Market
Analysis
Program
(MAP)

Industry Sector Markets 1991-1996

Banking and Finance

INPUT®

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BANKING AND FINANCE

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Introduction

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Purpose and Methodology

1. Purpose

There are five basic objectives of this MAPS vertical market report:

1. *Industry Introduction* - Introduce the reader to the banking and finance industry's structure and demographics.

2. *Business Issues and Trends* - Identify the business issues and trends that are driving the use of information services within the banking and finance industry.

3. *Systems Uses and Issues* - Discuss how the banking and finance industry uses information systems, and the issues facing banking and finance industry information systems organizations.

4. *Information Services Market* - Discuss the information services market within the banking and finance industry, including market sizing and factors driving market demand for each delivery mode.

5. *Competitive Environment and Vendors* - Discuss the competitive environment and profile leading information services vendors in the banking and finance industry.

2. Methodology

Much of the data on which this report is based were gathered during 1991 as part of INPUT's ongoing market analysis program. Trends, market sizes, and growth rates are based primarily upon in-depth interviews with users within the banking and finance industry and the IS vendors serving the industry. INPUT maintains ongoing relationships with, and a data base of, all users and vendors that it interviews. Interviewees for the research portion of this report were selected from this data base of contacts.

In addition, extensive use was made of INPUT's corporate library located in Mountain View, California. The resources in this library include several on-line periodical data bases, subscriptions to over 50 computer and general business periodicals, continually updated files on over 3,000 information services vendors, and the most up-to-date U.S. Department of Commerce publications on industry statistics.

It must be noted that vendors may be unwilling to provide detailed revenue breakouts by delivery mode or industry. Also, vendors often use different categories of industries and industry segments, or view their services as falling into different delivery modes from those used by INPUT. Thus INPUT must estimate revenues by these categories on a best-effort basis. The delivery mode and individual segment forecasts should be viewed as indicators of general patterns and trends rather than specific, detailed estimates for individual years.

When information is provided from vendors as requested, at times it is provided under an agreement of confidentiality. Therefore, vendor rankings based on these revenue figures should be viewed as approximations.

B

Industry Structure

For purposes of this report, the U.S. banking and finance industry (which does not include the insurance sector, the subject of a separate INPUT report: Industry Sector Markets, 1991-1996—Insurance) the banking and finance industry will be segmented as shown in Exhibit I-1.

EXHIBIT I-1

Banking and Finance Industry Segmentation and SIC Codes

- Money center and large commercial banks (602)
  - Assets over $5 billion
- Regional and midsized commercial banks (602)
  - Assets between $1 billion and $5 billion
- Small commercial banks (602)
- Savings and loan institutions (603)
- Credit unions (606)
- Brokerages and other financial services firms (62X)

The U.S. banking and finance industry, outlined demographically in Exhibit I-2, is highly concentrated. For example, although there are about 12,000 commercial banks in total, about 70% of all commercial banking assets are controlled by the 100 largest bank holding companies. With the recent rise of so-called "super-regional banks" (see Chapter II), however, the concentration is somewhat less at the very top of the industry: In 1975, the 10 largest money center commercial banks controlled 28% of all deposits, but that level of control dropped to 20% by 1989.

Total employment in the industry as of 1988 stood at about 3 million, almost half of whom worked for banks.

EXHIBIT I-2

U.S. Banking and Finance Industry Demographics

Segment	Number of Institutions	Total Assets ($ Billions)
Commercial banks	12,000	3,500
Savings and loan institutions	2,500	1,300
Credit unions	14,000	175
Brokerages and other financial services firms	N/A	1,500

Note: All numbers rounded

C

Organization and Contents of Report

The remainder of this report is organized as follows:

- Chapter II—Trends, Events, and Issues—provides background information on the business issues and trends that are driving the use of information services within the banking and finance industry.

The section on trends and events focuses on two areas:

- The impacts of general business trends, such as globalization of markets, competitive changes, organization restructuring, and the continuing use of technology to change basic operational practices and to achieve competitive advantage or parity

- Banking and finance industry-specific trends and events, including the impacts of the S&L bailout, profitability issues, restrictions on the banking business, competition, overcapacity and mergers, and other topics

The section on issues identifies specific questions that should be asked and situations that should be addressed in developing a business strategy to provide information services to one or more segments of the banking and finance industry.

- Chapter III—Information Systems Environment—provides an overview of the basic business processes in the banking and finance industry and their supporting information system applications. For example, discussion of how the banking and finance industry uses information systems to operate and manage its business activities is included. Networks and data communications are included in this analysis.

The impact of new and emerging technologies on applications and IS organizations is addressed, as are organizational and budgetary considerations.

- Chapter IV—Information Services Market—looks at the banking and finance industry from two viewpoints:

  - By delivery mode: How are these services delivered? INPUT's delivery modes for the banking and finance sector are:

    Processing services
    Turnkey systems
    Application software products
    Systems operations
    Systems integration
    Professional services
    Network services

  - By industry segment: Who is buying information services? In other words, what segments within the banking and finance industries are buying services in which delivery modes?

Overall market forecasts are provided by delivery mode and industry segment.

- Chapter V—Competitive Environment—identifies leading IS vendors in the industry, discusses some of the factors that affect the competitive dynamics of the industry, and profiles representative vendors.

- Chapter VI—Conclusions and Recommendations—reviews the trends and opportunities described in the report and provides recommendations for vendors as well as users.

In addition, there are two appendixes:

- Appendix A presents industry-specific definitions.
- Appendix B presents the Forecast Data Base and Reconciliation.

The Forecast Data Base contains a yearly (1991-1996) forecast of user expenditures by delivery mode for the banking and finance industry as a whole and for each industry segment. The Forecast Reconciliation compares this report's forecast with the forecast provided in INPUT's previous banking and finance industry report and explains the reasons for any major differences.

Trends, Events, and Issues

Trends, Events, and Issues

This chapter discusses trends, events, and issues in the banking and finance industry.

Section A, Trends and Events, highlights the business and political forces—as well as key technology trends—driving the banking and finance industry, and shows how the industry is responding to these forces.

Section B, Business Issues, identifies specific questions that should be asked and situations that should be addressed by IS vendors in developing a business strategy that is responsive to the industry trends discussed in Section A.

A

Trends and Events

1. General Business Trends

A number of national and international business trends impact the banking and finance industry in general, as listed in Exhibit II-1.

EXHIBIT II-1

Impacts of Business Trends

- Global financial services competition
- Third-world debt
- 1980s takeover/LBO-based junk bond debt
- 1990-1991 recession in the U.S.
- 1989-1991 "rolling recession" in real estate
- Europe 1992

The increasingly global level of competition facing many U.S. industries is a key business trend for the banking and finance industry as well. Although the largest U.S. money center banks for years have provided a variety of banking services overseas, during the 1980s the reverse became true in two ways. First was an expansion of the trend that began with the oil shocks of the 1970s—when Middle East nations enjoying a trade surplus with the U.S. invested their petrodollars in U.S. property investments, corporate debt, and government securities. During the 1980s, countries with hard-goods trading surpluses with the U.S.—in particular, Japan—made parallel investments. Such investments helped support debt financing of ballooning U.S. federal government deficits and the overseas trade deficit. Second, Japanese banks for the first time became aggressive acquirers of U.S. banks.

High levels of third-world debt continue to impact U.S. banks, especially the large money center banks. For several years in the late 1980s and continuing in some cases through 1990 and into 1991, many banks with heavy exposures to debt held by less-developed countries—especially in South America—went through one or more writedowns of portions of this debt. Some writedowns were self-initiated and some were mandated by U.S. regulators. Banks now anticipate that some or all of this overextension of credit will never be repaid.

The 1980s excesses in the issuance of junk-bond debt to finance corporate takeovers and leveraged buyouts became accountable in the early 1990s, especially as the economic slowdown cut the ability to service the debt undertaken. The result was bankruptcies in some cases and substantial restructurings of the debt in others. Either case impacted banks, savings and loans, and brokerages with substantial junk-bond holdings. In some instances, the debt was swapped for equity in the firms, increasing the debt holders' asset base but cutting their anticipated high rates of junk-bond interest return.

Official or unofficial, recession in the U.S. finally ended a decade of largely uninterrupted economic growth. As mentioned, junk bond debt was one of the first 1990-1991 casualties of the slowdown. A slowdown also raises the rate of business bankruptcies and imperils banks' portfolios of loans outstanding.

Starting in 1989, well before a generalized recession was widely acknowledged, U.S. banks—and especially savings and loans—saw a clear and negative regional pattern: a rolling recession in real estate values, starting in the Southwest oil patch and the Northeast industrial sectors, and moving into the Southeast, the Midatlantic states, and even the golden California real estate market. Financial institutions (as opposed to the nonbank financial sector) by law are restricted to a single state or to a largely regional economic base. Thus, each regional roll-down of

real estate values meant that substantial portions of the region's banks' asset portfolios were placed in jeopardy at the same time, which simultaneously weakened the collection of interest and the ability to profitably sell failed properties.

Finally, the march toward European trade unification in 1992 continues (albeit with uncertainty about monetary union and the strength of the newly unified German economy) and thereby raises flags of uncertainty about the likely impacts on international trade and finance. Two feared impacts are restrictions on the ability of U.S.-based financial firms to compete in Europe and the possibility of stronger European firms' muscling into the U.S. market.

2. Banking and Finance Industry Trends and Events

The mix of key trends and events affecting the U.S. banking and finance industry in the late 1980s and early 1990s can best be addressed in terms of the 9 major topics shown in Exhibit II-2.

EXHIBIT II-2

Key Topics Impacting the Banking and Finance Industry

- The S&L bailout
- Profitability
- Business restrictions and competition
- Overcapacity and mergers
- Cost cutting
- Outlook for regulatory reform
- The shifting credit card business
- Securitization
- Brokerages since the 1987 crash
- Nonbank financial services firms

a. The S&L Bailout

Exhibit II-3 lists two key topics related to the savings and loan industry bailout.

EXHIBIT II-3

S&L Bailout Issues

- The S&L bailout: A cloud over the industry
- Are the banks next?

During 1990 and 1991, American taxpayers have watched in disgust as the federal government's management of the bailout of insolvent savings and loan institutions (S&Ls) has faltered repeatedly and current and forecast costs have mushroomed. S&L investments in junk bonds and real estate, which are guaranteed against loss to depositors by federal deposit insurance, now imperil an estimated 600 to 800 of the 2,500 S&Ls. Forecasts now range up to $500 billion or more in ultimate costs, including interest.

As a result of the bailout—and especially its ever-expanding costs—today a dark cloud of citizen fear and distrust hovers over the entire U.S. banking industry. Without fully understanding the dynamics, citizens watch uneasily as many still-solvent S&Ls sell assets to meet new capitalization requirements and slash costs to bring back profitability. Many banks are buying S&Ls, often with government financial assistance, as the price of keeping the obligations to depositors in private hands.

Early in 1991, the press began to ask if commercial banks would be next. The U.S. Congress—and the banking industry—quickly moved to assure that no bank bailout would be necessary. Nervousness mounted, however, as the increasingly weak New England banking market saw banks with assets of $29 billion—led by Bank of New England—fail during just the first five months of 1991. In reaction, the banking industry offered its own plan to strengthen the funding of the Federal Deposit Insurance Fund (FDIC) insurance safety net for depositors. At the same time, many banks and analysts continue to protest that comparison to the S&L situation is unfair. Commercial banks, they argue, have broader lending bases in business and consumer loans, as well as the more-risky real estate lending. Also, commercial banks today derive an increasing proportion of their income from fees charged on services, such as trust and cash management. Analysts point out that during 1990 "only" $7

billion was recorded in commercial-bank charges against the FDIC insurance fund; this amount, they argue, is minor compared to $500 billion in anticipated S&L bailout costs.

b. Profitability

Commercial bank profitability in the 1990s clearly is a concern, however. Exhibit II-4 outlines the relevant issues.

EXHIBIT II-4

Commercial Bank Profitability Issues

- Weak profits
- Dividend cuts
- Soft loan demand
- Accelerated bank failures
- Bolstering the FDIC fund

Industry wide, banking profitability (measured as return on equity) dropped below 8% in 1989. Measured on total assets of $3.5 trillion in 1990, the banks earned only $16.6 billion—less than one-half of one percent. As a backdrop (see Exhibit II-1), the 1987-1990 period saw significant cuts in the profits of many money center banks, because of increases in banks' reserves for uncollectible debts in less-developed countries. As detailed earlier, industrywide profitability dropped in 1989 and 1990 due to defaults on (and expanded loan-loss provisions for) high levels of commercial real estate lending in regional markets that are now overbuilt.

Viewed by sector, problems generally are worse for midsized regional banks. In 1990, however, even the top 100 banks averaged only a 6.5% return on equity (although a few leaders earned over 20%); the good news is that this rate is up from 5.6% in 1989. As a result, in 1990 there was a wave of cuts in dividends paid by the largest banks, including a dividend cut of over 50% by giant Chase Manhattan Bank. Some analysts note that the little-watched community banking sector remains relatively unscathed so far, having "stuck to their knitting" of local business lending during the 1980s and avoided the speculative excesses now dogging the S&Ls and midsized regional banks. For all banks in general, however, loan demand reportedly continues to be soft in the 1990-1991 recession, with only isolated signs of a pickup.

