments of banks.
 - The retail processing includes batch processing for thrifts and credit unions.
- Anacomp sells retail or consumer processing services to credit unions and commercial banks as well as correspondent bank processing.

- Anacomp offers RCS, facility management, and batch processing services, software packages, and a turnkey system to bank clients.
- The turnkey system (CIS) is a comprehensive integrated system that handles on-line consumer banking as well as all retail functions on a large IBM system.
- Bradford sells RCS, facility management, and batch processing services. The company offers trust processing from buy and sell advices, and receive and deliver functions, all phases of report production, file maintenance, and processing required for trust departments.
- SEI offers minicomputer-based trust data processing on RCS and facility management. Trust departments managing large and small portfolios can buy on-line trust accounting, reporting, and MIS.
- INPUT suggests that vendors of processing services, shown in Exhibit VI-5, to banks can be grouped into high revenue vendors, bank vendors, and specialized processors of trust services, as shown in Exhibit VI-6.
- An observation from this chart along with a knowledge of the vendors is that firms who move from a position in the lower left quadrant to the upper right quadrant have enjoyed the largest growth in revenue from banking.
 - Growth comes from a broad range of delivery modes and applications.
 - This may be done by acquisition as well as development.
- EDS, Anacomp, and NDC all followed this pattern.
- ADP and GEISCO maintained a commitment to banking and let revenue grow from this industry segment while capabilities expanded.

EXHIBIT VI-6

VENDOR GROUPINGS



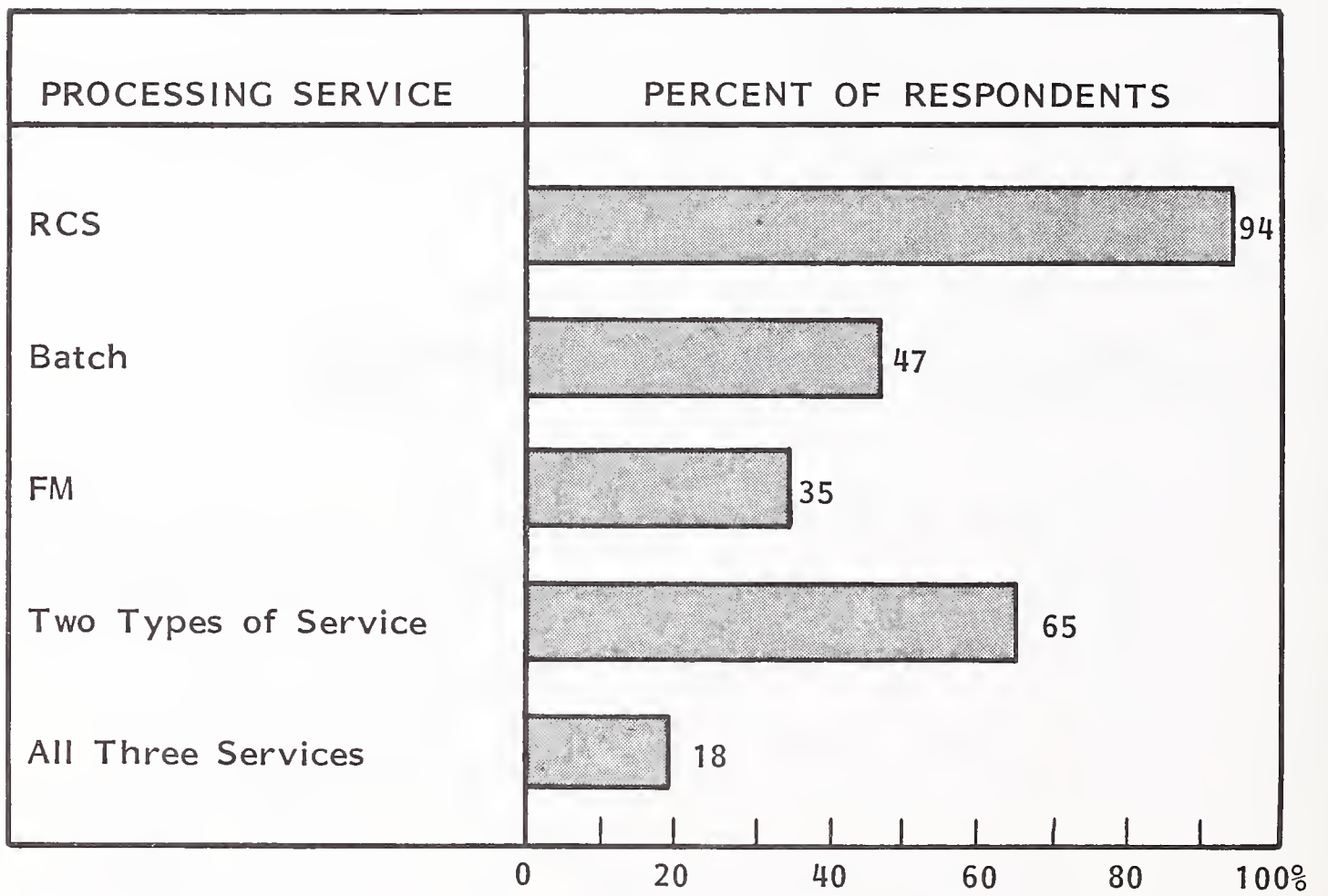
- Sun, Systematics, and the largest bank vendors, Chase and Citicorp, are moving in this direction as well. Citicorp will expand its services as a result of federal court decisions.
- The specialized vendors need to be reviewed separately. First Data Resources, as a subsidiary of Shearson American Express, is part of a company that offers a variety of services.
- Successful independent specialized vendors are concentrated in trust.
- INPUT recommends that vendors of successful but isolated applications for banking consider steps to enlarge both their range of applications and mode of delivery.

D. PROFILE OF PROCESSING SERVICE RESPONDENTS

- Exhibit VI-7 shows that most respondent vendors offer combinations of processing services. Sixty-five percent offer two types of processing service and 18% offer all three types.
- Vendors also offer other modes of delivery to users, including:
 - User site hardware services.
 - Professional services.
 - Software products.
 - Turnkey systems.
- Batch processing applications include:

EXHIBIT VI-7

RESPONDENTS' PROCESSING SERVICES



- Payroll.
 - Bookkeeping and accounting.
 - Credit card ticket processing and billing.
 - Correspondent banking.
 - Investment accounting.
 - Term and savings note processing.
 - Security prices and information delivered on tape or paper.
- Facility management is more limited, concentrating upon trust, retail banking, and custom programming for commercial departments. Several vendors expected this form of processing to spread to all areas of banking.
 - Only 18% of the vendors have just a few applications, and except for vendors of trust processing, these vendors are most worried about banking applications moving in-house.
 - Thirty-five percent of the vendors express concern about losing business to in-house EDP departments.
 - Most concern is over batch systems and financial modeling applications.
 - Vendors said that other applications, including cash management systems, were also moving wholly or partially in-house.
 - A few vendors believe that it is inevitable for some applications to move in-house. They stress that processing vendors must develop new products to replace them.

