OPPORTUNITIES IN ELECTRONIC PAYMENTS

INPUT

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Opportunities in Electronic Payments

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Abstract

This report examines the issues faced by banks, software companies, service bureaus, processing service, value-added network providers, and equipment vendors in selling electronic payment mechanisms. The report examines all areas where electronic payment mechanisms can be applied: homes, retail establishments, among corporations, between government agencies and corporations and homes. The report examines automated payment systems and services for consumers, preauthorized payments for consumers, retail card systems and services (including credit and debit card systems), EDI/EFT by corporations and government bodies, automated payroll processing, and other specialized payment services (such as electronic benefit transfers, freight bill processing, and others).

The report provides a comprehensive overview of the important factors that affect the proliferation of these electronic mechanisms in each of these segments. INPUT assesses the activity, dollar expenditures, and growth of these mechanisms through 1997. The report overviews the main competitors in these areas: banks, network and processing service vendors, home software companies, EDI/EFT software vendors, retail equipment vendors, credit card issuers, processing companies, debit card issuers and network operators, and government bodies.

The report is 80 pages long and contains 29 exhibits.

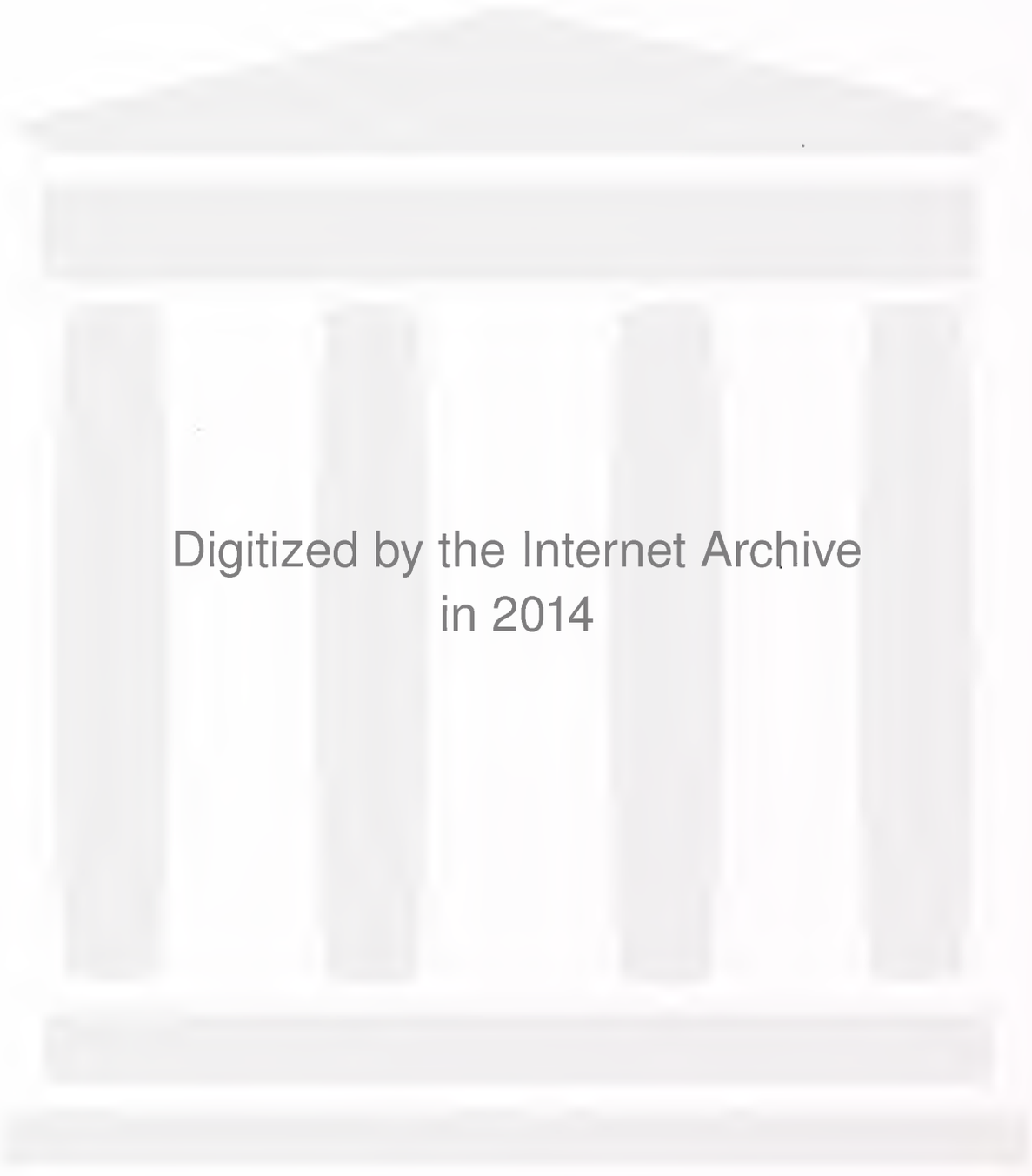


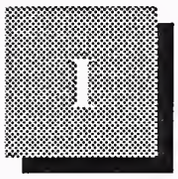
Table of Contents

Table of Contents (Continued)

Table of Contents (Continued)

Exhibits

Exhibits



Introduction

A
Scope of Report

This report examines the current status and use of electronic payment mechanisms for the several kinds of payments made in the U.S. economy. Electronic payment mechanisms vary according to the payor (who pays the bill) and payee (who receives payment) and the transaction type.

Corporations, for example, can use direct deposit of payroll mechanisms to electronically pay employees. They can use EDI/EFT (electronic data interchange/electronic funds transfer) to pay suppliers and tax authorities. Consumers can use credit and debit cards at retail establishments as well as the new automated banking services or the older preauthorized debit services to pay bills at home.

Exhibit I-1 classifies the kinds of electronic payment mechanisms according to payor/payee and kind of transaction. The classification scheme represents the areas covered in this report.

This report reviews and assesses each of the indicated payment segments. It characterizes the volumes of transactions made in each segment, the numbers of payors and payees, and the mechanisms that allow payors to electronically pay payees.

Each payment segment has its own infrastructure requirements in terms of software, equipment, and information services. This report enumerates these requirements. It lists who the principal providers of this infrastructure are and indicates how much revenue per year is generated from sales of these infrastructure components.

EXHIBIT I-1

Kinds of Electronic Payments

Payee \ Payor	Corporations	People	Government
Corporations	EDI/EFT trade payments	Preauthorized and automated bill payment / Credit/debit cards	Vendor Express
People	Direct deposit of payroll	N/A	Electronic benefits transfer / Payroll
Government	EDI/EFT tax payments	Electronic tax filing	N/A

N/A = not applicable

Source: INPUT

For each general segment (home, retail, corporate, government), INPUT outlines the issues that confront vendors and users of electronic payment mechanisms as they expand their electronic payment activity and capacity.

Retailers, corporations, banks, government agencies, and other enterprises that use or make available electronic payment mechanisms will find this report useful in that it clearly organizes the payment alternatives and what is involved in using them.

Vendors of electronic payment software, equipment, and services will find the report useful in assessing market development, comparing and contrasting different segments of the electronic payments market, and identifying market opportunities for new products and services.

This report does not examine pre-paid value card mechanisms or vending machine payment systems. Also, while the Automated Clearinghouse (ACH) and other intra-bank industry networks are certainly central to any discussion of electronic payment mechanisms, this report is not about these networks and clearinghouses per se. It is about making electronic settlement of payments accessible to payors and payees ("end users") in the economy. Bank networks and clearinghouses, from this standpoint, are considered "back end" systems.

B

Structure of Report

This report takes a very empirical approach in examining the several forms of electronic payment systems. In this report, INPUT examines payment systems according to where people actually make payments. This reduces to three areas:

- In their homes
- At retail outlets
- In the accounting/treasury departments of corporations and government agencies

This classification is not simply a convenient and rational taxonomy. The main kinds of electronic payment mechanisms today are indeed targeted towards these three payment-originating points.

INPUT examines these three areas, each in a separate chapter. The approach corresponds with the three main kinds of payors/payees, as shown in the first exhibit with two modifications.

First, "people" payors can be divided into two groups: people payors at home (paying bills) and people payors at retail outlets (paying for merchandise at the point of sale).

Second, corporate and government payors can be considered as one type of payor: a "corporate" payor.

Exhibit I-2 shows electronic payment mechanisms and the corresponding chapters of this report that discusses them.

EXHIBIT I-2

This Report's Coverage of Electronic Payment Mechanisms

Payee \ Payor	Corporations	People	Government
Corporations	Chapter V	Chapter III, IV	Chapter V
People	Chapter V	N/A	Chapter V
Government	Chapter V	Chapter III	N/A

N/A = not applicable Source: INPUT

In other words, Chapter III covers electronic payment mechanism used in homes. Chapter IV covers the mechanisms used by consumers at retail outlets. Chapter V covers the corporate systems (and government agencies are included here as a form of corporation).