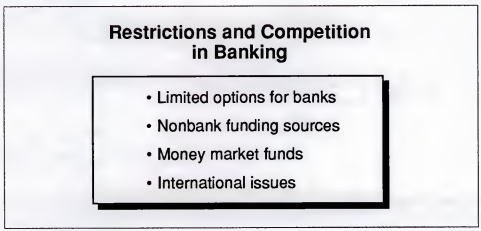
Most worrisome is a long-range and mid-term acceleration in the trend of bank failures: More than 1,000 banks failed in the past 10 years, versus just 500 bank failures in the 46 years from 1934 to 1980! Shorter term, the acceleration is even more obvious: In 1989 there were over 200 failed banks, versus a total of just 42 in all of 1982. Combining S&L and commercial-bank failure statistics brings out a highly regional pattern: In 1988-90, there were over 600 failures in the Southwest region alone, versus a total of about 350 in all other regions of the U.S. combined.

To prevent an S&L "replay" in commercial banks, the FDIC insurance fund reportedly needs a short-term infusion of $70 billion or more to stay solvent in 1991—although, of course, even with that addition only a small percentage of deposit obligations are actually covered by the level of funding. As of the second quarter of 1991, a big debate in the industry, and in Washington, centers on FDIC funding mechanisms now under consideration. Banks appear committed, however, to assessing themselves an additional $1.5 billion in FDIC insurance fees.

c. Business Restrictions and Competition

Exhibit II-5 summarizes business restrictions and competitive issues that impact the banking and finance industry.

EXHIBIT II-5



Until very recently, banks have remained largely restricted by the 1933 Glass-Steagall Act from diversifying beyond basic banking functions, even into related financial businesses such as mutual funds, insurance, and real estate. For this and other reasons, many money center, S&L, and commercial banks resorted, during the 1980s, to higher-risk third-world and real estate lending to try to boost profits.

The sentiment of the Glass-Steagall Act may now be changing. A recent state action in Delaware (since challenged by the Federal Reserve; the challenge is in the appeals process) opens the opportunity for banks or banking subsidiaries chartered in that state to sell and underwrite insur-

ance within the state and perhaps nationwide; Florida and Illinois, however, have turned back similar efforts. Based on court interpretations, banks already have the power to undertake asset-based underwriting (backed, for example, by credit card receivables). In addition, banks are now starting to win approval for equity-securities underwriting, which the Federal Reserve first granted to J.P. Morgan in 1990; other major banks now have applied. In an interesting competitive twist, stock brokerage firms now want corresponding authority to enter the banking business, or at least access to the Federal Reserve's discount window for emergency borrowing in liquidity crises.

One of the biggest changes to the banking business in the past decade is the availability to corporate borrowers of many nonbank sources of funds. Funding options are available from insurance companies and commercial credit sources, and there is a vastly expanded commercial paper market, aided by Wall Street brokerage and investment banking houses. As evidence of this trend, in 1989 only 55% of short-term corporate lending came from banks, versus 80% in 1975.

In addition to simple lending, a wider range of bank-like services are available from substantially unregulated competitors like General Electric, Sears Roebuck, General Motors, and American Express. Recent profits at GE Capital Corp. decreased due to losses on highly leveraged loans, but this sector shows few such problems compared to many banks and S&Ls. However, Ford Motor's First Nationwide Financial Corp. S&L has potentially deeper problems and will reportedly to be supervised by the federal Office of Thrift Supervision.

One of the strongest challenges to the traditional deposit business of the banks is coming from ever-stronger money market funds, which increasingly succeed in drawing basic deposits and certificate-of-deposit funds from banks. Money market funds tend to offer return rates 0.5% or more higher than bank rates because money market costs are lower due to no branch-bank costs, no deposit-insurance fees, and no regulatory requirements to hold reserves against deposits. Increasingly, the money-market funds offer check-based withdrawal options, and some see ATM-based access options soon.

Finally, U.S. banks now face foreign banks and finance units that increasingly compete for U.S. lending business. *The Wall Street Journal* (6/6/91) reports that "foreign and foreign-owned banks made more than 30% of all business loans in the U.S. last year" and controlled 21% of U.S. banking assets and 14% of deposits. Given continued restrictions on U.S. banks as to geographic coverage and nonbanking activities, most of the largest U.S. money center banks rank below top foreign banks in size and scope. Thus, international competitive strength is limited. Today, many U.S. money center banks are decreasing their reliance institutional and foreign deposits that can move out fast in a crisis. Rather, such banks are

emphasizing more-stable consumer deposits, and some have grown (for example, Bank of America) by acquiring deposits of failed thrifts. In parallel, the banks are expanding consumer banking services to raise fee income.

d. Overcapacity and Mergers

Exhibit II-6 lists a set of closely related industry capacity and merger issues.

EXHIBIT II-6

Banking Industry Overcapacity and Mergers

- Overcapacity
- Rise of the "super-regional" banks
- Merger impacts
- Transition from overcapacity

With the rise of alternative sources for lending and new opportunities for relatively high returns on deposits—and continuing restrictions on alternative business ventures—some analysts draw a picture of a traditional, local-based banking industry being overwhelmed by change. They say that 12,000 banks are too many for the new realities of the U.S. financial business.

As evidence, many cite the rapid consolidation in the midsized sector of the business since a 1985 Supreme Court ruling permitted a state to make local reciprocal banking agreements with other nearby states. Consolidation has given rise to a new class of super-regional banks that were built up through mergers and acquisitions. To date, money center banks have been excluded from such agreements because states view such banks as too powerful. Some expect this resistance to erode soon, however, as states permit acquisitions from out of the region. Wider geographic arrangements may still prove limited, however, because the cost economies are far greater on an intraregional deal, where operations can be centralized without being far from either player.

In all, there were over $10 billion worth of bank mergers in 1989. As most mergers resulted in the closing of duplicate branches, heavy staff cuts—and thus strong local opposition—were common.

Despite such local opposition, in the future it seems especially likely that there will be more acquisitions of midsized banks (with assets in the $1 billion to $10 billion range) by recently established or new

super-regionals. As noted, such mergers clearly can be rational from a cost-cutting standpoint. (Also, in June 1991 the first solid rumors came out about serious merger talks among pairs of big New York money center banks. The reports suggested that such unprecedented mergers might be driven in part by the banks' desires to cut total post-merger operating costs and thus strengthen their finances so as to position themselves to more easily win approval from federal authorities to acquire smaller banks during the coming industrywide consolidation.) Once merged, the larger institution's competitive position can be improved by the opportunity to offer a broader range of banking services and to spread wider the cost of more-sophisticated computer systems. On the negative side, in terms of local and human impacts, some see as many as three-quarters of a million bank employees laid off through such mergers in the next decade.

This raises a key policy: managing the transition of the banking industry out of overcapacity more effectively than the S&L excesses (and, perhaps, overcapacity as well) have been managed to date. Some note that the Bush administration plan for reforming banking regulations (discussed below) would permit rational, business-like exits from banking in a time of overcapacity and permit banks to reapply capital to other businesses—much as the steel industry has in recent years. In this way, not all banks would be forced by restrictions into holding on and fighting for shares of a declining market; many banks would fail at taxpayer expense.

e. Cost Cutting

Against the financial and competitive backdrop just outlined, it is scarcely surprising that cost pressures in general and cost cutting in particular are primary issues for almost all banks today. Squeezing costs of operations across the board is the norm, and one route is the merger wave described above. At the most radical, the largest banks have undertaken highly publicized waves of layoffs recently: 1,500 to 5,000 each by Bank of Boston, Chase Manhattan, and Citicorp. More generally, the costs of information systems and services are being scrutinized ever more carefully by cost-cutting bank management.

f. Outlook for Regulatory Reform

As alluded to earlier, banking regulatory reform looks inevitable in some form, although the final shape is anything but clear. Exhibit II-7 outlines the issues.

The major banking industry regulatory change to date (beyond the S&L bailout structure) is that banks' capital-reserve requirements have been raised significantly, which cuts the total volume of loanable funds. Banks at all levels are under such increased-capital-ratio regulatory mandates.

EXHIBIT II-7

Issues in Banking Regulatory Reform

- Capital ratios
- Proposals of the Bush administration, others
- Likely congressional action
- Status of the FDIC fund
- Regulatory roles
- Impacts on credit unions

In the case of industry giant Citicorp, for example, the target is to raise capital levels by as much as $5 billion. In addition to slashing expenses so that increased profits can be fed into the bank's capital base, Citicorp reportedly wants to raise $1.5 billion through the securities market, with perhaps another $1 billion coming from a new issue of common stock.

Through issues of equities and bonds, banks raised almost $5 billion in new capital during just the first quarter of 1991. For banks at all levels, the outlook is that regulators will require further increases in capital ratios.

The Bush administration proposes a wide range of commercial banking reforms: substantial bank participation in securities underwriting, insurance, and even nonfinancial businesses (again, permitting institutions to make an orderly exit from banking in a time of overcapacity); interstate banking; limited reform of deposit insurance to shift risk from the FDIC government fund (and thus the taxpayers) to bank shareholders; and elimination of or limits on insurance for brokered deposits. Others propose radical separation of deposit and lending functions, especially to shield insured deposit funds from risky lending. Some call for the basing of deposit insurance premiums on the riskiness of the loan portfolio, perhaps through privatization of the deposit insurance system. Assuming wide-ranging reforms, some believe the banks' broad base of branches would be the ideal distribution system for other financial products.

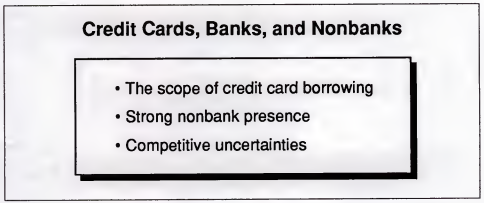
Although wide-ranging banking industry regulation reforms have been proposed, the final shape of any legislation is uncertain. Indeed, many doubt that significant reform legislation will pass. Rather, they predict increased regulation of deposit insurance only, with tabling of all other reforms. This is especially likely, some argue, with the political dark cloud of the $500-billion-plus S&L bailout creating a mentality of "let's not rock the banking boat further."

Hovering over all the proposals is a major short-term worry: The balance in the FDIC insurance fund has dropped from over $18 billion at the end of 1987 (to cover $1.6 trillion in deposits at that time) to just $10 billion at the end of 1990 (to cover fully $2 trillion in deposits now). As noted earlier, the commercial banks appear to be agreeing to further fund the FDIC. Increased funding will further the banks' major public relations challenge: distancing themselves from the S&L bailout's impact on taxpayers. On this issue and on the larger issue of regulatory control of the S&Ls and the commercial banks, however, there is ongoing political debate on the future roles of the Federal Reserve, the Treasury, the Comptroller of the Currency, and other current or future regulatory bodies.

There is also a possible side-effect of proposed banking industry reform that some argue is a conscious plan by banks, but others see as an unintended impact: proposed regulations that would increase costs for the nonprofit, generally local credit unions in how they account for deposit-insurance premiums versus assets. The regulations would eliminate a cost advantage that unions now have over banks and S&Ls. Credit union members, of course, are lobbying hard against this provision.

g. The Shifting Credit Card Business

Exhibit II-8 summarizes the issues that impact the banking and finance industry in the credit card business.



Few outside the industry realize how important a financial force credit cards have become: they now account for 30% of all consumer borrowing, with over $360 billion in billings in 1990. Yet, as indicated in Exhibit II-9, half of the top-used credit cards are issued by nonbanks.

EXHIBIT II-9

1990 Billings of Top Credit Card Issuers

	($ Billions)
American Express	88.3
Citibank	40.3
Sears Discover	19.4
Sears Roebuck	16.8
First Chicago	13.0
Chase Manhattan	11.4
MBNA*	11.0
Bank of America	10.4
J.C. Penney	8.7
AT&T Universal	4.4

* Formerly MNC Financial

Source: *Business Week* 4/15/91

In all, the credit card business is less and less controlled by banks: the nonbank share of card receivables had risen to 16% in 1990. Yet, for the big-bank players, credit cards are a major and important business: in 1990 the card business represented 69% of Citibank's profit! Among the banks, increasingly it is a big-bank game: The trend is for small and midsized banks to sell their credit card businesses and apply capital and reserves elsewhere, in part to meet new regulator-required levels.

Among the nonbanks, the successful upstarts include Sears' Discover Card and—more recently—AT&T's Universal Card. The latter has already captured 8.5 million active cardholders and is still growing fast, with over $4 billion in 1990 billings. In addition, there are many other nonbank-issued cards, including special-interest cards that often pay dividends to chosen causes.

A new competitive uncertainty emerged after AT&T's success in luring users of other cards with a no-annual-fee promotion; Visa and MasterCard tried to block other nonbanks from issuing cards (specifically, Sears), but an antitrust suit now is pending to keep open this option.

h. Securitization

An important trend impacting banks and nonbanks in the financial services industry is the increasing trend toward securitization—the packaging for reselling and/or trading of blocks of loans of all types. The lending agency that packages loans in this way earns a fee for the packaging and moves loans off the financial books, thus freeing the capital for lending—and securitizing—once again.