- Many vendors assist users in moving work in-house by offering software, hardware services, and turnkey computers.
- Seventy-six percent of the vendors offer user site hardware services and/or experiment with microcomputer-based turnkey systems.
- Vendors have microcomputer-based turnkey systems in operation or in test for financial modeling, treasury (for bank customers), personal trust, real estate, payroll, pay by phone, and other applications.
- Some respondents are developing new terminals for ATM and pay by phone use.
- Over half of the vendors also offer software packages and DBMS to bank customers.
- Forty-one percent of vendors stress network applications and the means for banks to use common carriers and international record carriers (IRCs).
- RCS applications are the most extensive, covering all areas of banking. They include:
 - ATM, POS, pay by phone, and home banking.
 - Retail account processing and CIF.
 - Savings and term note processing.
 - Mortgage and other customer loans.
 - Correspondent banking.
 - Automated customer services.
 - Commercial loans.

- Cash management.
 - Wholesale products.
 - Trust and investment.
- The range of revenue growth expected by vendors for processing services is shown in Exhibit VI-8.
 - The vendors who offer the widest variety of services have the highest revenue from banking institutions, except for the limited groups of trust processing vendors.
 - Several vendors with only a few products lost bank business to in-house processing during 1981.
 - The vendors with many banking services and applications note that they must offer banks a variety of products for several reasons:
 - This spreads the cost of contact work and research that banking institutions require.
 - The risk of losing too much business through sudden change is reduced.
 - Some vendors report problems at customer sites which could affect business. These problems are described in Exhibit VI-9.
 - Fifty-three percent of the vendors fear that problems might affect business.
 - The most significant of these problems is pressure for cost reduction.

EXHIBIT VI-8

GROWTH RATES FORECAST BY VENDORS

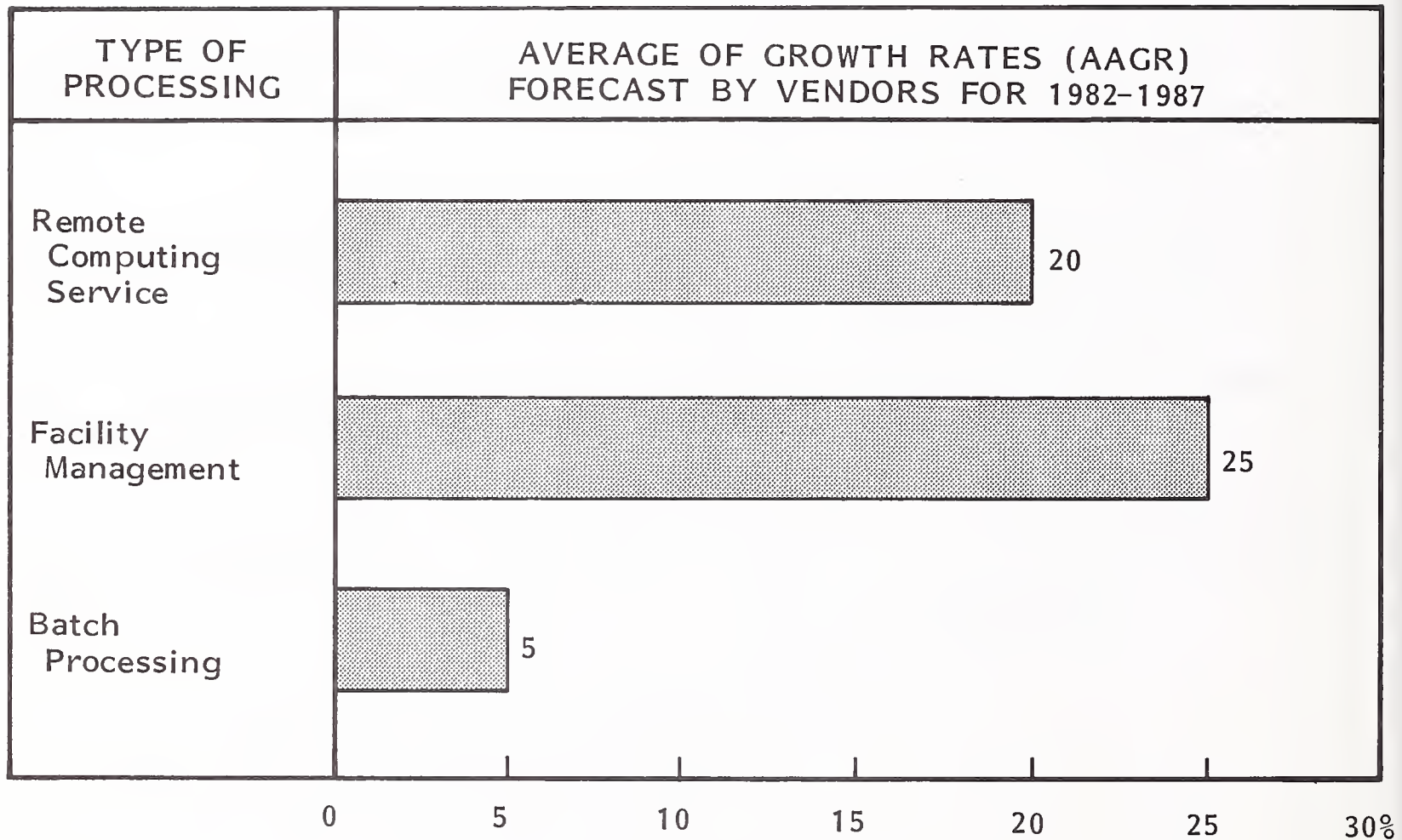
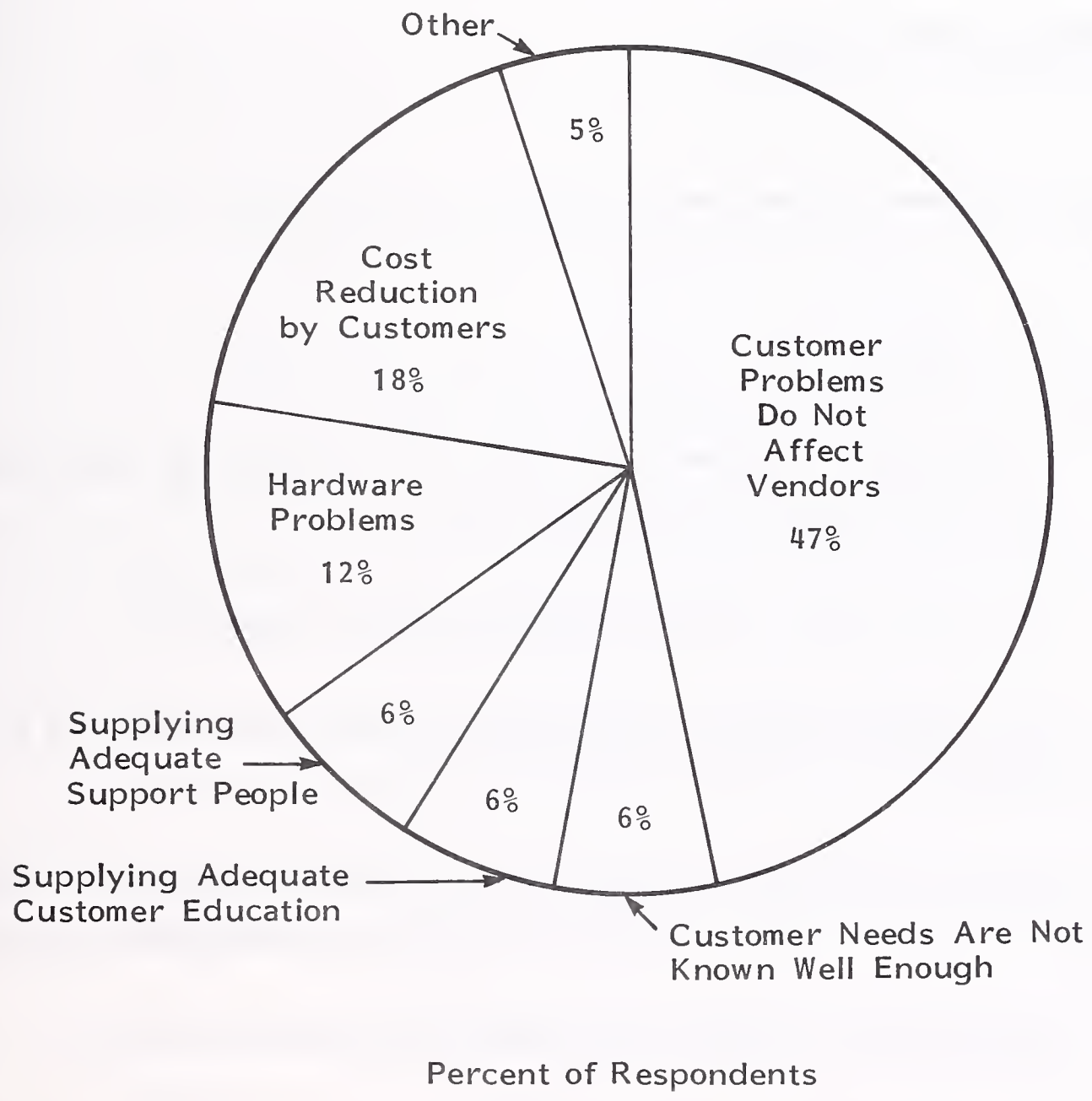