Chapter II provides an executive overview of the findings and conclusions of this report. These findings and conclusions are elaborated in more detail in Chapter VI.

An index of companies mentioned is included as Appendix C.

C
Methodology

INPUT drew on a number of sources for the information in this report. INPUT interviewed a number of EDI product managers at banks and software and service vendors in the home, retail, and corporate electronic payment services industry.

INPUT interviewed personnel and reviewed reports from the National Automated Clearing House Association (NACHA) regarding payment activities. NACHA has been the principal supplier of quantitative data on electronic payment activity. Data provided by VISA International, Verifone and NCR were also important contributions to the quantitative estimates in this report.

Department of Commerce and other government agency data were particularly valuable, especially those from the *Statistical Abstract*, *Industrial Outlook*, *Census of Business*, and *Federal Reserve Bulletin.*

INPUT has extensive files on over 3,000 information technology and service industry companies (ADP, CheckFree Corp., AT&T/NCR, etc.). These files provided much of the financial and product detail of companies mentioned.

INPUT has an extensive library of paper-based and electronic media covering business and technology news. These provided the primary research for this report.

INPUT's body of consultants in the U.S., Europe, and Asia are continually involved in ongoing interviews, custom and syndicated research, and advisory discussions with information technology and service vendors and users. This accumulating, collective expertise was brought to bear on this report via internal discussions among INPUT consultants.

D
Related INPUT Reports

This report is part of INPUT's EDI/Electronic Commerce Program. The program has covered EDI since 1986. The most recent publications of the program are available and will supplement the information contained in this report. Contact any INPUT office or call our California office at 415-961-3300 for more details (7 a.m. to 5 p.m. Pacific Daylight Time).

Electronic Commerce: The New Foundation for Trade
Electronic Commerce in the Media Industry
Electronic Commerce in U.S. Health Care
Electronic Commerce in Trade and Transportation
Electronic Commerce in Travel and Tourism
Electronic Commerce in Grocery Production and Distribution
Electronic Commerce in Apparel Production and Distribution
Electronic Commerce in the U.S. Federal Government
Electronic Commerce: Comprehensive Market Assessment
International EDI Markets, 1992-1997

EDI Vendor Profiles and Competitive Analysis
The U.S. Electronic Data Interchange Market, 1992-1997
EDI in Europe, 1990
The EDI Market in Japan, 1992-1997
Developments in Corporate Electronic Trade Payments
EDI Business Integration Issues

II

Executive Overview

In general, the rapid adoption of electronic payment mechanisms by consumers and businesses over the next few years appears to be likely.

INPUT believes that the fundamental stimulus driving this rapid adoption is the widespread proliferation of microcomputers and other digital devices/applications (such as ATM machines, voice response telephone applications, etc.) in businesses and homes that took place in the 1980s and continues today.

The "hands on" use of these applications and devices by hundreds of millions of people has, consequently, educated the business person and the consumer in the practices of using such devices. People are comfortable, or at least functional, in using computer devices. Thus, they are ready to apply them to one of the most basic of activities: paying bills.

But not all markets for electronic payment services/applications are equally attractive. Although all are growing at rates above normal information services growth rates (in the 20% and 30% and higher ranges versus the IS average in the low teens), some are growing faster than others. Even though some applications (such as payroll processing) might exhibit high growth, their opportunity may be limited by a restricted overall potential market, the existence of several large competitors, or a combination of these and other factors.

Exhibit II-1 summarizes the growth in adoption of electronic payment mechanisms for the several payment segments examined in this report.

EXHIBIT II-1

Annual Activity Growth Rates for Electronic Payment Applications

Payee \ Payor	Corporations	People	Government
Corporations	33%	Home: 111% Retail: 38%	33%
People	32%	N/A	25%
Government	50% - 100%	32%	N/A

N/A = not applicable

The percentages in Exhibit II-1 refer to the growth of either transaction volumes for electronic payments or the number of people adopting payment services or the number of debit cards to be issued. They do not refer to the growth in vendor revenues of payment services, related software, or equipment.

INPUT believes that the leading and most attractive markets for electronic payment services, software, and equipment are those for:

- Corporate-to-corporate payments (EDI/EFT)
- Home banking/bill paying (including all modes, computer, telephone, and television based)
- Retail payments at the point-of-sale, particularly debit card payments
- Electronic payment of corporate taxes to state and federal authorities

Exhibit II-2 summarizes INPUT's assessments of the opportunities for electronic payment services.

EXHIBIT II-2

Bank and IS Vendor Opportunity Rankings for Electronic Payment Applications

Payee \ Payor	Corporations	People	Government
Corporations	High	Home: High Retail: High	Medium
People	Low to medium	N/A	Medium
Government	Medium to high	Medium	N/A

N/A = not applicable

The corporate-to-corporate EDI/EFT payment segment shows high opportunity because it is, relative to some of the other fields, a new kind of payment mechanism.

A critical mass of hub and spoke companies has been attained, which can carry over and stimulate adoption by other companies in other industries that trade with these initial adopters.

The EDI/EFT segment is made more attractive by the relative absence of any dominant players. Hundreds of banks, a score of software companies, and a handful of value-added networks are offering services in this niche. Not one has emerged as the all-service provider.

The home market is also a high-growth market for electronic payment services. The market is young and many generations of systems are yet to come. Computer-, telephone-, and television-based payment systems exist today. No one medium has the advantage yet. With the technology of these three media rapidly evolving, it is very possible that in the near future, the three will converge into a single video-telephone-computer. Payment services out of the home will have to respond to this changing technological dynamic.

Home electronic bill-paying systems and services are being driven also by the increasing numbers of professionals and small businesses that operate out of the home. Also, electronic bill payment systems and services for the home are being driven by the rapid growth of home shopping services (again via the three modes, but in particular via television). As home shopping becomes more widely practiced, home electronic payment of bills will follow.

In the retail segment—people paying corporations at the point-of-sale (POS) at retail outlets—there is a great potential for growth. Growth here is coming in the areas of debit cards, whose use has begun at the consumer's two most frequented retail points: the grocery store and the gasoline station. Also, growth is coming in new retail segments, in particular, health care. There appears to be a large potential for point-of-sale card payment systems and services in health care (for both credit and debit cards, and even smart cards).

The next most lucrative opportunity for electronic payment systems and services is in the area of corporate tax payments to state and federal government agencies. This is a medium-to-high opportunity area in INPUT's judgment. It is high because state governments are mandating or will shortly mandate electronic tax payments (given certain qualifications) by corporations. It may be a limited market, however, compared to the corporate-to-corporate and consumer payment segments.

The other segments indicated in Exhibit II-2 are of lesser importance than the four cited above. They are explained in more detail in Chapters III through VI.

Providers of networks are in central positions because they carry the traffic of transactions, which is only increasing. The networks for electronic payments range from EDI value-added networks, POS debit/ATM networks, credit card authorization networks, bank clearinghouse networks to telephone, cable television, and wireless networks.

Software and equipment vendors face many opportunities, but many of their opportunities are reliant on network services.

Banks are somewhat caught in a bind in that many of the new electronic payment services (EDI/EFT and debit cards, especially) do not offer lucrative profits—at least right away. The opportunities for banks with electronic payment services are in the areas of enhancing customer satisfaction, increasing the number of bank customers, and introducing/bundling other bank services to existing service customers (particularly credit services).

Whereas network traffic will rise indefinitely, the number of network providers in each category of network is consolidating.

Owners of these networks are looking for ways to leverage them by adding more processing and value-added services to them and to exploit new potentials among their existing customer bases.

Some credit card processing companies are offering EDI/EFT services, such as National Data Corporation. First Financial Management Corp. could do the same.

Some EDI value-added networks are offering EDI/EFT services (either directly to corporate customers or through alliances with banks) as well as credit card processing services. GEIS, BT North America, and AT&T are examples of this.

Television and telephone networks are offering home banking services, such as AT&T and TV Answer, in conjunction with banks.

ATM/POS networks are offering debit services, such as Maryland National Bank and its MOST ATM network, not only to retail establishments but to homes as well.

Credit card processors are offering telephone calling cards (so that the telephone charge appears on the credit card's monthly statement not the telephone company's monthly statement).

Telephone companies are offering credit cards such as AT&T, Ameritech, GTE.

And some commercial and consumer information network services companies are offering home electronic payment services, such as Prodigy and America Online.