In fact, a major reason for the S&Ls' loss of mortgage business has been the increasingly widespread securitization of mortgages through GNMAE, FNMAE, and others, thus permitting low-capital mortgage brokers and others to compete easily, often under lower cost structures.

i. Brokerages Since the 1987 Crash

The trading volume of most stock brokerage firms still has not fully recovered from the crash of 1987, despite the Dow Jones average's April and June 1991 ascents to the historic 3000 mark. Not surprisingly, the long-term, multiyear trend of decreased trading volume (despite the recent upswing) means continued tight budgets for brokerages' spending on information systems and services. Brokerages are emphasizing efficient use of installed systems, not big investments in new systems.

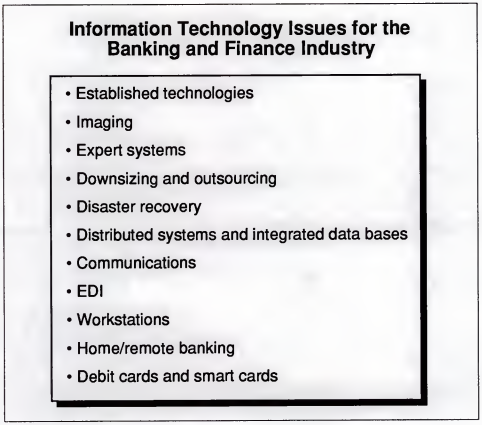
j. Nonbank Financial Services Firms

As mentioned in several of the subsections above, a strong new class of banking industry competitors is emerging: nonbank financial services firms. Whether in credit cards, lending, or nondepository interest-bearing accounts such as money market funds, more and more nonbank institutions serve the financial needs of individuals and businesses today. These institutions generally are well capitalized—often by industrial-sector parent firms—and operate largely free from the regulatory constraints imposed on banks and S&Ls. There is every reason to believe nonbanks will continue to win business from traditional banking firms in the future—and thus will invest relatively more heavily than the rest of the sector in information systems and information services.

3. Technology Trends Impacting the Banking and Finance Industry

Exhibit II-10 introduces the information technology issues facing the banking and finance industry in the 1990s.

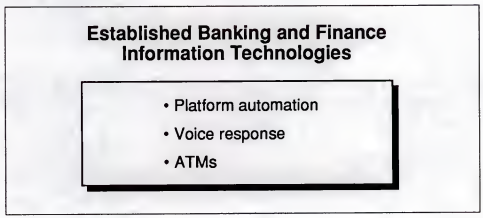
EXHIBIT II-10



a. Established Technologies

As introduced in Exhibit II-11, several information technologies are already well established in the banking and finance industry.

EXHIBIT II-11



The value of platform automation is now almost universally accepted in the banking industry, and is in far more general use now after a relatively slow start. This technology cuts costs by allowing each bank teller to capture every transaction directly and immediately as an on-line function, not at the end of the day as a batch operation.

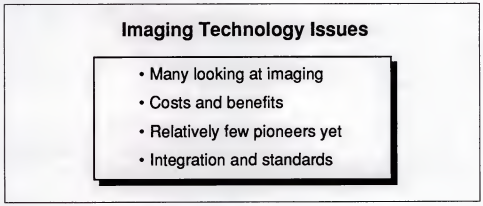
Similarly, it is becoming very common for banks, brokerage firms, and other financial institutions to use voice response systems to allow customers to obtain balances, records of checks cashed and deposits, and other information from touch tone phones.

Finally, it goes without saying that ATMs are now accepted alternatives to routine transactions with human tellers. Many observers note, however, that any early competitive advantages that banks gained by being ATM pioneers have now evaporated, and ATMs are now essentially a competitive necessity, albeit one that may serve to somewhat keep under control teller and transaction costs. It is ironic, however, that banks now have more ATMs in operation than ever before, yet are keeping branches open with paid staff for longer hours than in the past.

b. Imaging

Exhibit II-12 presents the issues relevant to the banking and finance industry's use of imaging technologies.

EXHIBIT II-12



Almost all banks and financial services firms appear to be examining and evaluating imaging at some corporate level. The top attraction appears to be the decreased costs of check handling; some estimate the real cost of handling a check at over $1.00. Imaged but checkless statements, besides being less costly, may be attractive in luring new banking customers and an advantage in retaining existing ones in the newly competitive deposit and checking arena. To speed paperwork processing, there are also good imaging opportunities in the handling of loan application documents.

The stumbling block, of course, is costs. Mainframe-based systems (the size required for mid- to high-volume bank applications) start at $2 million for a stripped system, with a new high-performance system recently introduced by IBM ranging in price from $10 million to $20 million. (In an interesting alliance between a hardware manufacturer and a consulting service house, Unisys and Cincinnati Bell Information Systems will jointly offer an imaging system for check processing.) One estimate is that a bank needs 3 million transactions a month to cost-justify

a large image-processing system. The Bank of Boston, for one, believes such costs are justified, albeit for a workstation-based system: The bank reports that an imaging system to automate the management of deposit accounts has resulted in a 40% increase in productivity after a staff cut through attrition from 41 to 25.

To date, however, The Bank of Boston is relatively alone as a pioneer. Among nonbanks, American Express has led the way for several years by using an imaging system based on networked PCs and workstations, not a mainframe. Besides costs, continuing obstacles to imaging's growth include lack of standards and lack of full integration with other banking systems.

c. Expert Systems

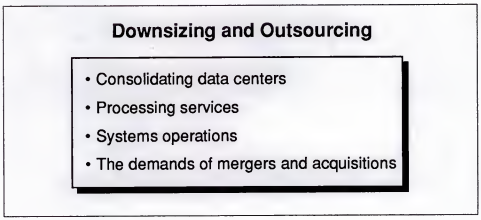
To date, expert systems in banking and finance have proved rather a disappointment. Compared to rosy expectations in the mid-1980s, there is yet relatively little use of expert systems for lending assistance; use is somewhat broader for credit scoring. The most extensive use of banking and financial expert systems to date has been by stock brokerages, especially to drive high-speed program trading from powerful workstations.

One of the main pioneering uses to date has been by American Express, whose workstation-based Authorizer Assistant helps speed approval of credit card purchases. In the future, expert systems technology likely will aid in the monetary union of Europe (assuming the political obstacles involved are overcome), and will alleviate the complexities—and business opportunities—of integrating multiple national currencies.

d. Downsizing and Outsourcing

Exhibit II-13 outlines key downsizing and outsourcing issues.

EXHIBIT II-13



Late in 1990, Manufacturers Hanover Trust set the pace for cost control through computer-operations downsizing by announcing it will consolidate eight data centers into just two, with major cuts in staff. Other, perhaps less dramatic, examples likely will follow.

Given today's cost pressures, banks and processing services vendors report that a far higher proportion of large and midsized banks are considering—and more often implementing—outsourcing of processing to third-party service vendors than in the recent past. Smaller banks, in contrast, increasingly are using recent advances and cost decreases in minicomputer technology to install turnkey systems that eliminate the unit-transaction-based fees charged by processing service vendors.

The Electronic Data Systems subsidiary of General Motors (EDS) late in 1990 won a precedent-setting $450 million, 10-year systems operations contract from First Fidelity Bancorp. The contract—guaranteed to save the bank $50 million per year—includes merging separate data processing systems from the bank's acquisitions and reducing 250 different applications to a common set of just 60. EDS and Automatic Data Processing (ADP) reportedly have cut systems operations deals in which the data centers they take over from banks double as processing centers for other EDS or ADP services—with or without profit-sharing with the institutions involved.

As demonstrated in the EDS/First Fidelity agreement, the wave of banking mergers and acquisitions is resulting in a new set of requirements and information services opportunities to integrate disparate information systems. Many professional services and systems operations firms now offer such services as part of their packages.

e. Disaster Recovery

Regulations issued by the Federal Reserve Bank and the Comptroller of the Currency now require that, by June 1991, banks shall have comprehensive plans to recover business within eight hours of defined disasters. Thus, vendors anticipate a big increase in business for disaster recovery firms, with some increase estimates ranging as high as 500%. Not surprisingly, the extended August 1990 power outage in Manhattan scared many; Citibank alone reported losing $100 million.

f. Distributed Systems and Integrated Data Bases

Exhibit II-14 lists several aspects of this topic.

EXHIBIT II-14

Distributed Systems and Integrated Data Bases

- Minicomputers versus PC/mainframe cooperative processing
- RDBMSs
- Integrated customer information systems
- Executive information systems

As in other industries, many midsized banking and finance firms are placing decreasing emphasis on minicomputer-based distribution of information systems functionality and increasing emphasis on local PCs (with or without disks, for security purposes) tied cooperatively into mainframe data bases. Banc One, for example, will implement 15,000 to 20,000 PCs in cooperative processing with its mainframes.

To support relationship banking, firms are finding RDBMS technology essential for implementing comprehensive, relationship-based records of a customer's accounts. Banks believe that integrated customer information systems provide competitive advantages—by attracting customers (business and personal) with single-statement summaries of financial status and by permitting bank cross-selling of added services any time there is an interaction with the customer. Clearly such systems require integration of separate account-based data bases. Similarly, RDBMSs are the key to implementing the transition from operational automation to strategic, competitively oriented information systems, including executive information systems.

g. Communications

Most banks report making increasing use of local-area networks (LANs), with some banks now at the second generation stage of integrating multiple LANs and centralizing control and backup operations. Some banks are integrating LANs with wide-area networks and/or integrated corporate communications networks. There is little movement toward ISDN (Integrated Systems, Digital Network) communications technology—which, for example, was found to be costly and incomplete technologically in a joint trial by Mellon Bank and Bell Atlantic Corp.

h. EDI

In terms of direct electronic transmission of financial transactions, electronic funds transfer (EFT) is well established among banks, with some advancing further in the automation of money transfer functions, such as more automatic and appropriate routing of EFT messages.

Some expect EDI (electronic data interchange) to follow EFT as the next wave. However, EDI in other industries permits business-to-business financial exchanges by end-user organizations without need for a banking intermediary, thus potentially eroding bank revenues. As a secondary factor, EDI acceptance by banks is also being limited somewhat by lack of full compatibility among three separate standards, all in use by the banking and finance industry: ANSI X12, UN/EDIFACT, and the separate standards of the National Automated Clearing House Association. It remains unclear whether banks will jump in aggressively and try to dominate the financial EDI market or leave it to other EDI players, both established and new. To date, however, relatively few pioneering banks are offering to sell EDI services and/or software to others.

i. Workstations

High-speed, high-powered workstations for several years have been serving the fast-action, complex needs of specialized brokerage traders, such as those in international currency trading. More recently, workstations are beginning to show results in banking for complex functions such as cash management.

Workstation technology likely will become even more important as international communications-based financial markets—and 24-hour trading opportunities—become reality and step up trading complexity by an order of magnitude.

j. Home/Remote Banking

To date, there has been little market enthusiasm for home-PC-based banking, and many banks have shut down pioneering and experimental systems. The new trend appears to be telephone-based systems, with or without new display telephones. Citicorp will pioneer such a system in 1991, after a successful trial in 1990.

k. Debit Cards and Smart Cards

Debit cards—where the user's bank balance is debited immediately through a communications link—are being explored by banks wanting to cut the float and are resisted by many users for same reason. Predictions vary on whether debit cards will ever replace traditional credit cards. Some see a stronger evolutionary trend in fast-food restaurant experi-

ments, whereby quick and automatic telecommunications inquiries against bad card lists cut waiting time to acceptable levels for small credit card transactions. Still, as of April 1991, 12 large ATM networks reportedly are discussing a national, integrated debit card system.

As pioneered in Europe, smart cards in the future likely will carry electronic balances on implanted chips, for instant debiting as an alternative to cash.

B

Business Issues

As an overview of the business, industry, and technological trends discussed throughout this chapter, Exhibits II-15 and II-16 summarize the problems, challenges, and opportunities facing the banking and finance industry as business issues and technological opportunities for the 1990s.

EXHIBIT II-15

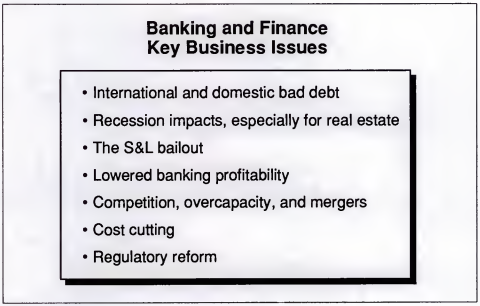


EXHIBIT II-16

Information Systems Environment

III

Information Systems Environment

Based largely on primary-research interviews with selected banking and finance firms, plus secondary research using other industry sources, this chapter first outlines how the banking and finance industry uses information systems, then details the key business and technical issues facing information systems management, as well as the impacts of key new technologies. Finally, a review of organizational control of, and budgeting for, information systems frames a discussion of key objectives and plans for information systems departments within banking and finance firms.

A

Applications

Although some applications used by banking and finance firms are common to other industries, many listed in Exhibit III-1 are unique to banking and finance.

B

IS Issues

A number of business issues face information systems managers at banking and finance firms, as outlined in Exhibit III-2.

Given the profitability problems facing banks, as outlined in Chapter II, few can escape pressures on the bank's costs, including information systems. Some critics, in fact, argue that many banking systems investments, ATMs in particular, have lowered bank profits, not raised them, by introducing new costs without corresponding financial benefits. Critics wonder whether many bank information systems have become costly, competitively required investments without providing competitive advantages. The emphasis in banking systems investments now and in the near future clearly is on demonstrating quantifiable benefits before the money is allocated, and then achieving benefits in practice.