EXHIBIT VI-9

CUSTOMER PROBLEMS THAT COULD AFFECT BUSINESS



- Other problems include supplying adequate support people and education for customers. It may cost too much to supply the support service and education that the customers demand, even if fees are collected.
- Six percent of the vendors expect problems if the needs of customers are not sufficiently known.

E. AREAS OF OPPORTUNITY

- Projects and ideas discussed with banks reveal the following kinds of opportunities:
 - Cost reduction.
 - Enhancements and new requirements for fast-growing applications, particularly those with value added capabilities.
 - New applications of interest to banking clients/prospects.
 - New services/applications that vendors might promote with banks or on their own.
- Cost reduction will affect most processing vendors adversely, but many vendors are using the banks' interest in cost reduction to obtain new business.
 - Users are more interested in cost reduction than vendors realize.
 - Cost analysis and reduction promote interest in financial modeling systems.

- Some vendors are providing more complex financial modeling and analysis software and consulting for models to capitalize on this interest.
- Financial modeling revenue is growing at several vendors who offer these increased services, while some vendors who have not responded to these user needs are losing business to in-house conversion of the application.
- Banks are more interested in moving their processing in-house because of costs pressure. Some processing vendors are capitalizing on this interest.
 - Sun, Anacomp, EDS, and a few other processing vendors are selling software packages that help banks move applications in-house.
 - Most large processing vendors, such as ADP, GEISCO, CDC, and Tymshare, have user site hardware services to help applications move in-house.
- Some processing firms including GEISCO, EDS, and Anacomp are replacing processing services with turnkey systems.
- Processing vendors could compete by moving their applications in-house at one of their bank customers. Software vendors have tried this approach.
- INPUT recommends that processing vendors prepare products that move bank work partially or wholly in-house.
- The drive to reduce costs also increases interest in facility management services.
- Several banks found it difficult to employ personnel at low rates for certain operational work.

- Banks are not generally prepared to hire and train personnel for low-cost processing work.
- Several managers at large banks expect a class of financial institutions to emerge in the next few years that will be, in effect, low-cost processors.
 - INPUT concurs and believes that new as well as existing processing vendors will be in this class.
 - These institutions will provide low-cost processing for credit card tickets, retail banking, and trust.
- The low-cost processors would provide services to large international banks and specialized or smaller institutions.
- Enhanced or new systems will increase revenue for some processing vendors.
 - This is particularly true for applications that will use value added services.
 - For example, cash management systems can use networks, intelligent terminals, and graphical displays or output.
- Exhibit VI-7 indicates areas where banks want new or enhanced systems for the future. Except for lending, these are the same areas identified as important for the future.
- Present and prospective users of cash management systems have new requirements, as shown in Chapter V-C. Vendors will gain revenue if they prepare to meet these new requirements.
- Some vendors, including bank vendors, offer cash management products. Product differentiation will be required to gain revenue or hold market position.

- INPUT recommends that processing vendors plan product enhancements if they are going to offer cash management systems.
- Large commercial banks, particularly those with assets above \$1 billion, will be seeking improved capabilities.
 - One set of improvements concerns the provision of information features and operational products (lockbox, zero balance), as shown in Chapter V-C.
 - The second set of improvements is for automatic or integrated operation between banks and their customers.
 - INPUT recommends that vendors enhance their products to meet these needs.
- Some commercial banks with assets below \$1 billion will be interested in cash management systems with a limited and less costly set of capabilities.
 - Information on balances and transaction details is needed.
 - Investment of net balances above certain levels in money market funds and information on a limited set of products should also be added.
- Retail banking is also a promising area for new and enhanced systems.
- The new on-line products such as ATM, pay by phone, and money market sweep accounts present opportunities.
- Vendors that offer these products, together with retail banking systems or other retail services, can make the most profit. These vendors will be more sensitive to changes in bank planning for retail banking.