Network operators and banks are wise to seek and exploit new service and customer add-ons to their business. The payment mechanisms are converging to some extent because corporations, consumers, and the government are naturally intertwined (by virtue of continually transacting with each other). Electronic communication technologies only bring these groups closer together. Electronic communication technologies eliminate

the paper processing institutions that have given rise to and have kept isolated the different kinds of payment practices. Now, the inherent interconnectedness of the three categories of payor/payee can be matched more closely with digital systems keeping records of transactions.

Banks should act on this, but they are inherently conservative. The banking industry is consolidating and this should bring efficiencies to the payment processing and network services businesses of those banks that survive.

Hub and spoke marketing of electronic payment services is particularly mandatory in the corporate payments and home payments sectors. Companies that receive payments from millions of customers are ripe for extensive electronic payment services. Their investment in systems will make it easier for their millions of customers to also invest in systems.

Megatrends that are affecting electronic payments today are:

- The growing computer literacy and competence in the business and consumer economies
- The restructuring and consolidation of the banking industry
- The changing landscape of the retail industry, with more shopping made available through television, computer, and telephone media
- The expanding number of professionals and small business entrepreneurs whose homes are also their businesses
- The continuing evolution of computer and communications technology including falling price-performance ratios

These trends are all positive influences in the adoption by the business and consumer public of electronic payment practices and mechanisms.

III

Home Electronic Payment Opportunities

Home payments are those made by consumers in their homes. They differ from payments made by consumers at retail establishments, which are examined in the next chapter.

Electronic home payments can often be one of the features of a home banking service. They can also stand alone with such services as CheckFree Corp. and Prodigy's BillPay USA.

Separate from the home payment/banking service are preauthorized bill payments. INPUT examines this kind of home electronic payment mechanism in this chapter as well.

Also, a specialized electronic payment service for the payment of individual income tax is examined in this chapter.

A
Home Demographics

There are 94 million homes in the U.S. out of a population of approximately 250 million people.

Virtually every home is equipped with a telephone and a television. Approximately 53 million homes (56%) subscribe to a cable television service, 20 million homes (21%) are equipped with a personal computer, and 3 million homes (3%) subscribe to an on-line data service (such as Prodigy, Compuserve, or America Online).

There are approximately 90 million consumer customers of banking institutions in the U.S. with one or more demand deposit accounts.

B

Transaction Types and Volumes

Approximately 15 billion bill payments are made each year by homes, according to NACHA. (This compares to the 4 billion payments that these home residents receive every year in payroll checks.)

Approximately 114 million individual income tax returns were filed.

C

Electronic Payment Mechanisms for Home-Originated Payments

There are two kinds of electronic bill payment programs for home: preauthorized bill payment and automated bill payment.

Preauthorized bill payment allows the biller to send a debit via the ACH to the consumer's bank account. In automated bill payment, the consumer, after receiving the bill from the biller, initiates payment by sending an instruction to his or her bank which then sends a credit to the biller's bank.

1. Preauthorized Bill Payment

Ever since preauthorized payment programs for consumer bills started in the 1940s and 1950s, the idea of many happy returns has never been one that financial institutions or their corporate customers thought to be true. Returned payments have often meant wasted company time and strained relations between all participants. An increased focus on the costs associated with returns in recent years has convinced many corporate officials to replace preauthorized check programs with ACH debit plans, according to preauthorized payment authorities.

Recent NACHA studies have indicated that more than 40% of U.S. households participate in a preauthorized debit program.

Preauthorized debit transactions via the ACH have been used by the insurance industry since the inception of the ACH network in 1974. But many companies, including cable, utilities, and non-profit groups now have ACH debit programs.

2. Automated Bill Payment

Automated bill payment requires the bill payor to actively send payment instructions to a third party, which then carries out the payments to the respective receivers on behalf of the bill payor.

There are three main media for automated bill payment: via computer, via telephone/smartphone, and via interactive television.

In the next section (Section D) INPUT explains how these media work and what companies are leading the development of services in the various media.

Home bill paying is still in its early stages and it will be some years before a common electronic bill paying medium and practice emerge. Home bill paying is one component of home banking. It is also an offshoot of home shopping (particularly by television). Players in both arenas (banks and home shopping TV networks) have initiated home bill-paying services.

Home banking, and by association home bill paying, was originally offered by banks in the early 1980s with the advent of the home computer. The service, however, was not popular. Today's situation is different with homes better equipped with computers and network services (on-line networks and cable television—see Section A) and computer-literate consumers possessing a greater propensity to adopt electronic practices.

3. Electronic Filing of Income Tax

In 1986, the IRS began accepting electronically filed tax returns for the approximately 114 million income tax filings.

Individual tax payers authorize IRS-certified agencies to submit their taxes electronically. These agencies are known in IRS parlance as Electronic File Originators (EFOs).

In addition to submitting returns for their own clients, EFOs often sell electronic filing services to other tax preparers. Fees range anywhere from $8 to $25 per return.

The benefits of electronically filed returns are reductions in error rates and accelerated processing of returns, from 4 to 5 weeks to 10 days.

Adoption of electronic filing has increased rapidly, from 25,000 filings in 1986 to an estimated 10.8 million in 1992. This amounts to a compound annual growth rate of 174%. The IRS is aiming to have 25 million returns filed electronically by 1995. If this objective is obtained, electronic filing will grow from today's base at a compounded annual average of 32%.

The IRS is in the process of adopting an ANSI X12 EDI transaction set (number 813) to enable EFOs to send IRS offices the tax return data.

D
Competitive Environment for Home Electronic Payment Services

1. Preauthorized Bill Payment

The stimulus for preauthorized bill payment comes from companies that offer services to consumers and have massive monthly billing operations. These companies are usually utilities, insurance companies, cable television companies, and some non-profit groups.

2. Automated Bill Payment

This kind of home-based electronic payment mechanism is where the action is in terms of opportunities for banks, service bureaus, software manufacturers, and equipment manufacturers.

a. Computer-Based Electronic Payment Services

In this type of consumer bill-paying service, consumers use their computer terminals to make payments. The payment instructions are sent on-line to a third-party service bureau and the bureau actually processes the payments. For those payees that can receive payment electronically, the bureau sends payments electronically. For those who cannot, it cuts a paper check and mails it.

Consumers use software to prepare their payment instructions. This software is typically part of a personal accounting/checkbook package that is designed to handle household finances. When the consumer prepares payment instructions (to pay bills, etc.), it sends the instructions either via on-line service or by floppy disk through the mail.

The two leading providers of computer-based home electronic payment services are CheckFree Corp. (Westerville, OH) and Prodigy BillPay USA (White Plains, NY).

CheckFree is an independent bureau and accepts payment instructions from a number of bill-paying software packages. Users of Prodigy BillPay USA simply use the BillPay USA interface once they log on to the network. In order to use BillPay USA, a person must subscribe to Prodigy.

For electronic payments, both services use a bank as the originator of ACH payments.

Chemical Bank processes the payments for BillPay. When Prodigy users log on to BillPay, they are in fact routed over to Chemical Bank's mainframe computers. Account files are kept on these computers. Users use a password to get into their accounts. They then set up payees and initiate

payments. Chemical takes the payment instruction, debits the person's account, then sends the payment by one of three methods depending on who the payee is. It either (1) cuts a paper check and mails it, (2) sends an electronic credit via the ACH to the payee's bank, or (3) sends a lock box credit through the ACH to the payee's bank. The latter two ways are electronic. To use the electronic methods, Chemical must have account and bank identification numbers to send the money and pre-notify the account holder that it will send funds electronically to it. Either the BillPay user provides this information or else Chemical has it already (in the case of very popular payments by BillPay members, such as the major credit card issuers, insurance companies, etc.). When Chemical Bank managers notice that there are payees who receive lots of payments from BillPay users, they will call directly to these payees and solicit the bank and account information so that the money can be sent electronically. Approximately 60% of BillPay's payments are sent out by check while 40% are sent electronically.

The leading software used by consumers for bill paying is Quicken from Intuit Inc. (Menlo Park, CA). Other providers of bill paying software are listed in Exhibit III-1.

EXHIBIT III-1

Home Electronic Bill Paying Software

Vendor	Product	Price
MECA Software Inc.	Managing Your Money	219.95
Intuit Inc.	Quicken	69.95
M-USA Business Systems Inc.	CashBIZ	49.95
786 Systems	CheckStar IV	59.95
Wilson WindowWare Inc.	WinCheck	69.99

b. Telephone-Based Electronic Payment Services

With telephone-based electronic payment systems, homes use phones equipped with touch-tone key pads minimally and, with more advanced services, with telephones that have a liquid crystal display (LCD) screen.

One "scan-phone" and two screen-phone products are now being marketed. Because the services were just launched at printing time for this report, prices and fees had not been firmly established.