EXHIBIT III-1

Key Banking and Finance Industry Information Systems Applications

- Customer information file
- Check processing
- Account reconciliation
- General ledger
- Cost accounting
- Proof of deposit
- Integrated deposit system
- Loan origination
- Loan processing
- Loan syndication
- Loan accounting, tracking, and loss control
- Loan servicing valuation
- Profitability analysis
- Collection and recovery
- Time account processing
- Mortgage origination
- Mortgage processing
- Payroll accounting
- Accounts payable
- Asset/liability management
- Fixed-asset management
- Branch automation
- Telephone inquiry management
- Financial planning
- Investment portfolio management
- Securities accounting
- Equipment leasing
- Vehicle leasing
- Safe-deposit management and accounting
- Shareholder accounting
- Budgeting
- Long-range planning
- Regulatory compliance
- Executive information systems

EXHIBIT III-2

Key Business Issues Impacting Information Systems

- Companywide cost pressures
- Securing demonstrated benefits
- Downsizing and outsourcing
- Integrating systems from mergers
- Implementing "relationship" banking
- Evaluating new technologies

As a result of cost consciousness and a desire to return to their core business—banking—many more institutions now favor shifting to a processing service or to outside systems operation of data facilities. In addition to direct operating-cost benefits, such arrangements generally free bank capital, which these days must be husbanded carefully in the face of regulators' requirements for higher capital ratios.

Others banks are taking advantage of technological advances to downsize from multiple data centers. Relatively few banks so far, however, are undertaking the up-front investment to downsize in another sense: by moving mainframe-based systems to networked PCs and workstations. In addition to the initial investment, a further obstacle is that the kinds of operations now on the mainframe for most midsized and larger banks could not yet be handled effectively on the smaller platforms, even given recent advances in processing power. In part, this is an issue of peripherals: To date, almost all of the key high-volume peripherals that are central to banking functions (such as check-processing systems) are available only for mainframe attachment. A new class of such systems—designed specifically for use with networked PCs and workstations—will be required before downsized systems can supplant mainframes in banks.

In parallel, several key technology issues face banking and finance systems managers, often with significant business implications, as outlined in Exhibit III-3.

EXHIBIT III-3

Key Technology Issues

- Substituting efficiencies for new technology investments
- Managing the impacts of downsizing or outsourcing
- Transitioning to RDBMSs
- Integrating multiple systems
- Integrating multiple accounts
- Establishing executive information systems
- Meeting requirements for disaster recovery

In the cost-cutting environment faced by most banks today, new technological investment is scarcely the primary topic of planning. The primary topic is finding new ways to use existing systems more efficiently, including any opportunities to downsize operations. Once downsizing or outsourcing to a processing service or systems operator is undertaken, the potentially disruptive impacts must be managed carefully. Some processing services offer a transition service whereby the bank's existing software systems are operated for a time on the processing service's computers, with transition to the service's standard packages taking place in an orderly sequence over time, not all at once.

The apparent short-term exception to limits on systems investment is funding of the transition from older bank data base systems to relational data base systems (RDBMSs). There can be several key motivators for this shift. First, in situations where a bank has taken over or merged with one or more other banks, is the need to integrate each bank's separate processing systems. Implementation of an RDBMS can aid this integration. Second, the banks historically have kept records on each account for each client separately, with little or no integration. Such integration is required for relationship banking to be successful, however, and is made feasible by RDBMSs. RDBMS-integrated account records, for example, would allow a teller processing a routine checking deposit to spot that a customer's 90-day certificate of deposit is due to mature in two days and thus direct the customer to a desk officer who can discuss reinvestment options. Finally, any management requests for executive information systems to better manage the business in the competitive environment of the 1990s generally require RDBMS technology.

As mentioned earlier, disaster recovery is no longer an option—new regulations require it. Most banks are approaching disaster recovery from the standpoint of contracting with outside disaster recovery firms, and in some cases are installing backup power supplies as well.

C

Impact of New Technologies

A few new technologies, listed in Exhibit III-4, are affecting the way banking and finance firms design and implement their information systems.

EXHIBIT III-4

Outlooks for New Technologies

- RDBMSs: A competitive requirement
- Imaging: Startup costs versus savings
- Expert systems: Looking for more payoffs
- EDI: Little rush
- Workstations: Beyond brokerages?
- CASE and 4GLs: Integration tools?

RDBMSs—especially IBM's DB/2—are already installed or in the process of installation at many large and midsized banks. Given the competition for deposits versus money market funds and other nonbank investments, many banks want to emphasize the kind of relationship banking discussed earlier, which takes into account all of the customer's business with the bank. Relationship banking makes installation of an RDBMS a competitive necessity.

Imaging, on the other hand, appears so far to be more talk than action. Although relatively few banks have implemented such systems (American Express, a nonbank financial institution that pioneered imaging for charge slip records, is a noteworthy exception), several variations are being examined by most sizable banks. Variations include: imaging of checks and moving the images to statements rather than further handling the paper checks; direct output of lengthy documents (such as daily balances) accessed by few bank staffers to image systems rather than paper; and capturing of the many nonstandard documents required for mortgages and other loans in image systems. The goal is flexible access and accommodation of record-retention requirements.

The stumbling block for imaging is fixed costs—complete systems range as high as tens of millions of dollars. Today's cost-cutting environment simply will not support most such investment without clear proof of short-term payback, which generally is missing for imaging.

In the mid-1980s, many saw expert systems as a bright new systems star for banking, especially for credit scoring, loan authorization, and credit card charge approvals. Although examples of all such applications exist,

there appears to be relatively little enthusiasm among banks for moving further with expert systems. A notable exception is the deepening commitment to the Authorizer's Assistant expert system by the nonbank American Express. The bottom line seems to be a lack of documentation of hard-dollar payoffs.

EDI—Electronic Data Interchange, the direct computer-to-computer transfer of information such as orders and deliveries, as well as financial transfers such as invoices and payments—continues steady growth outside of the banking sector. Yet EDI appears to generate little enthusiasm among banks. Although all banks routinely use electronic ACH—Automated Clearing House—facilities and most participate in wire transfers of funds with more or less systems sophistication, few banks appear to see themselves in future roles as EDI intermediaries. In part, this pessimism may spring from the already-entrenched position of service bureau vendors outside banking, and in part pessimism may be due to a view that disintermediation—the elimination of middlemen such as banks in financial transactions—is the ultimate goal of EDI and thus is ultimately counter to the banking industry's interests.

For several years now, high-powered workstations have become the vehicle of choice for humans beings to execute high-speed, high-profit transactions in such fast-changing brokerage environments as currency trading—or, some would say, workstations are the villain in crash-inducing program trading. As costs drop and workstation power increases, their use for such applications no doubt will accelerate. To date, however, the banking and finance industry has found little other use for workstation technology, and future applications remain unclear—except, of course, to the extent that banks begin to enter the brokerage business.

Finally, CASE and 4GLs may have noteworthy roles to play in many institutions' evolution from multiple merged-bank systems to integrated systems. CASE in particular, however, will have to deliver more effectively on its long-standing promise to help information systems managers re-engineer old systems before CASE sees widespread application.

D

Organization and Budget

Exhibit III-5 shows general patterns in banking and finance firms' information systems budgets.

Although banking and finance industry budgets in general are highly centralized, many banking firms maintain a split between back-office systems and the computers and equipment that implement field networks of ATMs. Fully decentralized exceptions to this pattern, of course, do exist. Chargeback systems are common but not typical of the majority of firms. Overall, corporate budgets in general and bank systems budgets in particular are tight. As noted earlier, this pattern holds for brokerages as

well, but many nonbank financial services firms are enjoying higher profit levels and are investing more heavily than the sector average in information systems.

EXHIBIT III-5

Organization Control and Budgets

- Highly centralized
- Field ATM operations often distinct from the back office
- Chargebacks common but not typical
- Budgets tight

According to a 1990 American Bankers Association survey, total data processing budgets range from about 8% (midsized banks) to 12% or more (large banks) of total bank operating expenses, excluding interest paid out. The Federal Reserve estimates total noninterest expenses at about $100 billion for the industry. The budget percentage breakdowns presented in Exhibit III-6 derive from the same survey.

EXHIBIT III-6

Banking and Finance Sector—Information Systems Budgets, Averages

14%	Hardware
2%	Software (purchased)
2%	External processing, information, and professional services*
7%	Communications
50%	Salaries and benefits**
25%	Other, including nonsalary overhead charges

* Ranges from about 6% for the smallest banks to 1% or less for large institutions

** Ranges, by segment, from under 40% to over 60%

Source: 1990 American Bankers Association National Operations/Automation Survey

E

IS Department Objectives

Based on background and findings presented throughout this report, Exhibit III-7 summarizes the objectives and plans of the banking and finance industry's information systems managers. The exhibit provides guidance for vendors planning products and services for this industry.

EXHIBIT III-7

Objectives and Plans of Information Systems Managers

- Cope with tight budgets and cost controls
- Evaluate and implement outsourcing as appropriate
- Implement disaster recovery
- Implement RDBMSs
- Integrate merged-bank systems
- Support "relationship banking"
- Explore imaging
- Research (only) most other information technologies

First and foremost at this time, vendors selling to information systems managers in the banking and finance industry must keep in mind that profitability generally is down, regulatory requirements for higher capital ratios are in force, and bankers are paying higher FDIC insurance premiums. Therefore, budgets are tight and across-the-board cost controls are in place at most banks, with layoffs at many. Brokerages are in a similar situation, with trading volume only somewhat recovered from the 1987 crash; management is still nervous about costs after waves of postcrash layoffs and other belt-tightening. The only budgetary bright spots are the less-regulated, nonbank financial services firms. Nonbanks generally are not suffering from large amounts of poorly performing LBO or real estate loans, and they are not subject to the extra burdens of mandated capital ratios and increasing FDIC payments. Nonbanks are more likely than the banks or brokerages to be in growth situations that call for increased investments in information systems and services.

The bright side of the budget crunch, of course, is that outsourcing is more popular than ever. Banks in particular have always been strong users of third-party processing services, and more and more banks are moving beyond routine yearly evaluations of outside processing to taking the action required to shut down costly in-house systems. Alternately, banks are—far more than in the past—accepting proposals for a third party to take over data centers and/or other systems operations (and often

staffs) in exchange for a long-term contract guaranteeing yearly savings. This option can prove especially attractive in merger or takeover situations, where the challenge of merging multiple information systems can be beyond the skills or resources of the systems professionals at the controlling firm. There is little indication, however, that nonbank institutions—brokerages or nonbank financial services firms—are particularly open to outsourcing in either form.

As noted, disaster recovery planning for banks is now mandated by mid-1992, so a competitive fray—with the potential of sizable winnings for multiple contenders—can be expected for hot sites and other such backup services. Note that the mandate also provides opportunities for third-party consulting to plan for disasters and to evaluate the service or other options.

RDBMs are already in place, being implemented, or being planned by most banks. One main motivator is the assistance RDBMs can provide in helping to integrate records after a merger or takeover. Another is the competitive pressure to offer relationship banking that ties together a client's multiple accounts. In terms of competitive positioning, the client becomes less likely to be lured away by another bank's offer of single statements and other integrated-account services. From the standpoint of service profitability, the bank with records organized within an RDBMS can use the data base connections to spot opportunities to expand the scope of account relationships with superior customers.

The new imaging technology is clearly the hot item in the banking and financial services press and is being investigated at some level by most banks. The reality, however, appears to be that funding to purchase such systems—at least those at the top of the line in price and functionality—will be lacking at most banks in the near term. To the extent, however, that vendors can offer small or midsized systems providing payback for specific functions at lesser transaction rates and lower front-end investments, there may be a good short-term market opportunity.

Similarly, most other leading-edge information technologies will get only research (without development) attention in the short term, based on the tight budgetary situation. As mentioned earlier, the exceptions likely will be found among the nonbank financial services firms, with the possibility of isolated exceptions for specialized functions in the fast-changing world of brokerages. To quote some recent examples, American Express leads in imaging implementation and a number of brokerages have pioneered the industry's effective use of networked workstations and expert systems. Similar leading-edge work may be done by these sectors in other new technologies over the next few years, although the prime candidates now appear to be extensions of recent work in those same areas.

Information Services Market

Information Services Market

This chapter discusses the markets for information services in the banking and finance industry. Information in this chapter draws on statistics presented in Chapter I, and trends and issues discussed in Chapters II and III, to outline anticipated future directions of the markets for information services.

One of the key items discussed is the trade-offs between prepackaged solutions—such as processing services, applications software, and turnkey systems—and custom solutions that involve consulting or external systems development and systems integration support.

User expenditure forecasts are provided for the banking and finance industry by industry sector and by delivery mode. Assumptions driving the forecasts are presented. Note that these forecasts do not include functional general-purpose information services, such as for human resources or generic planning and analysis. The markets for these types of information services are presented in other cross-industry MAPS reports, rather than the industry-specific reports.

Section A, Overview, discusses the overall size and growth rate of the banking and finance industry's expenditures for information services.

Section B, Delivery Mode Analysis, breaks out the overall data into INPUT's seven standard delivery modes.