- Banks wonder if ATM and other on-line offerings will be profitable, even though they are necessary. To enter this field, vendors must develop a sound marketing strategy.
- Some vendors are studying technical capabilities to improve ATM, pay by phone, and home banking systems. Greater reliability, store and forward options, improved ease of use, and features to promote use are mentioned.
- Agreement on use of the third track on magnetic tape strips in shared networks has not been reached.
- ADP, Telecredit, and Anacomp are engaged in research on improvements in use of cards in ATM units.
- Developments in terminals would be a good idea for these firms since they have comprehensive retail banking programs.
- Bradford, Telstat, Comshare, SEI, and many banks are working on new trust and investment applications.
 - Bradford is introducing a product like the Merrill Lynch CMA with the IN Bank of Rhode Island and Crocker.
 - SEI has introduced a very successful money market fund that is linked to its trust business.
- Bradford and SEI are offering money market sweep funds based on these developments to retail banking.
- Comshare has introduced a personal trust turnkey system on a microcomputer for banks with smaller trust holdings.
- The opportunities being exploited by these vendors are aligned to their trust business.

- Other vendors are exploring user site hardware services in trust.
 - Several vendors are investigating the use of microcomputers for portfolio management or trust.
 - This application would be located on the customer's premises, with a host computer for pricing data and possibly processing during peak periods or for complex jobs.
- According to several major banks, terminal access to and selective reports from sections of the master trust account managed by different investment advisers could aid processing of master trust accounts. A client corporation, as well as investment advisers, could then review portfolio performance of a subportfolio more rapidly.
- New lending products and improvements in credit processing are being investigated by several vendors and banks. Anticipated changes could produce an opportunity for processing vendors.
- International banking should be investigated further. The systems used by banks have not always kept pace with the requirements of international banking and new network capabilities.
- International banking systems could be a great opportunity for vendors with network capabilities and international cash management systems.
- The MIDAS turnkey system marketed by BIS for international banking, has been a success.
- The international system offered by Tymshare, IBIS, has been well received.
- GEISCO is investigating an international system as well.

- A processing vendor could offer a set of modules to be installed partially or wholly in-house, or on a processing service. A bank with international business could test or use modules of the system on a processing service and move some software in-house later.
- Processing vendors should consider offering more delivery modes such as software products, turnkey systems, user site hardware service, and value added networks.
- A range of products offers the opportunity to participate in the movement of services applications in-house, and to profit more from application expertise.
- Some vendors are considering another opportunity.
 - This opportunity involves becoming a bank.
 - Bradford has done this in trust services.
- Vendors are evaluating offering settlement services to banks which in turn would market these services to corporate customers.
 - The vendor would offer systems for ordering goods and services among a group of companies.
 - Net settlements between companies would be calculated periodically by a vendor and forwarded to a participating bank for posting.
- GEISCO, NDC, and several other vendors are involved with these applications.
- RCS and network capabilities could replace current means of ordering products and services. Payment data would be forwarded to participating banks.

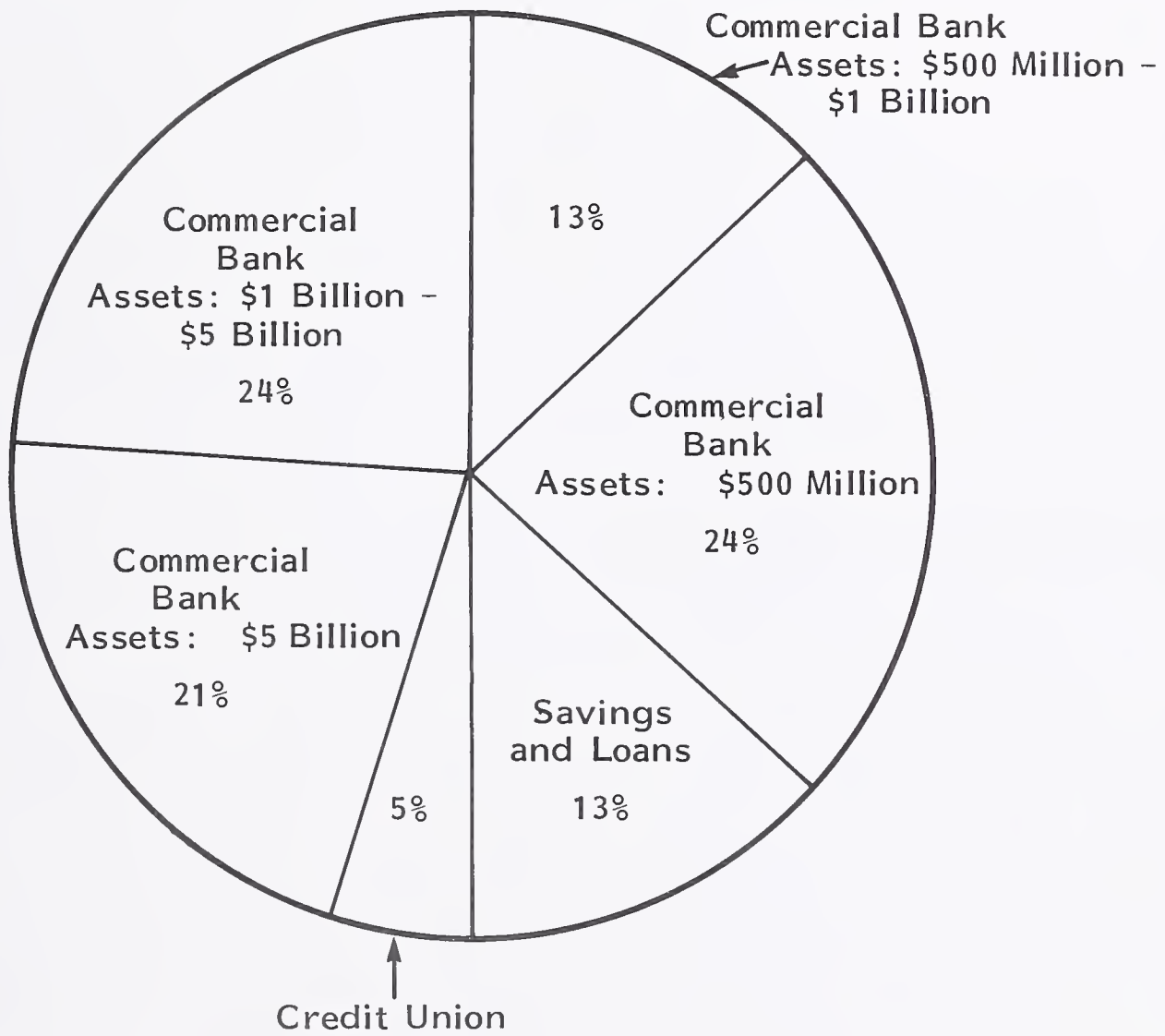
- Vendors would also set up a large-scale processing capability for small banks and provide connections to banks and federal services through willing commercial banks.
- Processing vendors should also consider nonprocessing services that could generate processing business.
- The club or package of services offered by vendors such as F.I.S.I. could be a model for such products, as shown in Exhibit V-8.
- F.I.S.I. provides services to over four million accounts at 2,100 banking institutions.
- A package of services offered through small banks could incorporate processing services to support the bank, or funnel depositor requests for services to other suppliers. The packages could be related to insurance, investment, travel, buying, and banking services not offered by the small bank.