Online ScreenPhone is being marketed by Maryland National Bank of Baltimore, a subsidiary of MNC Financial Corp. (Baltimore, MD), under the name of Online Home Banking Service. The ScreenPhone costs $75 and the monthly banking service fee is expected to be less than $10. The Online Home Banking Service was developed by Online Resources & Communications Corp. (McLean, VA), Shared Financial Systems (Dallas, TX), C&P Telephone, and the MOST ATM network, over which the phone-based transactions are executed.

Smart Phone is being marketed by AT&T and Huntington Bancshares Inc. (Columbus, OH). The Smart Phone costs $100 for installation and the service is expected to cost $20 to $25 in monthly fees. AT&T developed the Smart Phone which has a touchscreen interface, an internal microprocessor, and a modem. The interface is called "Smartel" and is owned by Huntington. The Smart Phone can be used for purposes other than paying bills and banking: for example, shopping and ordering, travel accommodations, event ticketing, and delivery services (flowers, pizza, etc.). Officials at Huntington expect to have five million consumers using their Smart Phones by 1995.

U.S. Order, Inc. (Washington, D.C.) has launched two pilot programs in Washington, D.C., and San Francisco where consumers can shop for groceries and household items at home using "ScanFones." The ScanFones are VeriFone OMNI 330 card swipe devices with touch-tone telephone and special application software. For monthly fee, a consumer can purchase groceries from Safeway with a check or credit card, pay bills electronically, or buy products from a variety of mail order catalogs.

A consumer selects items by scanning product codes with a bar code wand connected to a VeriFone OMNI 330 system. The codes are listed in catalogs provided by Safeway, other grocery chains, and Crate and Barrel. After ordering, the consumer pays for the purchases by swiping a Visa or Mastercard through OMNI's built-in magnetic stripe reader. The OMNI system then sends the transaction data to the Bank of America for processing.

A consumer can use an OMNI system to pay bills in a similar manner. In this case, the transactions are handled through the Federal Reserve System. Order information and bill payment data is transmitted through the BT North America packet-switched network or through Transactions Communications Inc. 950 service, which eliminates local message unit charges.

U.S. Order plans to extend its home shopping and bill-paying application to 16 cities nationwide. It also plans to accept ATM cards for payment in mid-1992.

c. Television-Based Electronic Payment Services

Television-based payment services have consumers interact with their television sets, which, via cable hook-ups, are transformed into data entry terminals. The use of a hand-held point-and-click device is being introduced.

TV Answer, Inc. (Reston, VA) signed its first banking partner, Meridian Bancorp. (Reading, PA) to launch a service in 1994. Two-way wireless technology will allow consumers to use their television sets to do banking, bill paying, and catalog shopping. Hewlett-Packard will manufacture the point-and-click control module device. The module transmits instructions to a local cellular radio antenna, which in turn transmits the message to a satellite. The satellite sends the instruction to TV Answer's mainframe computer for execution. JC Penney Company Inc. and CheckFree Corp. are two other companies that are likely to offer services via TV Answer's system.

Interactive television is seen as having huge potential for companies to mass market goods and services to consumers.

TV Answer expects to install 1.5 million U.S. homes within one year of the time it receives permission from the Federal Communications Commission, which has only authorized pilot test installations so far.

TV Answer has applied to the FCC for a license to operate in the New York City area.

E

Activity, Service-Revenue, and Equipment-Sales Estimates and Forecasts for Home Bill Paying /Banking Services

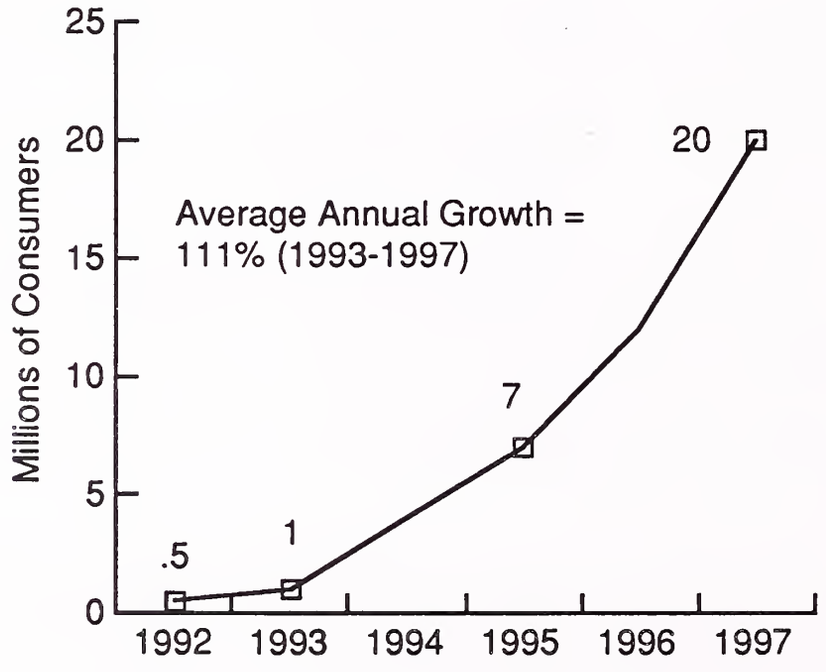
INPUT anticipates rapid growth of automated bill payment services (home banking services) in the 1990s in all three modes (computer, telephone, and television based) of automated bill payment services, instead of preauthorized bill payment services (which will continue to grow but, because there is no service or equipment revenue to speak of, INPUT is not forecasting this segment).

INPUT believes that the equipment and communications infrastructure is in place more than it was in the early 1980s when home banking was first attempted. Moreover, the computer literacy of the consumer public is widespread today, whereas ten years ago it was not. Consumer competence and willingness to use digital devices is the single most important factor in attaining the right market atmosphere to allow electronic consumer bill-paying and banking services to be a success.

Exhibit III-2 shows INPUT's estimate and forecast for the number of people that will use automated bill payment services (computer, telephone, and television based) over the next five years.

EXHIBIT III-2

Number of Consumers That Will Use Automated Bill Payments Services (Computer-, Telephone-, and Television-Based)* 1992-1997

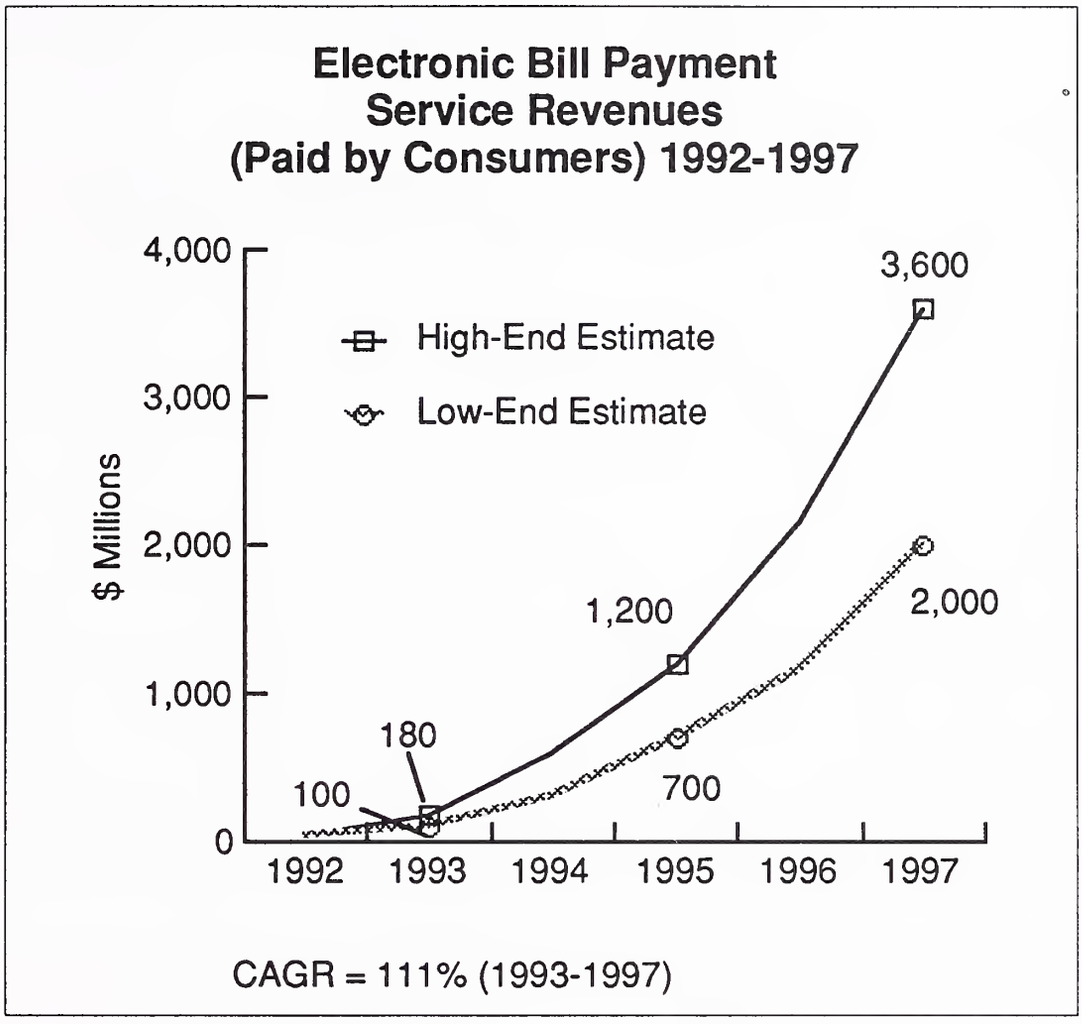


*Excludes electronic tax-filing service customers

INPUT derived these activity and forecast numbers by compiling the remarks and expected activity levels voiced by spokespersons at the banks and other service providers that have begun offering automated bill payment services.