Section C, Industry Segment Analysis, provides a breakout of this same forecast in terms of the major market segments within the banking and finance industry. These segments are:

- Commercial banks
- Savings and loan institutions (S&Ls)
- Credit unions
- Brokerages and other financial services firms

A

Overview

As shown in Exhibit IV-1, a number of business and technical driving forces are impacting the banking and finance industry's use of information services during the next five years.

EXHIBIT IV-1

Banking and Finance Sector
Information Services Driving Forces

- Cost/capital-use attractiveness: Processing services and systems operations
- Current price/performance of minicomputer-based turnkey systems
- RDBMS benefits
- Mergers among midsized banks
- Fast-changing regulatory/reporting requirements
- Nonbank financial services firms' strong competitive positions

The most important force driving many commercial banks and S&Ls toward outside information services is the double-edged squeeze on funds from their generally low-profit positions and the regulatory requirements for higher capital ratios. Switching to either a processing service or an outside systems operator can move a banking institution's capital out of the data processing center and back into the bank's business. Also, most systems operations contracts include guaranteed annual savings over current costs.

A different information services sector—turnkey systems—is benefitting from recent price-performance advances in minicomputer systems. The advances allow many turnkey vendors to offer midsized—and even small community—financial institutions mainframe-like power for in-house

processing at much better hardware prices than in the past. Note, however, that such turnkey business often will come at the expense of the processing services on which such users relied in the past.

As discussed earlier, many commercial banks and S&Ls are finding RDBMSs an opportunistic technology to deal with two key forces: the competitive need to implement relationship banking that ties together records of all a customer's accounts and the need to integrate multiple systems and records in the current wave of banking industry mergers. Vendors of the basic RDBMS software environments and of the add-on software packages that extend RDBMS functionality—especially those that work with IBM's DB2—are seeing such new opportunities.

Bank mergers are having important impacts on other information services delivery modes. Although processing services vendors may see their usage shrink somewhat as merged banks bring outside processing in house to newly merged systems departments, several sectors clearly will benefit from the mergers. Bank system application software vendors will see acquiring banks take a fresh look at expanded systems needs, often choosing to buy rather than build new and larger systems. Professional services firms and systems integrators certainly will see the merging banks reach out, for advice on systems modification or evolution and for full-scale contracts to integrate old and new systems. Also, systems operations vendors should keep a watchful eye on mergers to identify ripe opportunities to pitch the advantages of outsourcing the expanded systems department functions.

Commercial banks and S&Ls are being driven harder and harder to maintain their systems' compliance with fast-changing banking regulations and reporting requirements. Packaged application software vendors, processing services vendors, and system operators all can point out that they offer a central, economical approach to keep the institution up to date—and legally compliant—with such changes so that banks may get back to the banking business.

Nonbank financial services firms will likely continue to be in relatively strong competitive positions versus the traditional banking industry in the future, unless now-unforeseen new bank-like regulations are imposed. Many nonbanks are already strong users of network services and of processing services for credit card authorization and transaction processing. Nonbanks should prove good customers for:

- Banking application software adapted to restricted nonbank functions
- Professional services to help nonbanks modify software or build custom systems to meet their unique needs
- Integration of new technologies (perhaps even imaging, which nonbanks can better afford than banks can) into their systems

- Operation of systems in a cost-saving fashion—perhaps to keep data processing costs stable even in the face of growing business and systems requirements

In contrast, a number of forces are simultaneously inhibiting banking and finance firms' use of information services, as shown in Exhibit IV-2.

EXHIBIT IV-2

Banking and Finance Sector
Information Services Inhibiting Forces

- Weak profits
- Rising capital-ratio requirements
- Scrutiny by regulators
- Shrinking S&L segment, specifically
- General overcapacity
- Uncertainty about regulatory changes and impacts
- Continued doldrums for the brokerages?
- Nonbanks' continued reliance on in-house?

Although the commercial banks' and S&Ls' weak profit performance—and regulatory requirements to raise capital ratios—may bode well relatively for processing services and systems operations vendors, on an absolute basis they will inhibit all spending for internal information systems and outside information services in the short term. As if that was not enough, regulators are being driven by public outrage and legislative mandate to scrutinize banking operations and spending ever more closely, a trend that will likely lead institutions to introduce an extra measure of caution to their naturally conservative temperaments.

The industry's overall condition of overcapacity is most obvious to date in the shrinkage of the S&L segment. Many observers believe a wave of commercial bank consolidation is just around the corner. Although specific opportunities will emerge from this downsizing of the industry, the absolute number of sales prospects for information services vendors will drop.

Toughest to deal with will be the uncertainty factor. At least until the federal legislation currently under consideration takes final passed-and-signed shape, the future structure of the industry will be in doubt. To

take just one example, the decision about industry ownership options could take one of at least three shapes during 1991: no change in bank-ownership restrictions, bank and nonbank financial institution cross-ownership, or free-and-open bank and industrial cross-ownership (as modeled by Japan or Germany). The implications for the shape of the banking business in the 1990s are profound—and further changes likely will follow the 1992 presidential and congressional elections. In that environment, caution by bankers can be expected to limit changes in how they manage internal information systems and contract for outside information services. Vendors, in turn, need at least three corresponding scenarios and business planning frameworks.

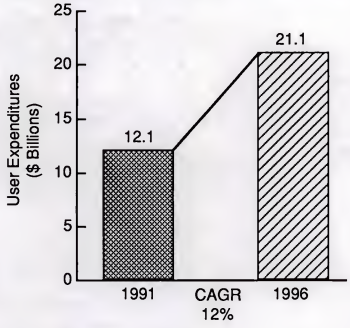
The brokerages still represent a wild card that is generally too uncertain to call. Although the recent upswing in the market has eased some of the continuing pain of the post-1987-crash volume doldrums, many view the future shape of the brokerage business as questionable. Although another long-term expansion and bull market may come sooner or later, it is unlikely to strongly revive employment at—and systems or services investment by—brokerages; even the return of boom times likely will fail to erase the memories of the crash. Chastened brokerage managements will remain cautious for some time, at least. They likely will continue, however, to pioneer the use of technologies like expert systems for specific functions such as currency trading.

Similarly, nonbank financial services firms—some affiliated with major industrial firms and some diversified only in financial services—represent a future uncertainty for information services firms. Historically, nonbanks have strongly favored in-house solutions, including building their own software rather than buying packages. As noted earlier, generally nonbanks have the advantage over commercial banks and S&Ls of having money to invest in information technologies. Some, notably American Express, have been real pioneers. There is relatively little track record of success by outside information services vendors, however, to ease uncertainty about their ability to penetrate this market segment.

Based on these driving and inhibiting forces, and other factors detailed below, INPUT projects the 1991-1996 information services market for the banking and finance industry as shown in Exhibit IV-3.

EXHIBIT IV-3

Banking and Finance Sector
Information Services Market, 1991-1996



Year-by-year detail is shown in the forecast data base (Appendix B). In addition to the driving and inhibiting forces just outlined and the delivery-mode-specific trends outlined in the next section, a number of industry-segment-based trends are at work behind this forecast. For example, some commercial banks should represent growth markets short-term for processing services and systems operations, for the reasons detailed earlier. The S&Ls, however, in general can be expected to be sufficiently preoccupied with their continuing troubles such that change in their use of information services will be more the exception than the rule. The exception will be where raw cost-cutting is the motivator, which will increase movement toward processing services and systems operations as well. Credit unions are already strong users of processing services, and little should change there. The forecast for nonbank financial services firms' use of outside information services is modest for the reasons noted earlier.

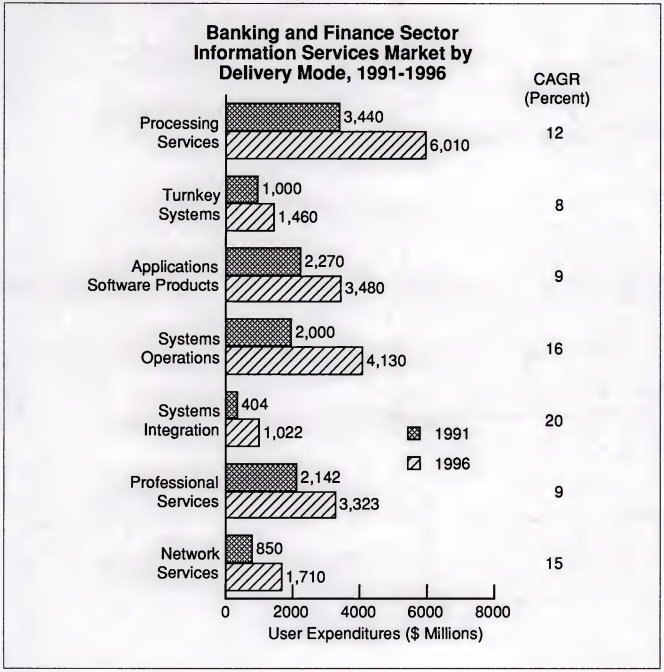
In terms of year-to-year growth rates, note that there is a general assumption that today's troubles and uncertainty in the banking industry will ease within several years. Regulatory uncertainties will settle, consolidation and new ownership patterns will take place in now-uncertain form, and a re-establishment of stable banking industry operating conditions will lead to a period of renewed growth in the new banking business—whatever shape it takes. Starting in about 1995 and 1996, therefore, information services vendors will see a corresponding increase in the growth of their revenues from the industry.

B

Delivery Mode Analysis

As shown in Exhibit IV-4, there are significant differences projected in the five-year growth rates for the information services delivery modes to the banking and finance industry.

EXHIBIT IV-4



1. Processing Services

The banking and finance industry's use of processing services has always been strong relative to that of other industry sectors. Such use has always been heaviest by smaller and midsized commercial banks, S&Ls, and credit unions not willing to invest in on-site hardware to provide competitive system capabilities.

As noted earlier, one change to these conditions during this period will be that some commercial banks and S&Ls (although generally not the smallest) will merge into larger and stronger local and super-regional banks, which generally can be expected to bring processing services in-house for consolidated economies of scale. This move in-house will be particularly true for the S&L segment, which will continue to shrink significantly in numbers through solvency-based closures and consolidations.

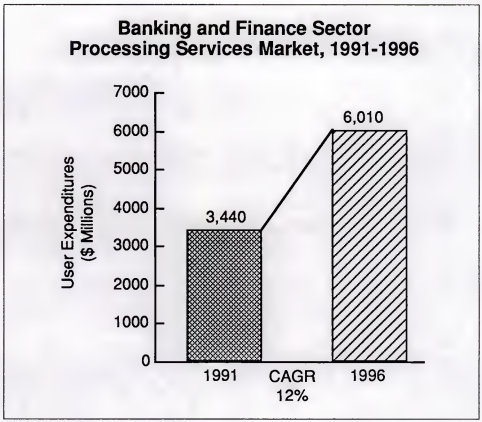
The more important trend, however, will be the increased use of processing services by commercial banks and S&Ls of all sizes, which will shift to processing services to redeploy their capital away from in-house systems and toward meeting higher capital-ratio requirements. However, there will be somewhat of a countertrend whereby some midsized commercial banks and S&Ls will find turnkey, minicomputer-based systems to be an increasingly cost-effective alternative to outside processing services' usage-based charges. Because this countertrend will be especially valuable when the bank or S&L is growing, however—and not when capital is short—it will likely prove to be the lesser trend.

Since there will be a constant rise in the use of credit cards during this period, there will be corresponding rising transaction volumes for third-party card-processing services, which will continue to enjoy highly competitive economies of scale.

Brokerages and nonbank financial services firms typically have not been heavy users of processing services, and no change is expected in this pattern.

Exhibit IV-5 shows the 12% CAGR expected in processing services, based on these trends.

EXHIBIT IV-5



2. Network Services

Banking and finance industry firms generally are significant users of network services, especially for value-added data communication services and to a lesser extent for electronically accessed information services.

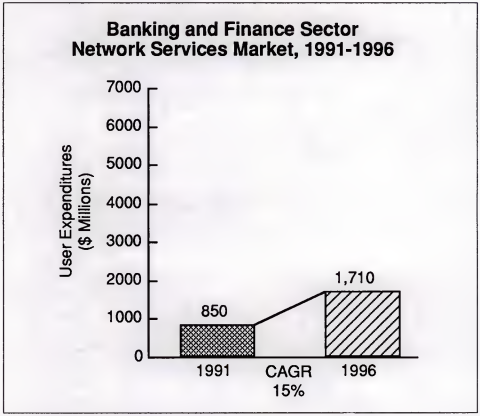
The main use of network services is by bank and nonbank credit card issuers. Issuers handle purchase authorization, generally through value-added access to credit data bases through packet network services such as BT Tymnet and US Sprint's Telenet.

Banking institutions and nonbank financial institutions are all heavy users of network-based credit reporting services, especially from giants such as TRW and Equifax.

Brokerages make quite different use of on-line information sources, ranging from their use of market leaders—like Quotron and Reuters—to regular or occasional access to multiple specialized information feeds to meet particular trading needs.

Exhibit IV-6 shows the growth expected in network services, based primarily on continuing growth in the use of credit cards. Additional growth from use by brokerages assumes a midterm trend away from brokerage volume stagnation.