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APPENDIX A: BANK RESPONDENT PROFILE

APPENDIX A

BANK RESPONDENT PROFILE



Percent of Respondents

Number of Respondents = 38

APPENDIX B: DEFINITIONS

APPENDIX B: DEFINITIONS

COMPUTER SERVICES

- These are services provided by vendors which perform data processing functions using vendors' computers (processing services) or assist users to perform such functions on their own computers (software products and/or professional services).

- The following are definitions of the modes of service used in this report.
 - Remote Computing Services (RCS) provide 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. There are five submodes of RCS:
 - Interactive (timesharing) is characterized by the interaction of the user with the system, primarily for problem-solving timesharing but also for data entry and transaction processing: the user is on-line to the program/files.

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

- Data Base is characterized by the retrieval and processing of information from a vendor-maintained data base. The data base may be owned by the vendor or a third party.
 - User Site Hardware Services (USHS). These offerings provided by RCS vendors place programmable hardware on the user's site (rather than the EDP center). USHS offers:
 - Access to a communications network.
 - Access through the network to the RCS vendor's larger computers.
 - Significant software as part of the service.
 - Videotext is a variant of interactive Remote Computing Services.
 - Access may be through cable television systems as well as ordinary telephone lines.
 - The display is a television set equipped with a keypad or typewriter keyboard and special circuitry.
 - The user may not create programs on the remote computer.
 - The user may query or enter transactions to the remote computer through menu driven software.
 - Prestel and QUBE are examples of videotext.
- Batch Services include data processing performed at vendors' sites of user programs and/or data which are physically transported (as opposed

to electronically, by telecommunications media) to and/or from those sites. Data entry and data output services, such as keypunching and COM processing, are also included. Batch services include those expenditures by users who take their data to a vendor's site, where a terminal connected to a remote computer is used for the actual processing.

- Processing Services Facilities Management (FM). (Also referred to as "Resource Management" or "Systems Management.") The management of all or a significant part of a user's data processing functions under a long-term contract (not less than one year). To qualify as processing services FM, the contractor must directly plan and control as well as operate its own computers/communications network, including providing computers at the client's site, to deliver the service. Simply providing resources, even though under a long-term contract, and/or providing for all of a user's processing needs, does not necessarily qualify as FM.

TYPES OF PROCESSING SERVICES

- Processing services encompass processing services facilities management, remote computing services, and batch services. They are categorized by type of services bought by users as follows:
 - Function-Specific services are the processing of applications that are targeted to specific user departments (e.g., finance, personnel, sales) but cut across industry lines. Most general ledger, accounts receivable, payroll and personnel applications fall into this category. General purpose tools such as financial planning systems, linear regression packages and other statistical routines are also included in this category. However, when the application or tool is designed for specific industry usage, then the service is industry-specific.

- Industry-Specific 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 applications "tool" which the user employs to produce a unique solution. Specialty applications can be either business or scientific in orientation; data base services, where the vendor supplies the data base and controls access to it (although it may be owned by a third party), are also included under this category. Examples of industry 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, data base management systems, information retrieval software, scientific library routines, and other systems software.

USE OF PROCESSING SERVICES

- Processing can be categorized by use as follows:
 - Transaction Processing indicates those services where the primary or predominant purpose of the application is to process transactions, usually in a highly repetitive fashion. Most business accounting fits into this category. Payroll, accounts receivable, order entry, portfolio accounting, and inventory control are all good examples of transaction processing.

 - Information Analysis services are processing services where the primary or predominant purpose of the application is to convert data into

information through the use of mathematical, statistical, or financial analysis tools that readily and easily display the results in report or graphical form. The tools may be rapidly adapted to address a variety of nonrepetitive problems. These tools are often in the areas of financial analysis, marketing, planning, and statistical analysis. Many of the techniques incorporated have their origins in scientific and engineering applications, which also generally fall within this category.

- User Data Base Management services are processing services where the primary or predominant purpose of the application is to organize and maintain a data base of user information in a manner that facilitates its rapid and efficient retrieval and display according to user-defined parameters, either in ad hoc or fixed form.

- Vendor Data Base services are processing services where the primary or predominant purpose of the application is to retrieve and/or process data supplied by the vendor who controls access to it (although it may be owned by a third party). There are two modes of delivery of this service:
 - Inquiry data base services provide a means of selection and retrieval of data only. They neither provide, nor usually allow, for the subsequent processing of the data. Stock market statistics, news services, and bibliographic data bases are commonly offered in this mode.

 - Application Processing services, in addition to providing a means of selection and retrieval, also provide a means of further processing the data into information through the full use of information analysis tools and data base management systems, which permit the merging of vendor data with user data. Demographic, marketing, and financial and economic data bases are commonly offered in this mode.

PROFESSIONAL SERVICES

- This category is made up of services related to EDP, including professional services facilities management, system design, custom/contract programming, consulting, education, and training. Services are provided on the basis of:
 - Time and Materials - The billing rate is measured in units of time, rather than actual costs.
 - Fixed Price - A firm price is agreed upon for a defined piece of work.
 - Cost Plus Fee - The billing rate depends on actual costs plus a fixed fee.
- Professional Services Facilities Management is the management of all or a significant part of a user's data processing functions under a long-term contract (not less than one year). To qualify as professional services facilities management, the contractor must directly plan and control as well as operate the client's facility, where the computers are owned by the client. Simply providing resources, even though under a long-term contract, does not necessarily qualify as professional services facilities management.