Exhibit III-3 shows the expected service revenues paid by the consumers for these bill payment services.

EXHIBIT III-3

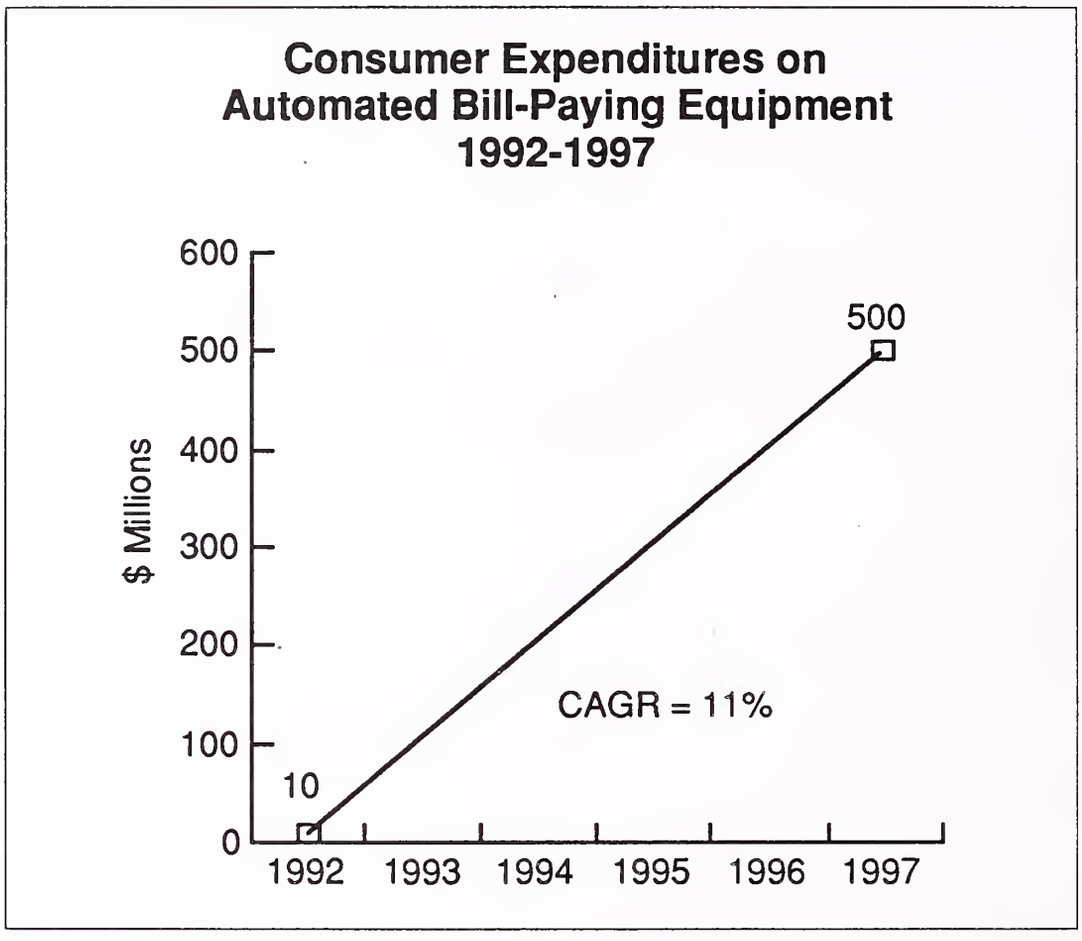


INPUT derived these numbers by assuming an average monthly/annual fee for such services and multiplying it by the number of users, as shown in the previous exhibit. The high-end service revenue forecast is based on an average $15 monthly fee; the low-end forecast is based on an average $8.30 monthly fee (or $100 annual fee).

Today's service providers are charging from below $10 to $25 per month. INPUT believes that this fee will settle at around $10 per month. Pricing of consumer services will have to be in this range. Consumers will pay more for the service than they do for credit cards (which have averaged $50 annually). Credit cards are certainly a different kind of bank service, but in terms of service pricing, they are a reasonable yardstick for comparison. Credit card competition is bringing down credit card fees and this downward pressure, INPUT believes, will help keep home banking service fees down as well.

Exhibit III-4 shows INPUT's forecast for expenditures by consumers on equipment for automated bill-paying/home banking services. This includes expenditures for smart phones, scanning devices, and remote control devices. It does not include expenditures on home computers or televisions.

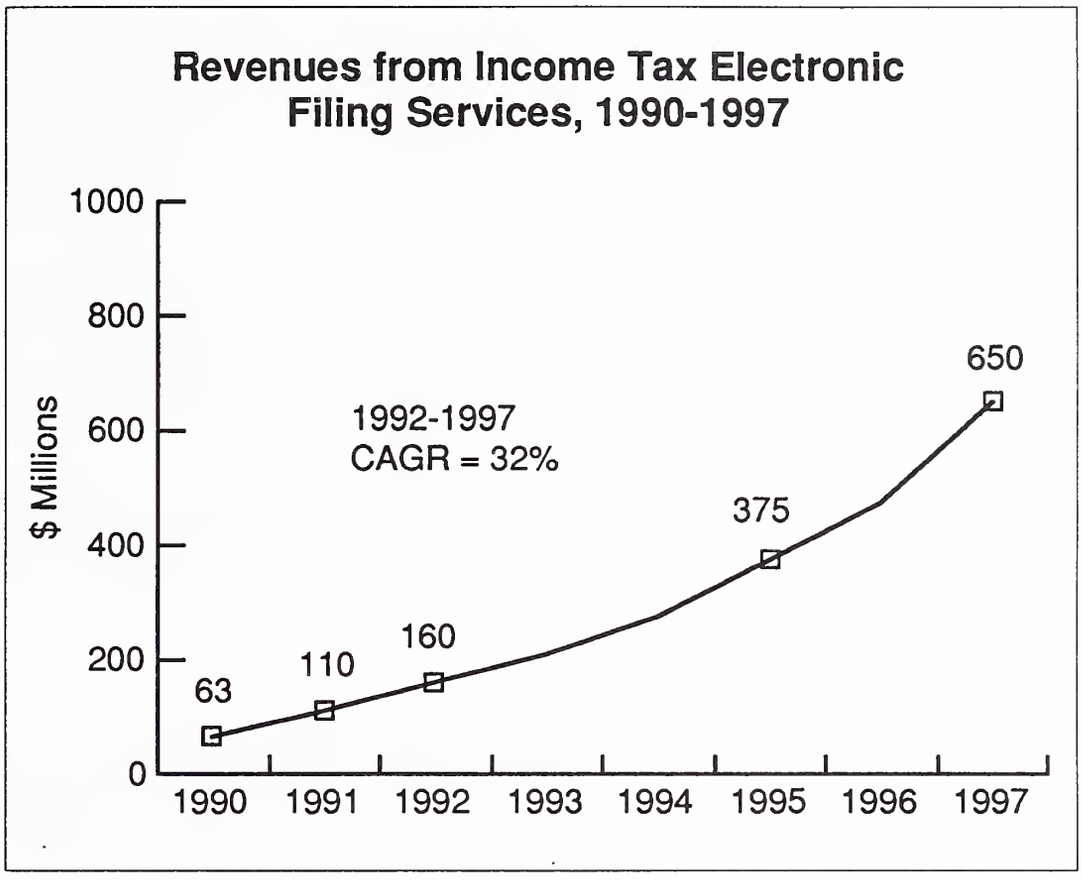
EXHIBIT III-4



INPUT used an average of $50 of equipment purchased per consumer. This average purchase cost was multiplied by 20 million, the number of consumers expected to be using the home-based automated electronic bill-paying services in 1997. The resulting $1 billion in equipment expenditures was distributed over the five-year (1992-1997) interval in increasing sums as shown.