EXHIBIT IV-6



3. Applications Software Products

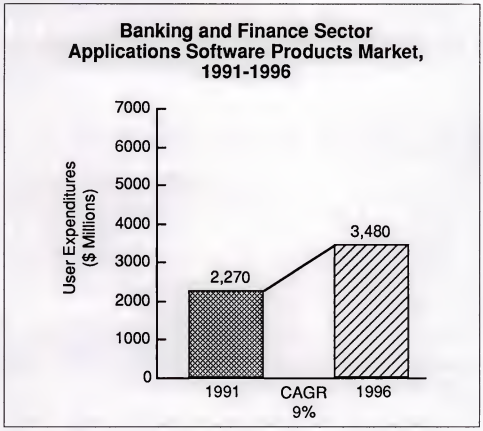
The banking and finance industry has always made substantial use of packaged software products among the high proportion of small and midsized institutions. Generally only the largest firms have developed most of their own software systems. Many standard packages are offered, although these often require modification to meet a particular bank's needs. Modification is in two ways, with no particular pattern except size of institution: Smaller firms more generally contract to the vendor or a third-party consultant (sometimes a small local contractor), whereas larger firms use their in-house information systems staff.

To date, at least, PC-based banking software products (except for spreadsheet-type utilities) have not been particularly relevant in this market sector. There are few PC-based software systems robust enough to meet the high-volume transaction needs of most central banking functions. In parallel, few of the key, volume-based banking peripherals are available for PC attachment. Mainframes and minicomputers remain the rule,

although this rule could change with PC advances in power. (A related trend at the minicomputer level is covered under Section 6, Turnkey Systems.)

Exhibit IV-7 shows the growth expected in software products. In the short term, bankers increasingly will try to make do with existing systems except where competitive pressures—as for RDBMS-based support of relationship banking—require new software investments. Near the end of the period, however, this growth rate is expected to rise, based on the return of stability, growth, and profits to the banking industry in general. At that time advances in PC power—and the PC-based high-transaction-rate peripherals required—will tend to power a new generation of PC-based software applications.

EXHIBIT IV-7



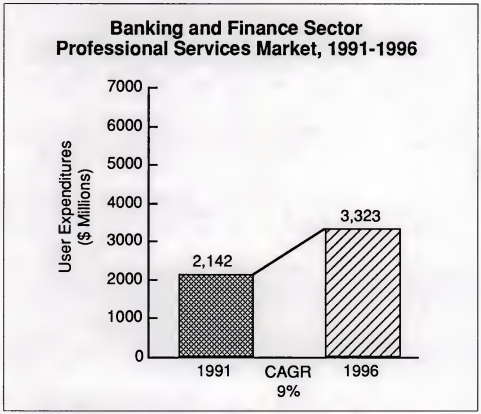
4. Professional Services

The use of professional services by the banking and finance industry is strongest historically in the use of contract programmers and other consultants to meet specific programming and systems needs on a relatively short-term, ad-hoc basis. There has also been secondary use of consultants for services such as overall systems evaluation, overviews of technologies and new technical options, and recommendations on directions for rearchitecting large systems where such large systems are typical: in

the largest banks, and especially in the nonbank financial institutions and the large brokerages.

Exhibit IV-8 shows the growth expected in professional services.

EXHIBIT IV-8



The trend shown for the use of professional services reflects the short-term emphasis on cost control. In this atmosphere the first cuts generally are made in expendable contract programming and consulting services, as opposed to in-house staff.

One exception will be cost-control consulting. Such engagements, of course, will be required to promise savings in excess of contract costs.

Further, despite the continuing pace of change in information technologies, cash-strapped banks generally will not pay for noncritical technology consulting in the short term. To take one example, with the high implementation price tags involved for imaging systems, commercial banks and S&Ls likely will limit investigations to press clippings, report reading, and attendance at local trade shows, rather than pricey consultant evaluation contracts. The larger nonbank financial services firms—of which there are relatively few—will likely prove the exception to this trend.

There should be somewhat of a countertrend, but more toward the end of the forecast period. As the pace of commercial-bank consolidation picks up, wide-ranging opportunities should open for professional services firms to consult with the acquiring firms on systems expansion and/or consolidation.

5. Systems Integration

The market for systems integration is closely related to that of professional services. The key distinction between professional services consulting and systems integration is who bears the ultimate responsibility for planning and managing a systems installation project. Consulting firms typically provide analytical or technical support as professional services to their clients, while seldom bearing responsibility for the result of an implementation project. Systems integrators, in contrast, act as the general contractor on a systems project, assume project management responsibility, and generally bear some financial risk for the success of the project.

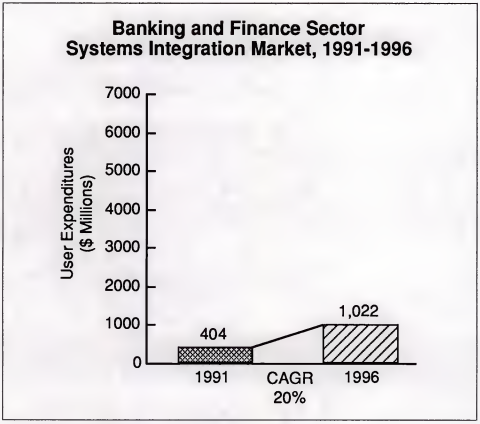
To the extent that banks and financial services firms are undertaking large new-systems projects, the complexity of today's information systems and services technologies and the rapid pace of technical change make it increasingly difficult to manage such projects, especially projects requiring a combination of in-house and outside resources.

Exhibit IV-9 shows the growth expected in systems integration. These numbers reflect the fact that relatively few commercial banks, S&Ls, or even brokerages—under current financial conditions—now are undertaking complex new projects requiring systems integration services.

Note, however, that strong and aggressive nonbank financial services firms can be expected to make relatively more such systems investments, and thus increasingly will tend to transfer such risks and responsibilities to systems integration firms. As aggressive nonbanks are relatively few, though, this transfer makes relatively little difference industrywide.

Starting about the middle of the period, new forces should emerge: The services of systems integration firms will be increasingly important to guide newly merged commercial banks through the complexities of systems consolidation. In part, the larger size of the merged organization—especially when there have been multiple, successive takeovers by one institution—eventually should drive many to cost-justifying larger in-house systems (with or without new technologies such as imaging) that system integrators can help set up.

EXHIBIT IV-9

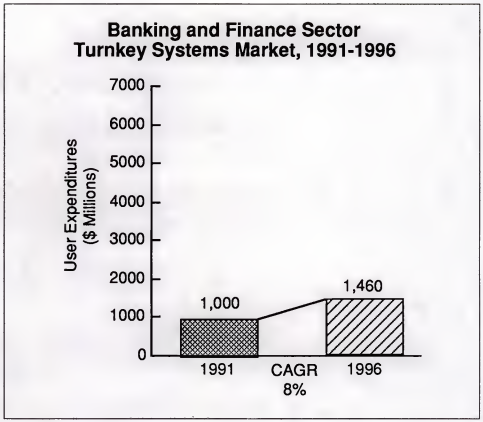


6. Turnkey Systems

By bundling the required hardware and software into a single package, turnkey systems provide an easy-to-implement solution for many midsized and community commercial banks and S&Ls. This solution is at the price, of course, of generally providing less flexibility for users, thus placing them more at the mercy of the turnkey vendor. Turnkey systems do, however, generally provide the user with more flexibility than some processing service vendors' one-service-fits-all approach.

Exhibit IV-10 shows the growth expected in turnkey systems, which is driven primarily by a new generation of minicomputer-based systems for banks and S&Ls. These systems increasingly offer cost-effective alternatives to outside processing services, especially for growing institutions wishing to avoid continuously increasing unit transaction costs inherent with a processing service. Perhaps more important, the newly cost-effective turnkey systems significantly increase the level of control available to user organizations.

EXHIBIT IV-10

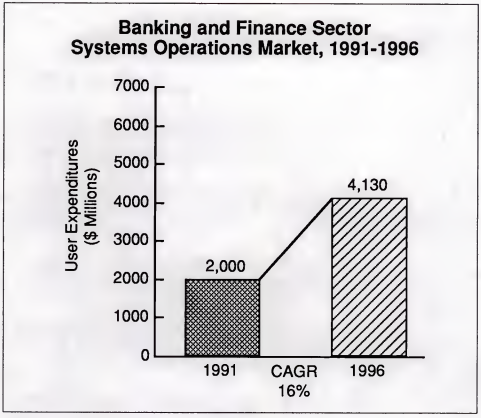


7. Systems Operations

As discussed earlier, systems operations vendors (along with vendors of processing services) are big winners today in the banking industry's efforts to cope with low profitability and regulatory requirements for higher capital ratios. Today a systems operator often offers to purchase a capital-consuming in-house data processing operation and to guarantee the bank or S&L yearly savings over the course of a multiyear contract. This combination increasingly is outweighing the institution's natural hesitation to give up a measure of corporate control over a key business resource. Note, however, that credit unions (which have few in-house systems) and nonbank financial services firms (which have few regulatory requirements and generally higher profitability level) are largely exempt from such dynamics.

Exhibit IV-11 shows the growth expected in systems operations, based on these trends.

EXHIBIT IV-11



C

Industry Segment Analysis

In Chapter III, the banking and finance sector was segmented into commercial banks, savings institutions, credit unions and brokerages, and other financial services firms. Exhibit IV-12 provides INPUT's forecast for the segments of the banking and finance sector and relative market size.

There are several rather disparate factors driving growth rates in information services spending by each of the market segments in the banking and finance sector.

The relatively high growth and increasing proportion of the overall information services expenditures by the commercial banking sector is tied to the sector's ability to leverage systems operations and systems integration offerings. These faster growing delivery modes are primarily driven by the medium and larger banking institutions.

EXHIBIT IV-12

Banking and Finance Sector Individual Segment Markets, 1991-1996

Industry Segment	1991		1996		1991-1996 CAGR
	$ Millions	Total (Percent)	$ Millions	Total (Percent)	
Commercial Banks	6,050	50	11,600	55	14
Savings Institutions	2,420	20	3,800	18	9
Credit Unions	1,815	15	2,750	13	9
Brokerages & Other Fin. Serv. Firms	1,815	15	2,950	14	10
Total	12,100	100	21,100	100	12

Brokerages and other financial services firms show relatively steady but not high growth rates. Brokerages, although emerging somewhat from the relative stagnation that persisted for years after the 1987 crash, still are operating cautiously in a market that has risen significantly over 1990 levels, but has not yet shown a clear return to bull market conditions. Business growth may or may not accelerate soon, but crash and layoff memories and continuing tight belts likely will limit increases in information services spending.

The savings institutions and credit unions will see lower growth and a declining proportion of the information services sector. These smaller institutions will able to leverage the lower costs of client-server technology or stick with processing services offerings, and are not inclined to change applications software very often.

- For credit unions, INPUT assumes that no "killer" features to limit unions' low-cost popularity will be legislated as part of federal banking regulatory reform. Enactment of such restrictions would, of course, shift unions to the low-growth path.

- For savings and loans, successes are balancing the failures, but overall growth in information services expenditures will be modest.

Competitive Environment

Competitive Environment

This section discusses the competitive environment for information services within the banking and finance industry. Leading vendors are identified and representative vendors are profiled.

A

Vendor Characteristics and Competitive Trends

A wide variety and large number of information services vendors serve the banking and finance industry, without any pattern of top-heavy concentration of market control. Leading vendors are often banking-industry specialists, such as Systematics, yet many multi-industry vendors—such as the Electronic Data Systems subsidiary of General Motors (EDS)—also rank high. No single profile of vendor characteristics dominates.

Competition is intense for the business of an industry sector that includes many smaller and midsized institutions that make extensive use of information services. Recently there has been some noteworthy acquisition-based consolidation near the top of the vendor list. For example, Automatic Data Processing (ADP) has sold its banking industry processing service business to EDS.

B

Leading Vendors

Exhibit V-1 lists leading information services vendors serving the banking and finance industry.

EXHIBIT V-1

Banking and Finance Sector
Leading Information Services Vendors

	Market Share (Percent)	Proc. Svcs.	Turnkey Sys.	Appl. SW	Sys. Ops.	Sys. Int.	Prof. Svcs.	Network Svcs.
First Fin. Mgmt.	5	*						
ADP	3	*	*					*
CDC	2	*	*					*
Dow Jones	4							*
EDS	4	*			*	*	*	*
First Data Res.	2	*						
GEIS	2	*					*	*
IBM	3	*		*		*	*	*
TRW	2					*	*	*
Andersen	2					*	*	
Quotron	2							*
SIAC	2	*					*	
Systematics	2			*	*			
FISERV	2	*			*			
Reuters	3							*

C

Vendor Profiles

A representative group of information services vendors serving the banking and finance industry is listed in Exhibit V-2. Vendors are profiled below.

EXHIBIT V-2

Vendors Profiled

- AGS Computer Systems
- American Management Systems
- Bolt Beranek and Newman
- Broadway & Seymour
- First Data Resources
- Hogan Systems
- Kirchman Corp.
- Mellon Information Systems
- NewTrend Group
- Price Waterhouse
- SunGard Data Systems
- Systematics

1. AGS Computer Systems

AGS is owned by the regional telephone holding company NYNEX. It derives about $22 million of its worldwide revenues of $250 million from the U.S. banking and finance industry, primarily from money center banks. This professional services business is relatively evenly split—$10 million from custom software development and $12 million from management consulting engagements. Such engagements include reviews of systems operations and systems integration opportunities, and competitive analyses.