SOFTWARE PRODUCTS

- This category includes the user's purchase of applications and systems packages for use on in-house computer systems. Included are lease and purchase expenditures as well as fees for work performed by the vendor to implement and maintain the package at the user's site(s). Fees for work performed by organizations other than the package vendor are counted in professional services. There are several subcategories of software products:

- Applications Products are software products which perform processing to serve user functions. They consist of:
 - Cross-industry products, which are used in multiple-user industry sectors. Examples are payroll, inventory control, and financial planning.
 - Industry-specialized products, which are used in multiple-user industry sectors. Examples are payroll, inventory control, and financial planning.
 - Industry-specialized products, which are used in a specific industry sector such as banking and finance, transportation, or discrete manufacturing. Examples are demand deposit accounting and airline scheduling.

- Systems Products are software products which enable the computer/communications system to perform basic functions. They consist of:
 - Systems operations products, which function during applications program execution to manage the computer system resource. Examples include operating systems, communication monitors, emulators, and spoolers.
 - Systems utilization products, used by operations personnel to utilize the computer system more effectively. Examples include performance measurement, job accounting, computer operations scheduling, and utilities.
 - Systems implementation products, used to prepare applications for execution by assisting in designing, programming, testing and related functions. Examples include languages, sorts, productivity aids, data dictionaries, report writers, project control systems, retrieval systems, and Data Base Management Systems.

INTEGRATED SYSTEMS (TURNKEY)

- An integration of systems and applications software with hardware, packaged as a single entity. The value added by the vendor is primarily in the software. Most CAD/CAM systems and many small business systems are integrated systems. This does not include specialized hardware systems such as word processors, cash registers, process control systems, and military weapon systems. Products sold by computers which are primarily computer manufacturers are generally excluded.

TELETEXT

- Teletext is an information service that is distinct from processing services.
 - Information is provided to the user through a broadcast transmission.
 - The vendor does not process user data.
 - Information may be selectively displayed through interaction with the receiver, not the vendor's computer.
 - The receiver is usually a television set equipped with special circuitry and sometimes a device which allows the user to select which portion of the broadcast should be displayed. There are two types of service:
 - Continuous. Transmission is continuous. The user cannot select information to be displayed.
 - Selective. The user can select a portion of the transmission to be displayed.

- Examples of teletext includes cable TV broadcast of news services and stock quotations.

OTHER CONSIDERATIONS

- All expenditures and revenues addressed are "available" in that they are open for competition. "Captive" figures, which refer to expenditures by a user for services from a subsidiary company, such as Boeing Aircraft with Boeing Computer Services (BCS), are not included. They may be referred to when examining an individual "spin-off" vendor, such as BCS.
- When any questions arise as to the proper place to count certain user expenditures, INPUT addresses the questions from the user viewpoint and categorizes the expenditures according to the answer to the question, "What do the users perceive they are buying?"
- Industry sectors used in this report are defined in Exhibit B-1.

SUMMARY OF BANKING TERMS

- ACCOUNT RECONCILIATION - A service of balancing customer bank accounts by comparing checks issued with checks paid. The customer can obtain a listing of checks paid or a full service program with a computerized listing of checks outstanding.
- AUTOMATED CLEARINGHOUSE (ACH) - A clearing location where members settle accounts by electronically exchanging debit and credit information. The ACH is formed by an association of private depository institutions. Most are located on the premises of Federal Reserve banks. The Chicago and N.Y. ACH are privately operated.

EXHIBIT B-1

INDUSTRY SECTOR DEFINITIONS

INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
DISCRETE MANUFACTURING	23	APPAREL
	25	FURNITURE
	27	PRINTING
	31	LEATHER
	34	METAL
	35	MACHINERY
	36	ELECTRONICS
	37	TRANSPORTATION
	38	SCIENTIFIC AND CONTROL INSTRUMENTS
PROCESS MANUFACTURING	39	MISCELLANEOUS MFG.
	10	METAL MINING
	11	ANTHRACITE MINING
	12	COAL MINING
	13	OIL AND GAS EXTRACTION
	20	FOOD PRODUCTS
	21	TOBACCO
	22	TEXTILE PRODUCTS
	24	LUMBER AND WOOD PRODUCTS
	26	PAPER PRODUCTS
	28	CHEMICALS
	29	PETROLEUM
	30	RUBBER AND PLASTICS
	32	STONE, GLASS, CLAY
	33	PRIMARY METALS

EXHIBIT B-1 (Cont.)

INDUSTRY SECTOR DEFINITIONS

INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
TRANSPORTATION	40	RAILROADS
	41	LOCAL TRANSIT
	42	MOTOR FREIGHT
	43	U.S. POSTAL SERVICE
	44	WATER TRANSPORTATION
	45	AIR
	46	PIPELINES
UTILITIES	47	TRANSPORTATION SERVICES
	48	COMMUNICATIONS
BANKING AND FINANCE	49	ELECTRIC, GAS, & SANITARY
	60	BANKS
	61	CREDIT AGENCIES
	62	SECURITY AND COMMODITY BROKERS
INSURANCE	63	SECURITY AND COMMODITY BROKERS
	67	HOLDING AND INVESTMENT OFFICES
MEDICAL	63	INSURANCE (LIFE, HEALTH, ETC.)
	64	INSURANCE AGENTS
MEDICAL	80	HEALTH SERVICES

EXHIBIT B-1 (Cont.)

INDUSTRY SECTOR DEFINITIONS

INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
EDUCATION	82	EDUCATIONAL SERVICES
RETAIL	52	BUILDING MATERIALS, HARDWARE
	53	GENERAL MERCHANDISE
	54	FOOD
	55	AUTOMOTIVE AND GAS STATIONS
	56	APPAREL
	57	FURNITURE
	58	EATING AND DRINKING
	59	MISCELLANEOUS RETAIL
	WHOLESALE	50
51		NON-DURABLE GOODS
STATE AND LOCAL GOVERNMENT	91-97	AS APPROPRIATE
FEDERAL GOVERNMENT	91-97	AS APPROPRIATE
SERVICES	73	BUSINESS SERVICES

- AUTOMATIC TELLER MACHINES (ATM) - Machines allowing consumers to deposit or withdraw cash from their checking or savings accounts.
- BALANCE REPORTING SYSTEMS - An information system used to report daily bank account balance and transactions by a computer terminal or Telex.
- BANK CUSTOMER PROFITABILITY ANALYSIS - A statement of the activity cost in a corporate account and the adequacy of the compensation to the bank.
- CASH MANAGEMENT SYSTEM - A set of applications providing:
 - Information for a bank customer on balances, transactions, pending transactions, and operational products. It is gathered within the bank and from other banks.
 - General information on services and interest rates.
 - The capability of initiating transactions, particularly funds transfer.
- CHECK TRUNCATION - The process whereby the movement of a paper check is stopped at the depository institution first receiving the check. Pertinent information is converted to electronic image and processed by the payments system. The customer receives either a descriptive account statement or facsimile check copies.
- CONCENTRATION BANK - A bank which receives funds moved from other depository banks to maximize the availability of funds.
- DEPOSITORY TRANSFER CHECKS - A demand deposit instrument, bank or company prepared, to move funds from one location to another. This instrument, requiring no signature, is primarily used by corporations to move funds from outlying bank locations to a concentration bank.