Exhibit III-5 shows the growth in revenues generated from electronic individual income tax filing.

EXHIBIT III-5



The numbers are based on IRS reports on the number of electronic filers and expected filers multiplied by an average per-return fee charge of $15.

F

Issues and Conclusions

- Home payment services is still a nascent industry. Competition is not among service providers, but between the electronic service (independent of provider) and paper checks. More entrants into the market at this time actually helps in that it helps the education process and gives users/prospects a level of comfort knowing that there are several providers to choose from.

- No single payment mechanism will prevail. Households will continue to use several mechanisms to originate payments from the home: preauthorized electronic debits, electronic services including simultaneous use of systems based on the computer, the phone, and the television.

- Computer-based services have more versatility than the phone- or TV-based systems. Users can communicate more details and have more information given to them because the interface is through a keyboard. The telephone method has the advantage that every household has one (and only 20% of the households have computers) and people are comfortable using them.

- It is very difficult for telephone users to pay payees who are not already listed on a pre-published list of eligible payees. To do so, users must send a postcard to the phone company itemizing who it is they want to pay. This inconvenience may curtail usage of the telephone method.

- It is difficult for consumer bill-paying service to migrate to small businesses because of accounting methods and procedures that rely on paper documents. Also, businesses are unwilling to support dual methods, electronic and paper, side by side.

- EDI can play a role in bill statement remittance transmission between merchant and household and between bank and service bureau. Eventually, the bills/statements can be sent to homes electronically (to the electronic mailboxes of the homes or to the home's account at a bank or third-party bureau).

- Adoption of EDI or other standard formats is needed, but more household users must adopt automated electronic bill paying to provide the necessary critical mass that warrants such an infrastructure investment on the part of merchants (billers), service bureaus, software vendors to households, and banks. Telephone companies and credit card companies are the first logical candidates to send bills via EDI or EDI-like electronic formats. Not until a couple of million households adopt automated bill-paying services (instead of the half million today) will the first universally paid biller appear. Probably only a hundred or so companies in the U.S. send bills to a large enough base of nationally dispersed consumers to make it a candidate for EDI transmission of bills.

IV

Retail Electronic Payment Opportunities

Retail electronic payment mechanisms consist of debit and credit card usage by consumers at the point of sale in retail establishments. Small businesses use cards for retail purchases and card purchases are also made over the phone. Yet for the most part, card usage is synonymous with electronic payments at retail establishments.

The payments are bank-to-bank EFT transfers from the consumer's bank to the merchant's bank. With a debit payment, the consumer's checking account is debited directly. With a credit card payment, the consumer is typically billed later by the card-issuing institution (which is not necessarily the same bank where the consumer keeps his/her checking account). The consumer then pays the credit card bill typically by writing a check (but this is changing as home banking services expand; see prior chapter).

A
Retail Demographics

The universe of retail establishments by kind are listed in Exhibit IV-1. The exhibit includes the number of outlets, the number of transaction points of service (as available), and the total dollar value of merchandise sales.

The listed retail sectors (multi-lane retailers, petroleum/convenience stores, general retail, health care etc.) are the mainstream retail sectors that accept credit and/or debit cards for payments. The absolute numbers of outlets form part of the basis of the marketplace to which information equipment, software, and services vendors can sell products to. The other side of the market is the number of cards held by consumers, which is indicated below.

EXHIBIT IV-1

Retail Outlets: Kinds, Number of Outlets, Number of Points of Service, and Total Dollar Value of Sales

Segment/Subsegment	Number of Outlets	Number of Transaction Points of Service	Value of Transactions ($ Billions)
Multi-Lane Retailers (Drug stores, fast food restaurants, home centers/ hardware store, supermarkets)	214,000	762,000	600.0
Supermarkets		215,000	
Petroleum/convenience store	162,00	415,000	140.0
General Retail	3,000,000	6,000,000	2,489.0
Health Care (Total)	729,000		271.0
Hospitals	7,000		25.0
Physicians	400,000		112.0
Dentists	125,000		30.0
Pharmacies	80,000		64.0
Nursing homes	14,000		26.0
Opticians	40,000		4.5
Other	63,000		9.5
Total	4,105,000	2,392,000	3,500.0

Sources: VeriFone, U.S. Statistical Abstract, Industrial Outlook

Dollar value of transactions is another important indicator of market potential because with credit cards, part of the fees that service providers glean from this market is based on a percentage of purchase amount and interest income on outstanding, unpaid credit card debt. Fees for debit card usage are not based on percentages, yet the fee structures for debit cards at this time are highly unstable because debit card usage in the U.S. is still in its infancy.

B

Transaction Volumes

As shown in Exhibit IV-1 above, of the $3.5 trillion in sales by the retail sector only $600 billion, or approximately 17%, were handled by cards. The remaining was handled by cash and checks.

Exhibit IV-2 shows the number of cards in circulation, the number of transactions that these cards generated, and the total dollar value of sales for which these cards accounted.

EXHIBIT IV-2

Card Activity: Cards in Circulation, Transactions, Dollar Value of Sales

Card Type	Number of Cards (Millions)	Transactions per Card Type Type (Millions)	Value of Purchases ($ Billions)
Credit	300	5,300	N/A
ATM	200	5,000	N/A
POS Debit	15	300	N/A
Total	515	10,600	600

N/A = Not Available Source: VISA International, ABA Banking Journal

Many ATM (automatic teller machine) cards are used at retail point-of-sale transactions. When the bank issued them to its customers, the ATM cards' primary purpose was for use at the bank's ATM network. Use of debit cards issued specifically for use at retail points-of-sale has begun to take off, particularly with VISA International's Interlink/VISA Debit program, Mastercard's Maestro program, and the recently formed Electronic Payment Services, Inc. program. With varying restrictions there is a functional crossover between the POS debit cards and the older ATM cards. The POS debit card can be used at the cardholder's ATM. Conversely, the person's ATM card can be used at retail points-of-sale. INPUT distinguishes the two groups for greater specificity. As debit card growth is the most explosive and has the greatest potential, INPUT believes that it is useful to highlight this rapidly emerging payment mechanism.

For the purposes of this report, INPUT will call POS debit cards and ATM cards used for retail purchases by the single term, *debit card.* Also, INPUT will not examine electronic payments generated by ATM card usage other than for retail payments (in other words, the EFT that occurs when a consumer withdraws money from his/her bank account using an ATM at another bank).

Whereas there are more credit cards (300 million) than there are people (250 million) in the U.S., not all people carry a card and many people carry more than one. About 150 million U.S. consumers (55-60% of the total population) carry one or more bank cards.