Befitting its telephone industry ownership, AGS's work in new technologies includes analysis of how to integrate existing systems with ISDN (Integrated Switch, Digital Network) communications standards. AGS is also analyzing imaging and workstation technologies for clients.

The firm competes primarily with the Big Six CPA firms' consulting divisions. AGS notes that the two CPA firms that are the result of recent mergers appear to be confused by the mergers.

As competitive strengths, AGS cites its strong roots in technology innovation and its use of senior consultants, not junior staffers. AGS's competitive strategy is to be a one-stop consulting source for its money center

bank clients and to provide the full range of professional services that any bank requires.

2. American Management Systems (AMS)

The $50 million that AMS derives from the banking and finance industry represents about 20% of AMS's overall revenue. Its business in this sector is concentrated mainly among the largest commercial banks and the big nonbank financial services firms. About 20% of this revenue is from the sale of software products such as those for credit processing and scoring, and for international credit and collections, including support of SWIFT and other electronic messaging systems. The other 80% is professional services revenue derived from support of the software packages, modification of the packages, or custom software development.

The new technology of imaging is integrated by AMS into the credit origination subsystem of the credit processing software package, in the form of images of supporting documents. In expert systems AMS now offers credit-scoring and -advice functions in the loan origination package and has a collections expert system coming. AMS integrates computer-based training technology in two of its software products and builds such courses on a custom basis for clients. Some cooperative processing capabilities linking PC-based system components with the mainframe are part of AMS's platform automation product. For now AMS is postponing any commitment to OS/2, preferring an open-architecture approach.

Competitively, AMS believes it stands alone against the big CPAs and leading banking and finance industry vendors, because only AMS offers software products and a wide range of consulting services. AMS emphasizes its expertise in system development and the management of systems resources for meeting tough schedules and handling complex tasks. This expertise includes key technology tools such as life cyle productivity methodology and a system design workbench. AMS emphasizes to clients that big-dollar systems investments in the past and the future can achieve correspondingly large paybacks in all bank-processing areas, but only with full integration of systems to make them flexibly accessible to a much broader range of the institution's staff and managers.

3. Bolt Beranek and Newman (BBN)

Working mainly in the banking industry and with large commercial banks, BBN derives about half of its revenue in this sector from turnkey systems and half from systems integration services. The turnkey systems are the communications processors and software that drive private network communications systems; the systems integration work is directly tied to implementing the turnkey systems.

Imaging technology is supported by BBN in the form of electronic communication of signature documents. LAN-based workstations can be integrated into BBN wide-area networks (WANs).

BBN notes that banks' increasing need to make real-time decisions in a time-based competitive environment is driving banks toward BBN's type of networks, but that poor profitability and hesitation to embrace new technology are holding many back. BBN competes in this business with value-added networks like BT Tymnet and US Sprint's Telenet, and with Sysco. BBN emphasizes its technical expertise and ability to deliver professional services side by side with turnkey systems. Especially important is BBN's ability to assist with the transition planning and implementation as a bank migrates from a traditional terminal-host environment to LAN/WAN-based peer-to-peer communications. Firms are requesting more such transition planning recently, BBN reports.

4. Broadway & Seymour

Over three-quarters of Broadway & Seymour's U.S. revenue of $37 million comes from the banking industry: $15 million from large banks and $15 million from small community banks. The large-bank business represents primarily custom system development and maintenance. For small banks, Broadway & Seymour provides turnkey hardware and software systems based on IBM's AS/400 minicomputer system.

In new technologies, Broadway & Seymour supports imaging in two fashions. First, Broadway & Seymour provides low-cost PC-based image statement systems that can be cost-justified at the relatively low check volume levels typical at community banks. Second, Broadway & Seymour's turnkey systems offer the option to print little-used but high-page-count documents—such as the daily balance spool file to write-once, read-many (WORM) optical disk technology—for screen-based access (and printing as required) by the relatively few bank personnel who require such access.

In the community bank market segment, Broadway & Seymour competes primarily with the vendors Information Technology and Jack Henry. In this competition, Broadway & Seymour emphasizes its strength and longevity. Broadway & Seymour lets clients know it will weather the banking downturn in general and the current recession in particular. The company claims its strength is underscored by market position and the market sector's largest number of AS/400-based installations.

5. First Data Resources

First Data Resources—a wholly owned subsidiary of American Express Information Services Company—reports serving over 700 clients in its processing-services-based business of maintaining the data bases and

handling all processing of the credit cards issued by clients in the banking and finance industry. First Data Resources' business also includes securitizing credit card receivables for sale to third parties.

First Data Resources is evaluating how to integrate imaging technology with service offerings in the future.

First Data Resources sees its competition as other card-processing services and in-house operations. The in-house mentality of some firms and/or their inability to break out the costs of credit card processing tends to inhibit the growth of the business, but processing-service growth is simultaneously driven by the difficulty of keeping up with changes: The Visa and MasterCard organizations, for example, keep implementing changes that processors must keep up with, and there are also periodic government regulatory changes.

The firm competes intensely with other service vendors, such as Total Systems, Credit Services, and EDS. First Data Resources emphasizes that it has been in the business a long time and has established a depth of resources—technology and people—that is hard to match. First Data Resources has great economies of scale, yet also emphasizes that it can be very flexible in services. Overall, the company likes to say to clients, "If it's been done in credit card processing, First Data Resources has done it."

6. Hogan Systems

Hogan's business is concentrated in software products for large commercial banks, plus some professional services in support of the software. For years it has offered software systems for loans, deposits, and customer information, and now it also provides products for measuring and reporting financial results and for risk analysis. IBM is the exclusive U.S. marketer of the Hogan Integrated Banking Applications software product.

Technologically, Hogan supports moving mainframe functions to distributed platforms. In terms of RDBMS technology, Hogan offers an earnings analysis system based on DB2. A strong presence is being developed in CASE in the form of a customer relationship system that Hogan has developed using CASE tools and that customers update more easily than prior product offerings (by using those CASE tools).

Hogan competes mainly with Marshall & Iseley and Systematics by emphasizing that it offers the most flexible product in its class. The product provides better control for the banker, ease of product modification, and rapid implementation of systems to support new bank products. Such flexibility and ease of use, Hogan reports, mitigates any disadvantages it suffers from being a more complex system and somewhat diffi-

cult to install initially. Hogan does profit, of course, from installation-oriented consulting services. Newer products position Hogan strongly in the banking sector's transition from emphasizing back-office operational automation to future implementation of new systems offering new management benefits, such as profitability measures and risk analysis.

7. Kirchman Corp.

Selling only to commercial banks, Kirchman's $50 million dollars in U.S. revenue is all from software products that operate on mainframes or minicomputers.

Although not undertaking work in any new technologies, the firm emphasizes to users the benefits of its concentration on the banking-software business and its staff of 250 professionals dedicated to keeping the systems compliant with new regulations, up to date with the latest hardware platform specifications, and fully documented and supported.

Kirchman competes primarily in a tough environment with Systematics, Citicorp, FIserv, and Jack Henry. It maintains a strong leading position by putting control of information systems automation in the hands of the banker. The banking executive can get all the information needed from the system—and even build new reports and support new banking products—without a need for in-house programmers. This has been Kirchman's winning strategy since the mid-1980s, and Kirchman sees no need for change.

8. Mellon Information Services

Although it has roots in the internal processing of its Mellon Bank parent, Mellon Information Services for 25 years also has been offering its processing services to other institutions. Revenues now total $250 million. Clients are mostly below the top tier of the sector and include banks and nonbank financial services firms.

Rather than implementing new technologies, the firm emphasizes the breadth of the functionality offered, based on its in-house big-bank experience.

It competes on the banking side with EDS, IBM, Marshall & Iseley, Systematics, and FIserv, and on the nonbank side with EDS, IBM, Genex, and Litton. Mellon's traditional competitive strategy has been to emphasize its 25+ years of experience and well-established products and services. In the past year, Mellon added a new angle: it will ease a customer's conversion from in-house operations by first running the customer's own in-house application on the processing service's computers, and only after a transition period to the Mellon system. This transition eases the conversion process and permits immediate dollar savings.

Among nonbanks, Mellon emphasizes support of the latest banking system internal functionality and its speed in handling functions now done manually by clients.

9. NewTrend Group

NewTrend derives $37 million of revenues from the sale to U.S. credit unions, S&Ls, and commercial banks of wide-ranging processing services, software products, turnkey systems, systems integration services, and systems operations services. NewTrend Unisys-based systems include loan origination and processing, central information file, and general ledger.

In the future NewTrend may support the new technologies of imaging and laptop computer communication with the mainframe. The imaging system may be offered on a processing service basis. The laptop communication system would be in support of field personnel who handle loan processing.

Competitively, NewTrend emphasizes processing services (where it competes mainly with Systematics and EDS) and turnkey systems (versus NCR and John Henry). NewTrend points out that over 240 banks operate the same NewTrend software—whether in-house, on a systems operations basis, or through NewTrend's processing service. In fact, the company notes that a bank using NewTrend software in-house can convert to NewTrend's service bureau in a single weekend if required by business changes such as a merger or a regulatory situation. NewTrend offers a strong track record of well-planned implementations that are truly installed in the number of days promised. NewTrend is a low-cost, high-function vendor that sells on a complete-package basis, without separate add-on contracts and costs. The processing service offering was added two years ago and includes NewTrend's commitment not to place more than 10 banks on a single shared system.

10. Price Waterhouse

Price Waterhouse derives about $20 million in banking and finance industry information services revenue from the professional services of custom software development and system effectiveness reviews provided to all parts of the industry. It also offers software products for securities trading.

Price Waterhouse promotes implementation of imaging technology via the selection of hardware and its implementation. Implementation can be either for high-volume systems for check processing or low-volume systems that support loan documentation. For banks that want to improve electronic funds transfer (EFT) functionality, Price Waterhouse

assists with automating EFT message repair and routing, and with setting new EFT strategies. Price Waterhouse is helping the industry to set EDI standards.

In strategic consulting Price Waterhouse competes mainly with First Manhattan. Arthur Andersen and Peat Marwick are the main professional services competitors for nonstrategic engagements. As a firm, Price Waterhouse reports that about two or three years ago it shifted competitive emphasis away from health care and government and toward banking and finance. Price Waterhouse emphasizes an interdisciplinary approach that integrates complex solutions to meet organizational, technology, and information-flow needs. Price Waterhouse's strong reputation as a firm is bolstered, it reports, by excellent, high-quality references from clients.

11. SunGard Data Systems

SunGard provides disaster recovery services to all parts of the banking and finance industry, mainly in the professional services of establishing hotsite backup, consulting on disaster recovery, and business resumption planning. SunGard also offers software products for business recovery functions.

In terms of newer technologies, SunGard provides limited functionality for LAN-based environments. Support may be offered in the future for imaging and EDI functions.

The firm competes primarily with Comdisco and IBM. SunGard emphasizes its roots in mainframe systems (now evolved to encompass minicomputers as well) and a crisis management approach that tries to accommodate all clients without requiring them to declare a disaster and thus receive services only on a first-come, first-serve basis.

12. Systematics

Systematics serves the entire banking and finance industry, primarily with systems operations services and with software products and development/maintenance services. Next comes other professional services in training, education, and consulting and a fast-growing business in systems integration (including conversions). Turnkey systems and disaster recovery services are relatively small business areas.

Although not strictly a new technology, Systematics reports a leadership position in the use of PC graphic user interface capabilities to make it easy for all bank personnel to find needed data, with or without RDBMS technology. Systematics supports imaging for archival storage and image statements.

The firm competes intensively in systems operations, systems integration, and professional services with EDS. Hogan and Kirchman are the key software products competitors, and processing services competitors are EDS and FFMC. IBM is still a relatively recent competitor. Systematics emphasizes as its key competitive strength its multidecade record of experience. All the software it sells and operates is its own, supported by trained staffers. Systematics' technology strategy is to maximize efficiency and payback for the client.

VI

Conclusions and Recommendations

Conclusions and Recommendations

A

Industry and Information Services Market Conclusions

As detailed in Chapter II, the banking and finance industry faces a business and social environment of uncertainty and likely change during the 1990s. Many S&Ls have already closed or merged with stronger institutions, and the shrinkage of the S&L segment is far from over. Consolidation of a commercial bank segment beset by overcapacity appears inevitable. Regulations governing the operations and ownership of all banking segments will change, although the exact shape of short-range and mid-term changes will be subject to the uncertain interplay of powerful political forces. Credit unions likely will enjoy a relatively unchanged—if unglamorous—future of local-based, nonprofit operation. The bright star—barring unforeseen regulatory changes—will continue to be the competitively aggressive and successful nonbank financial services firms.

For the most part, therefore, the market outlook for information services firms selling into the banking and finance sector is relatively weak in the short term. Institutions are not necessarily stopping the kind of information services spending they have done in the past, with the notable exception of curbing noncritical professional services usage. Rather, for the most part institutions are unlikely in this environment to undertake significant new investments. The two exceptions, as detailed earlier, are cost-cutting/capital-conserving shifts from in-house systems shops to outside processing services or to outside systems operations contracts; the latter often includes purchase of the on-site equipment by the contractor.

B

User Issues and Recommendations

Key technological issues faced by banking and finance industry information services users are outlined in Exhibit VI-1.