- EFT TRANSFERS - The use of preauthorized debits and credits including corporate and government disbursements to replace paper based collection and disbursement systems electronically.
- FLOAT TIME - The time until deposits are considered collected and usable (availability). Float is the quantity of money in deposits that is not available.
- INVESTMENT PERFORMANCE ANALYSIS - The evaluation of investment practices relating to market performance of security holdings.
- LOCKBOX (WHOLESALE/RETAIL) - A special post office box used by a bank to receive customer payments and accelerate the collection of funds by reducing mail and check clearing float. Lockboxes are usually classified as retail (high volume, low dollar amounts) or wholesale (low volume, high dollar amounts).
- MONEY MARKET TRADING - Providing a brokerage service for use by corporations and individuals to invest their excess cash in short-term money market instruments.
- MONEY MARKET SWEEP - A review of the balances in a group of customer accounts (checking or NOW accounts) after the close of business daily, that will automatically invest all funds above a set amount in money market funds.
- NEGOTIABLE ORDER OR WITHDRAWAL (NOW) ACCOUNT - A NOW account is a form of interest-bearing checking account. The consumer writes a NOW draft (similar to a check) which, when countersigned by the depository institution, allows for third-party payment.
- NETTING - The electronic transfer of debit and credit information to an agreed-upon bank or processing service for the purpose of settling payments between corporations.

- POINT OF SALE (POS) DEVICE - A device located at a retail outlet, such as an electronic cash register, key pad activated credit authorization or check guarantee terminal for handling both authorization and transaction information.
- PREAUTHORIZED DRAFTS/DEBITS - A demand deposit instrument requiring no signature that is used to accelerate recurring payments through prior agreements among a corporation, its bank, and its customers.
- SAME DAY TRANSACTION REPORTING - Provision to send details on debit and credit activity to a customer terminal periodically during the day.
- SECURITIES TRANSACTION REPORTING - The use of on-line timesharing facilities to obtain current and pending security transaction information.
- SECURITY CUSTODY ACCOUNTS - A service rendered by banks, usually located in metropolitan areas, whereby securities are received for safekeeping in the vault of a bank for a service fee. This service can include buying and selling of securities, collection of dividends and interest payments, transfer of ownership, and automatic credit and debit entries to the depositor's account.
- SHARE DRAFT ACCOUNTS - Payable through third-party drafts which a credit union member uses to remove money from an interest-bearing account for payment purposes.
- WIRE TRANSFERS - The electronic transfer of funds from one bank to another through the Federal Reserve Wire, Bankwire, or Swift systems.
- ZERO BALANCE ACCOUNTS - A disbursement account allowing checks to be drawn against a zero balance. Funds are automatically transferred from a central control account to cover checks presented at the end of the day.

APPENDIX C: RELATED INPUT REPORTS

APPENDIX C: RELATED INPUT REPORTS

<u>Date</u>	<u>Title</u>
December 1981	U.S. Information Services Markets 1981-1986
September 1981	Directory of Leading U.S. Computer Services Firms
April 1981	Banking and Finance Industry Trends: Impact on Computer Services
March 1978	Computer Services Markets in Correspondent Banking

APPENDIX D: QUESTIONNAIRES

USER (BANK) QUESTIONNAIRE

INPUT is conducting a study on the growing use of computer service firms (GEISCO, ADP, Tymshare, etc.) by banks. We would like to ask you some questions about the issues and needs which you feel are of greatest importance currently and about your use of computer service firms. Your answers will be averaged with others and no reference will be made to your institution.

If you can aid us, a summary of the information gathered will be sent to you, which should be useful.

1. What major issues and needs could cause your bank to expand its use of computing?

Please weight each answer on a scale of: 1 = low importance, to 5 = high importance.

<u>ISSUE/NEED</u>	<u>WEIGHT</u>
Continuing high interest rates	_____
Cost reduction	_____
New (non-bank) competitors (e.g., Merrill-Lynch)	_____
Competition from other banks	_____
Revenue increase for your bank	_____
New technology	_____
Use of data networks	_____
Deregulation	_____
New lines of business	_____
New products/services	_____
Improvement of service	_____
Other factors (please list)	_____
_____	_____
_____	_____
_____	_____
_____	_____

2. What products or areas of your bank have the greatest need for new or enhanced systems as a result of the issues and needs discussed? Please list the products/- areas in order of importance. (A list of products and areas appearing on the next page can be read for illustrative purposes.)

PRODUCT OR AREA

Examples Of Products/Product Areas

- New Retail
ATM, POS, NOW, credit and debit cards, IRA, Keogh, money market accounts, pay by phone, home banking, preauthorized services.
- Retail Accounts
Installment lending, mortgage, holiday club, personal loan, etc.
Commercial loan - lines, secured loans.
- Lock box, zero balance, remittance, disbursement, collection, letter of credit.
- Cash Management
Same day reporting, money transfer input, international reporting.
- Correspondent banking.
- Payroll.
- Trust and securities related portfolio management.
- Commercial paper.
- Interest rate data bases.
- Other proprietary data bases.
- Data communication networks.

3a. Do you use computing services?

() YES () NO

3b. What are the major applications run on a processing service? Please list by importance.

APPLICATION	VENDOR	ANNUAL DOLLAR VALUE	GROWING SLOW, FAST OR NO GROWTH

3c. What is your total use of computer services?

\$ _____

4. We would like to separate your total use of computer services into three categories.

- o Applications used only in the banking industry.
- o Applications like financial modeling that are being used in a way that would be applicable to any industry.
- o Applications that could be moved to other vendors or in-house machines (e.g., in-house coding of small jobs in BASIC or FORTRAN).

5. Please estimate the annual dollar volume of each type of work and the major vendors involved.

	<u>ANNUAL DOLLAR VOLUME</u>	<u>MAJOR VENDOR(S)</u>
Banking industry applications	_____	_____
Functional applications - any industry	_____	_____
Utility work	_____	_____

6. Is any of the work that you listed run on a batch basis? (Input and output are carried by truck or messenger to the processing point.)

YES NO

If YES:

ESTIMATE OF HOW MUCH

Banking Application	_____
Functional Application	_____
Utility Work	_____

7. Do you utilize personnel from vendors to run work at your site?

YES NO

If YES:

TYPE OF WORK	FULL OR PART TIME	VENDOR	ANNUAL DOLLARS

8. Is any present work being moved in-house?

- YES NO
 YES, PARTIALLY

WHAT	WHEN (IMMEDIATE OR OVER TIME)	REASON (COST, CONTROL, ETC.)