C
Electronic Payment Mechanisms for Retail Payments

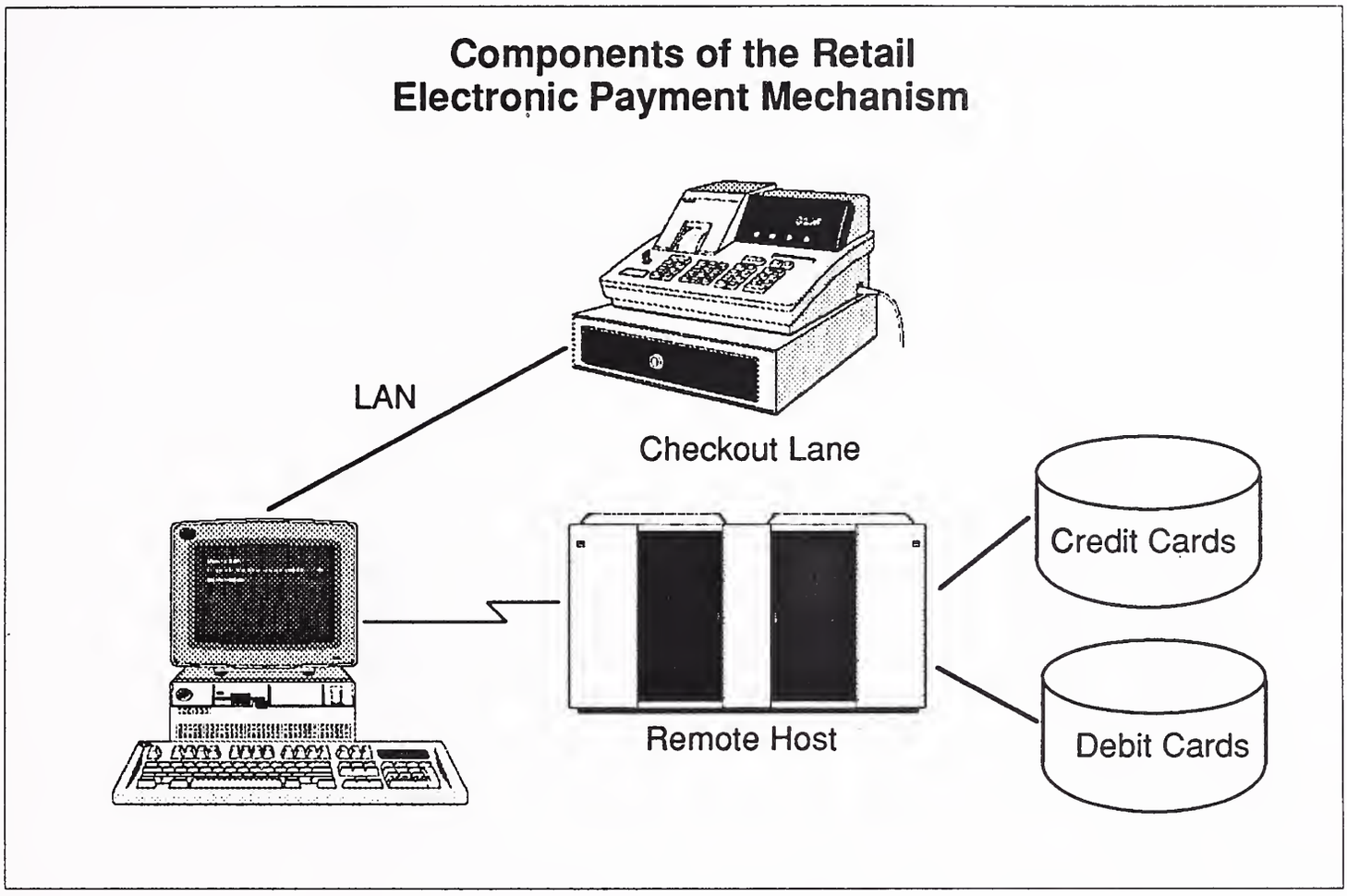
Credit cards differ from debit cards in that debit cards, using a network signal from the point of sale invoke a funds transfer from the consumer's bank account to the merchant's bank account. In a debit transaction, the settlement between consumer and merchant can be completed within the day.

With credit card payments, the card issuer (usually a bank but now increasingly non-bank companies) promises to pay the merchant within a few days (electronically) and then bills the consumer in a monthly statement. For the issuer to promise to pay the merchant, the merchant must verify the credit card presented by the consumer. To do this, the merchant swipes the card (or calls in by voice) and receives a verification or a decline from the issuer or a representative of the issuer. Credit card verification, therefore, is the critical network service needed for credit card payments. There is no funds transfer at the moment of the sale, only a credit check.

Exhibit IV-3 depicts the basic components of retail electronic payment mechanisms, i.e., mechanisms that process credit and debit cards.

Credit and debit card processing is one part of the overall point-of-sale information processing industry, which also includes credit authorization, check authorization and guarantee, electronic marketing/couponing and frequent buyer programs, and other related functions (see INPUT's reports, *Electronic Commerce in Grocery Production and Distribution* and *Electronic Commerce in Apparel Production and Distribution*).

EXHIBIT IV-3

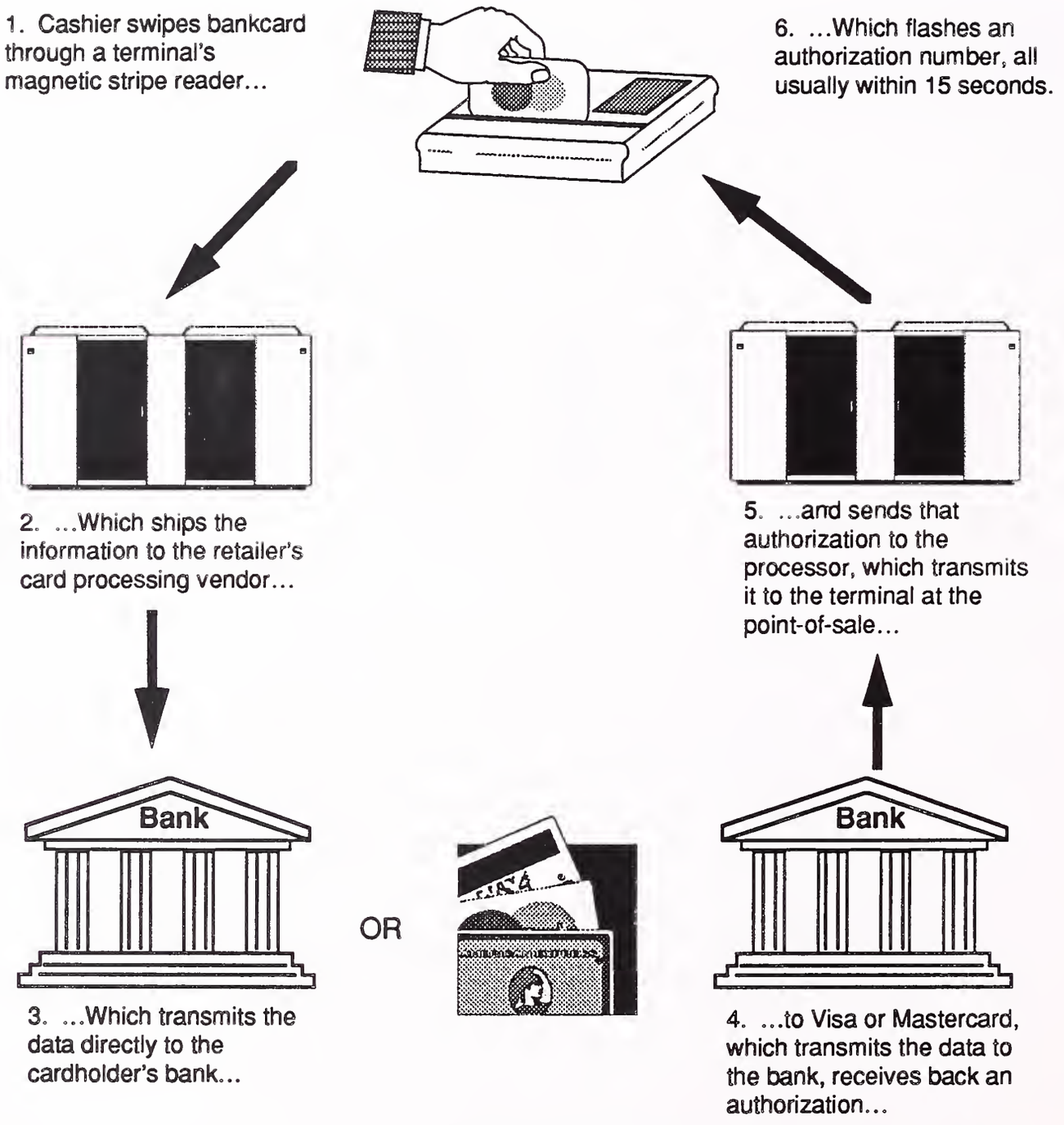


The processing company provides some or all of the above services to merchants of all sizes—from Wal-Mart to the single-location retail store owned by a single proprietor. The processor provides the terminal which "reads" the credit card, verifies the credit-worthiness of the cardholder, and stores and transmits the purchase information. Exhibit IV-4 shows the information flow of a typical POS card purchase.

The processor (through its relationship bank) also interfaces with the Mastercard and VISA systems to actually move funds from the customer's bank to the merchant's bank, via the nation's Automated Clearinghouse (ACH) system.

EXHIBIT IV-4

Information Flow of the POS Card Purchase



Source: *Chain Store Age Executive*, November 1991

1. Credit Card Payments

Historically, in processing a credit card transaction, the merchant would take an imprint of the card at the time of purchase, then telephone a data center for credit clearance and send the paperwork to Mastercard or VISA

at the end of the business day. Up to eight days later, the funds would be deposited in the merchant's bank by the cardholder's bank.

In return for being authorized to accept credit cards, the merchant would pay a percentage of the transaction value (typically 2% to 3.5%) to the merchant processor. The processor would pay a part of that fee to the Mastercard of VISA system (typically about 1.25%), which would in turn pay a small part of its fee to the cardholder's bank. In return for their respective portions of the total charge, the different parties processed and guaranteed the transaction. The merchant processor guaranteed that the retail store would provide a credit if the purchase was returned for a valid reason and the Mastercard and VISA systems guaranteed that the merchant would receive payment if the credit card was approved at the time of the transaction.