EXHIBIT VI-1

Banking and Finance Sector
Key Technological Issues for Users

- Integrating systems from merged banks
- Achieving efficiencies, including downsizing
- Implementing and managing disaster recovery
- Managing the switch to a processing service
- Handling systems impacts of regulatory changes
- Choosing an RDBMS to meet business objectives
- Establishing an executive information system
- Integrating imaging with other systems
- Determining the role of workstations
- Getting started in CASE?
- Keeping the finger in the dike

For an increasing number of systems managers at midsized banks, the key technological issue today is (or tomorrow will be) how best to integrate multiple systems from institutions undergoing mergers or acquisitions. At minimum, postmerger integration involves cross-system communication issues, but more normally it calls for the scrapping of various duplicate applications, subsystems, or entire systems/services complexes in favor of integrated—and more cost-effective—operational environments.

Even without a merger, the key industrywide dynamic of low profit margins and high-capital-ratio requirements means that systems budgets are squeezed almost universally. Deadlines and user demands, of course, may not decrease in proportion. Thus, far from evaluating which major investments to make, most systems managers at S&Ls and commercial banks today are faced with constant pressure to squeeze more-efficient performance out of existing systems. Sometimes this performance can be coupled with investing in high-performing new technology in the context of systems consolidation—say from multiple data centers to a single less-costly center.

Given the regulatory mandate to plan for disaster recovery by mid-1992, implementing such systems is a priority for any banking shop that has not already tackled the problem. All shops, of course, must manage such capabilities in the face of the uncertainty generated by the fact that many never need to use—and thus tend to never fully test—the capability.

Any shop that considers the switch from in-house support of users to an outside processing service must carefully plan and manage the switch. Some creative service vendors are offering a transition plan whereby the user's applications are run for a time through the processing service to iron out the kinks in access routines; cutover to the processing service's own applications are postponed until a second stage of the process.

Regulatory changes—especially for the S&Ls—are already coming thick and fast. Many have sizable systems impacts, yet regulators rarely factor this impact into their timeframe requirements. Systems managers, of course, must handle such disruptions even in the face of tight or reduced budgets.

Transition to RDBMS environments is increasingly common, if not yet universal, for commercial banks and S&Ls; nonbank financial services firms are more likely to be there already. The key technological issue here is partly a business issue: understanding the business objectives well enough to choose an RDBMS that will prove cost-effective. One of the trickiest challenges is projecting the likely system-load and capacity impacts—and therefore the required hardware upgrades, if any.

Often, one of the main drivers of an institution's transition to an RDBMS will be top management's desire or demand for an executive information system. In many ways, this desire represents a second wave of computer systems for banking and finance firms: Back-office operations (and, more recently, platform transactions and of course automated tellers) have been fully computerized by most institutions, yet few such systems have generated high-level management information that can be critical in a fast-changing competitive environment. The new RDBMSs often will perform a central role in making possible such executive-level systems. Note that although the costs of information technologies have always been highly visible to banking management, executive-level systems represent a new level of visibility where success will be all-important to the systems managers.

As noted earlier, imaging technologies are being studied at one level or another by midsize or larger institutions but are implemented by relatively few due to high startup costs. Note also that an important part of the costs and complexities of implementing imaging is determining how it will impact and integrate with other systems. In general, the free-form nature of electronic images is in marked contrast to the highly formatted numeric content of most of today's banking information systems.

Outside of brokerages, the future role of the fast-evolving workstation technology in the banking and finance sector remains uncertain. Raw costs and price-performance ratios are moving fast in the directions that users favor, yet the investment to use this technology is still sizable.

Managers must decide which applications—old or new—will justify such investments, and what systems integration issues must be faced.

As noted earlier, many commercial banks, S&Ls, and credit unions prefer outside processing services or packaged software to in-house software development. Many institutions with significant software-development shops, however, now are evaluating whether to initiate CASE. One stumbling block in today's business environment will be the general agreement that—in addition to sizable dollar investments up front for the required environment set-up—initial CASE learning curves generally result in short-term drops in programming productivity. On cost and productivity counts, therefore, CASE investment likely will be postponed by many.

The fact that the banking and finance industry generally lacks funds to invest in systems has not slackened the pace of technological change. Forward-looking systems managers need to find ways to make the key systems investments required to keep valuable staff when other industries offer better opportunities to use the latest technologies. For example, at least some investments of time and resources will be required to determine which technologies should be implemented on at least a trial basis. Trials can lead to selective new-technology cost justifications that will ease the burden of coping with a technological flood—and provide rapidly implemented competitive advantages—when more-profitable times resume for the banking and finance sector.

Key business issues that information services users face in the banking and finance industry are outlined in Exhibit VI-2.

EXHIBIT VI-2

Banking and Finance Sector
Key Business Issues for Users

- Trading needs for cost controls
- Squeezing savings out of in-house systems
- Determining options to save/preserve capital through a processing service or systems operations contract
- Reevaluating minicomputer-based turnkey systems
- Evaluating cuts in use of professional services
- Considering a shift to buying software packages
- Deciding where to act in times of uncertainty

Perhaps the toughest business issue for a banking and finance industry systems manager today is coping with backlogged, continuing, and new user needs in an environment of strict cost controls. An especially thorny issue for many is the additional task—on top of normal responsibilities and priorities—of integrating the systems of one or more merged banks. At some level, a triage mentality may be required, with clear communication to business management that certain current or proposed projects or investments simply must be cut from the plan in order to make reasonable progress on other higher priority—or less costly—ones.

As noted earlier, pressures are relentless to squeeze actual savings out of existing systems. Although some institutions are successfully downsizing multiple data centers, far more are considering the cash and/or capital savings implications of switching to a processing service or third-party systems operator. On the other hand, users of processing services are looking at today's improved price-performance ratios for minicomputer-based turnkey systems.

As usual in tight times in any industry, users of professional services must evaluate whether such spending is actually discretionary—or at least of lower value, relatively, than preserving in-house staff and alternate investments. The exception is cost-cutting-oriented consulting engagements. Similarly, software development shops with reduced or frozen staff levels are evaluating the latest software packages to determine the cost and capabilities versus in-house development.

Overall, of course, the toughest challenge for users is the uncertainty of today's banking environment.

Recommendations for users that derive from the issues outlined in this section are presented in Exhibit VI-3.

C

Information Services Vendor Issues and Recommendations

Recommendations for information services vendors often parallel those for users, as they derive from the same set of issues. These recommendations are presented in Exhibit VI-4.

EXHIBIT VI-3

Banking and Finance Sector
User Recommendations

- Anticipate further budget tightening: Evaluate systems budget tradeoffs
- Strengthen justifications for high-priority systems budget items
- If operating in-house, consider a processing service and/or outside systems operations
- Reconsider the cost-effectiveness of software packages versus in-house development
- If your company is large, consider downsizing/merging multiple data centers
- If your company is smaller, consider the latest generation of minicomputer-based turnkey systems
- Require demonstrated value for each professional services dollar
- Fully understand and balance all business needs before choosing an RDBMS
- Carefully evaluate costs before undertaking imaging; look for a low-cost pilot
- Retain valuable staff, in part, by making at least some investment in new technologies
- Determine the firm's likely merger positioning and the resulting systems impacts
- Deal with uncertainty by planning for multiple scenarios, especially as to financial condition and regulatory changes
- In all planning, consider the firm's competitive positioning when better times return

EXHIBIT VI-4

Banking and Finance Sector
Vendor Recommendations

- Develop sales approaches that recognize that cash and capital are especially tight now for most firms in the sector
- Proactively defend budget line(s) with user management
- Provide new and stronger cost-justifications that buyers can present to their management
- Processing service vendors or outside systems operators should use this opportunity to press the case for saving cash and/or capital
- Software package vendors should ask those who have declined package(s) in the past to reconsider, given cost-effectiveness under current conditions
- Minicomputer-based turnkey systems vendors should press any new advantages in cost-effectiveness
- Professional services firms or systems operators should look for opportunities to help larger firms downsize/merge multiple data centers
- Professional services firms should prepare tougher cost-justifications of the value they deliver
- RDBMS vendors should work with the client to understand all business needs and thus present the strongest case
- Imaging vendors should promote lower-cost "get acquainted" pilots
- New technology vendors should emphasize the importance of at least some investment to help retain valuable staff
- Consider each user's likely merger positioning and the impacts on your systems or services
- Look at your business planning from the standpoint of multiple scenarios for changes in regulations and in each user's financial condition
- Identify and promote to users any benefits of investing now to achieve competitive advantages as banking industry conditions improve
- Place relatively more emphasis on selling to financially and competitively strong nonbank financial services firms

Appendixes

Definitions

No industry-specific definitions have been used in this report.

See the separate volume, *Appendix A: Definition of Terms*, for the general definitions of industry structure and delivery modes used throughout INPUT reports.

Forecast Data Base

A

Forecast Data Base

Exhibit B-1 presents the detailed 1990-1996 forecast for the banking and finance sector.

EXHIBIT B-1

Banking and Finance Sector
User Expenditure Forecast by Delivery Mode, 1990-1996
($ Millions)

Delivery Modes	1990 ($)	Growth 90-91 (%)	1991 ($)	1992 ($)	1993 ($)	1994 ($)	1995 ($)	1996 ($)	CAGR 91-96 (%)
Sector Total	11,029	10	12,106	13,366	14,830	16,623	18,681	21,135	12
Processing Services	3,100	11	3,440	3,820	4,240	4,750	5,320	6,010	12
- Transaction Processing	3,100	11	3,440	3,820	4,240	4,750	5,320	6,010	12
Turnkey Systems	925	8	1,000	1,075	1,160	1,250	1,355	1,460	8
Applications Software	2,130	7	2,270	2,430	2,615	2,860	3,160	3,480	9
- Mainframe	950	6	1,010	1,080	1,160	1,270	1,400	1,540	9
- Minicomputer	680	6	720	765	825	900	990	1,085	8
- Workstation/PC	500	8	540	585	630	690	770	855	10
Systems Operations	1,740	15	2,000	2,320	2,690	3,125	3,590	4,130	16
Systems Integration	354	14	404	470	548	651	799	1,022	20
Professional Services	2,040	5	2,142	2,271	2,452	2,697	2,967	3,323	9
Network Services	740	15	850	980	1,125	1,290	1,490	1,710	15
- Electronic Info Svcs	650		750	860	990	1,140	1,310	1,500	15
- Network Applications	90		100	120	135	150	180	210	15

B

Forecast Reconciliation

Exhibit B-2 presents the forecast reconciliation for the banking and finance sector.

EXHIBIT B-2

Banking and Finance Sector
1990 MAP Data Base Reconciliation
($ Millions)

Delivery Modes	1990 Market				1995 Market				90-95 CAGR per data 90 rpt (%)	90-95 CAGR per data 91 rpt (%)
	1990 Report (Fcst) ($)	1991 Report (Actual) ($)	Variance from 1990 Report ($)	Variance from 1990 Report (%)	1990 Report (Fcst) ($)	1991 Report (Fcst) ($)	Variance from 1990 Report ($)	Variance from 1990 Report (%)		
Total	11,454	11,029	-425	-4	21,722	18,681	-3,041	-14	14	11
Processing Services	3,275	3,100	-175	-5	5,718	5,320	-398	-7	12	12
Turnkey Systems	939	925	-14	-1	1,408	1,355	-53	-4	8	8
Applications Software	2,150	2,130	-20	-1	3,860	3,160	-700	-18	12	8
Systems Operations	1,931	1,740	-191	-10	4,056	3,590	-466	-11	16	16
Systems Integration	369	354	-15	-4	1,280	799	-481	-38	28	20
Professional Services	2,044	2,040	-4	<1	3,381	2,967	-414	-12	11	8
Network Services	746	740	-6	-1	2,019	1,490	-529	-26	22	15

The significant differences between the 1990 and 1991 forecasts are as follows:

Overall growth of the information services market within banking and finance was only a modest 7% in 1990 compared with the expected 11%. This results in a reduction in the market size of $425 million at the end of 1990 compared to the previous projection. 1990 user expenditures were just over $11 billion as compared to the forecasted $11.45 billion.

Processing services grew at 5% compared to a projected 11%, resulting in a $175 million reduction in 1990 expenditure level at $3.1 billion. The reduced growth is directly tied to the business challenges throughout the banking and finance sector and the recession. Stronger growth is projected for 1991 at 10%.

Systems operations is the other sector that grew slower than forecasted. The 1990 user expenditure level reached $1.74 billion, or $190 million less than forecast. Though there is much more modest growth in actual expenditures, the activity level remains very high and the growth for the five-year period 1991-1996 remains one of the strongest within the systems operations sector with a 16% CAGR. Numerous systems operations agreements were negotiated during 1990 within banking and finance, but their revenue impacts in 1990 were modest.

The differences in the other delivery modes are modest.

About INPUT

INPUT provides planning information, analysis, and recommendations for the information technology industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

Subscription services, proprietary research/consulting, merger/acquisition assistance, and multiclient studies are provided to users and vendors of information systems and services. INPUT specializes in the software and services industry which includes software products, systems operations, processing services, network services, systems integration, professional services, turnkey systems, and customer services. Particular areas of expertise include CASE analysis, information systems planning, and outsourcing.

Many of INPUT's professional staff members have more than 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

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