9a. What computer will be used?

- Mainframe
 Mini
 Micro

9b. Does the processing vendor rent or lease the computer?

YES NO

10. Will software packages be used to replace vendor processing?

YES NO

Which packages? _____

11. Do you want to use application packages on processing services that utilize certain languages, data bases and access capabilities?

YES NO (or don't care)

If YES, are they similar to what is used internally?

YES NO

12. What software do you use for major applications?

Programming languages (COBOL, PL1, etc.) _____

Database (IMS, IDMS, TOTAL) _____

TP monitor, DBDC, CICS _____

Network or Datacomm (SNA; DECNET) _____

13. Does your bank offer computing software or services to other banks?

PLEASE DESCRIBE

YES

YES, expanding services

NO, but will offer

NO

VENDOR SURVEY QUESTIONNAIRE

INPUT is conducting a study on the use of computer service firms by banks. We would like to ask you some questions about the issues and needs which you feel are most important in regard to growth or contraction of services and about your services to banks. Answers will be averaged and your firm will not be mentioned in regard to data.

If you are not a subscriber to INPUT, a summary of the information gathered will be sent to you, which should be useful in your planning.

1. What major issues and needs are responsible for changes (growth or decline) of services?

Please weight each answer on a scale of: 1 = low importance, to 5 = high importance.

<u>ISSUE/NEED</u>	<u>WEIGHT</u>
Continuing high interest rates	_____
Cost reduction	_____
New (non-bank) competitors (e.g., Merrill-Lynch)	_____
Competition from other banks	_____
Revenue increase for your bank	_____
New technology	_____
Use of data networks	_____
Deregulation	_____
New lines of business	_____
New products/services	_____
Improvement of service	_____
Other factors (please list)	_____
_____	_____
_____	_____
_____	_____
_____	_____

2. What products or areas of your bank have the greatest need for new or enhanced systems as a result of the issues and needs discussed? Please list the products/- areas in order of importance. (A list of products and areas appearing on the next page can be read for illustrative purposes.)

PRODUCT OR AREA

Examples Of Products/Product Areas

- New Retail
ATM, POS, NOW, credit and debit cards, IRA, Keogh, money market accounts, pay by phone, home banking, preauthorized services.
- Retail Accounts
Installment lending, mortgage, holiday club, personal loan, etc.
Commercial loan - lines, secured loans.
- Lock box, zero balance, remittance, disbursement, collection, letter of credit.
- Cash Management
Same day reporting, money transfer input, international reporting.
- Correspondent banking.
- Payroll.
- Trust and securities related portfolio management.
- Commercial paper.
- Interest rate data bases.
- Other proprietary data bases.
- Data communication networks.

3. What are the major products which your company offers to banks, thrifts, credit unions? (e.g., cash management, credit card processing, ATM network service.)

PRODUCT	DOLLAR VOLUME	NUMBER OF CUSTOMERS	GROWING (SLOW, FAST OR NOT AT ALL)

4. What is the total volume of computer service business with commercial banks, thrifts, and credit unions? Please categorize the work as banking industry applications, general packages such as financial modeling (unmodified) that could be used elsewhere and utility time.

CATEGORY	DOLLAR VOLUME	NUMBER OF CUSTOMERS
Banking Applications		
General or Functional Applications		
Utility Work		

5. Please identify any of these products that are processed on a batch basis?
(Not remote batch; batch here refers to trucking work back and forth.)

PRODUCT

6. Do you provide facility management service to banks, thrifts, credit unions?

YES NO

What areas?

What type of service (systems, programming, operations, other)?

7. Do you think that other products or services will become major products during the next five years?

YES NO

Which ones?

8. Do you think that service is a problem to your company or for vendors in general?

- YES NO
- NO OPINION

Please describe.

9. Do you have any concern or problems due to customers deciding to move work in-house or take over work partially or fully?

- YES NO
- NOT MUCH

Please describe type of work.

10. Do you have a program to react to this?

- YES NO (Go to 12)

11. Does your program involve a hardware service that will aid a customer to move work in-house?

- YES NO

Do you offer a mini, micro, intelligent terminal, mainframe?

12. Do you offer software packages (system or application software) to aid a customer to move work in-house?

YES NO

13. What other steps do you offer to aid customers to move work in-house?

14. How well is the program working?

Very well
 Moderate
 Not so well

Please comment.

15. Are you concerned about the offering of services by banks?

YES NO
 NO OPINION

If YES, which services?

INDEX

INDEX

	<u>Page</u>
ATM	3,8,10,25,51,62,75,78,88,95,114,121
Account reconciliation	96
Asset conversion	95
Automated customer services	91,114
 Bank Holding Company Act	 37,46
Cash management information systems	4,8-9,13,51,62,81,84
Check authorization and guarantee cards	75
Comingling funds	46-47
Commercial loans	66
Competition	40
Consumer banking	28
Correspondent services	88
Cost of funds	34
Credit	66
Credit cards	75-76
Credit unions	60,64
Customer information file (CIF)	25,77,93,95,114
Customer integrated/referral file (CI/RF)	5,79
Custody systems	89
 DBMS	 8,114
Data exchange	82
Depository transfer	87
Deregulation	1,10
 Edge Act	 50
Electronic check clearing (ECC)	62
Electronic delivery	49
Electronic items	25
 Facility management	 20,28,60,107
Financial Center Development Act	50-51
Financial modeling	6,11,13
 Glass Steagall Act	 9,46-47
 Hardware services	 13,111
Home banking	10,25,75,78,95,114
 International banking	 97

	<u>Page</u>
McFadden Act	37,46
Microcomputers	6,11,13,19-20,84
Middle market	33
Minibranches	59
Monetary Control Act of 1980	46
Money market	
funds	38
sweep	72,121
NOW account	10,52,75-76
Pay by phone	8,10,51,62,75,88,95,121
Performance measurement	89
Performance monitoring	97
Point of sale (POS)	10,25,51,78,95,114
Portfolio	
information	87
management	86,89
Processing firms	67
Profitability	64
Proprietary data bases	93,108
Regional banks	59
Regulations	
Q	9,36,45-46
Y	51
Retail banking	69
Savings instruments	36-37
Security	77
Target amounts and balance	82
Term note	113
Thrift institutions	66
Time deposit	96
Treasury workstation	84
Truncated checks	25,54,62,86
Trust	88,115
Turnkey systems	62,95,111
Wholesale banking	96
Wire transfers	86-87
Clearing House Interbank Payments Systems	54
Federal Reserve Wire	54
Zero balance	86,96

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姓名: _____
Name

职务: _____
Post

单位: _____
Unit

No: _____ Date: _____

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