Beginning in 1983, to reduce fraud and encourage card use, Mastercard and VISA significantly reduced their processing charges for merchants who agreed to use on-line terminals to their computer systems (called electronic draft capture or EDC). When a merchant uses an EDC system, the customer's card is passed through a cardreader ("swiped"). The transaction amount is punched in or scanned electronically. All of the data is electronically transmitted to Mastercard or VISA, where the validity of the account and the customer's credit status is immediately verified. At the end of the business day, the recorded transactions are transmitted to the appropriate card system. Within two business days, the cardholder's bank wires funds to the merchant's bank. If the purchase is disputed at a later date, or the merchandise is returned, the transaction is reversed in the same manner.

2. Debit Card Payments

A debit card is simply an enhanced ATM card that can be used to purchase goods and services at merchant locations by providing the cardholder with electronic access to his or her checking account.

There are currently two kinds of debit card transactions: off-line (batch) and on-line.

In the off-line mode, consumers present debit cards at the point of sale. Merchants, in turn, handle the transaction using credit card transaction processing systems. The debit transaction is typically posted to the cardholder's checking account in three to eight days.

In the on-line mode, the debit card gives the cardholder direct access to his or her checking account. The cardholder or sales clerk passes it through a point-of-sale terminal that reads the magnetic stripe on the back of the card. The cardholder then uses a keypad on the terminal to enter his or her personal identification number (PIN). The sale clerk enters the amount of the transaction, the cardholder approves it, and the information is transmit-

ted directly to the cardholder's bank. At the bank, the transaction amount is checked against the available funds in the cardholder's checking account. If the transaction is approved, the amount of the purchase will be posted to the account, typically within 24 hours.

Debit cards do not have the many fee-charging opportunities that credit cards offer to banks, institutions, and processing service companies. Debit payments by consumers disallow banks charging 15% to 19% annual interest rates on outstanding unpaid balances as they do with credit cards. Also, banks and processors are not charging service fees based on a percentage of the dollar sales value.

Debit cards have been around since the 1970s, but their use has grown at a glacial pace primarily because bankers have seen little revenue opportunity with them. Credit card services, on the other hand, are for many banks their most profitable lines of business.

Pricing of debit services is still being tested out. Proponents say that merchants will eventually pay for services. Some say that banks should charge a annual fee. Many implementations have the consumer paying a small service fee: from twenty cents to one dollar per transaction. Banks are generally taking the position now of charging for debit card usage similarly to the way they charge for checking card usage: checking balances determine how many transactions per month can be made without incurring a per-transaction charge and so forth.

D

Markets, Distribution Channels and Competitive Environment for Retail Electronic Payment Mechanisms

Retail electronic payment solutions are composed of equipment (card data capture, electronic cash registers), software applications, network and transaction processing services. Depending on retailer type, size, and capabilities, these components are sold:

- Either separately or as a turnkey system bundled with transaction processing services
- Either directly (by information technology/service vendors directly to retailers) or indirectly (by bank, third-party processor, or independent sales organization)

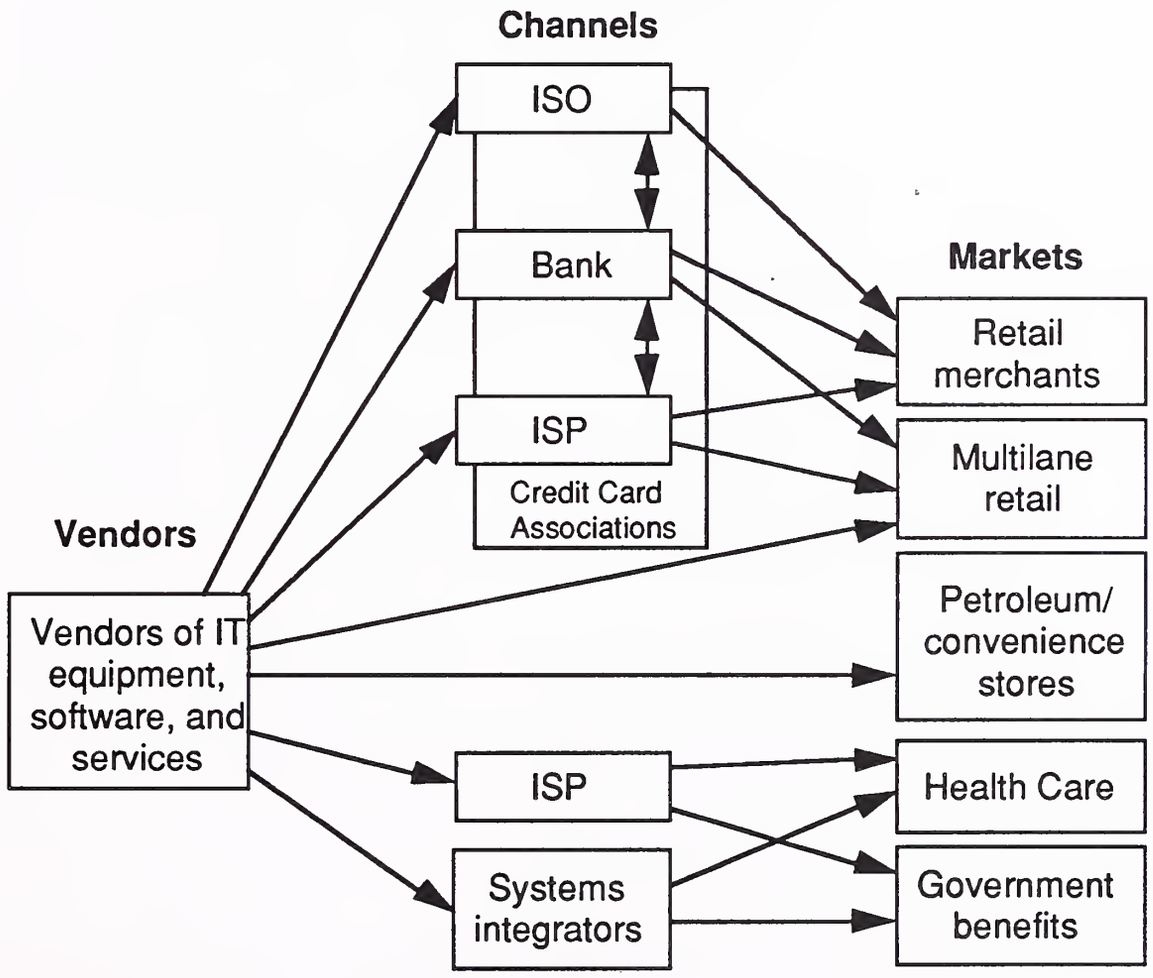
Usually small retailers depend wholly on their banks for transaction automation services and acquire their card payment and processing systems and services from the bank in a lease or fee-based arrangement. These kinds of retailers typically have no IS department and use inexpensive Japanese electronic cash registers.

Large retailers, especially the chains, will have their own IS departments. They buy the components separately and directly from information technology and service vendors. Their POS automation solution is integrated to back office systems that perform other functions such as price look-up, inventory control, accounting, employee time scheduling, and other applications.

The basic distribution channels are shown in Exhibit IV-5.

EXHIBIT IV-5

Distribution Channels for Retail Electronic Payment Systems and Services



ISP = Industry Service Provider
ISO = Independent Sales Organization

Source: VeriFone

1. Card Processing Services

Some of the leading banks that provide retailers with full turnkey systems that are bundled with card processing services are Wells Fargo, Bank of America, CitiBank, Chemical Bank, and others.

Leading third-party card transaction processors that also provide (usually in a lease or fee basis) retail payment solutions are NaBANCO, SPS Transaction Services, First Data Resources, National Processing Services, National Data Corporation, and Card Establishment Services. The revenues earned from card transaction services by these vendors are shown in Exhibit IV-6.

EXHIBIT IV-6

Leading Vendors and Revenues Earned from POS Card Transaction Processing

Processor	1990 Card Revenues ($ Millions)
NaBANCO (FFMC)	434
First Data Resources (subs. of AMEX IS)	275
Telecredit	167
Comdata Network Inc.	133 (1991 Rev.)
National Data Corp.	122 (1992 Rev.)
VISA	N/A
Mastercard	N/A
Other	-
Total	1,500

N/A = Not Available

Independent sales organizations include such companies as Harbridge Merchant Services, Rocky Mountain Bank Association, and National Bankcard Association.

2. Credit Card Issuers

The U.S. credit card industry is dominated by American Express, Mastercard, and VISA, although Sear's Discover Card has made some inroads in recent years.

Credit cards are getting very competitive because (1) many non-bank institutions are now offering them and (2) issuers of cards are lowering interest rates and annual fees (in some cases, eliminating the annual fee altogether).

A number of telephone companies, such as AT&T, Ameritech, and GTE, offer credit cards. On top of the credit card function of these cards, consumers can also use these cards for long-distance telephone service. (The charge for the telephone call shows up on the credit card bill, not the telephone bill.)

In addition to the telephone credit card offerings, General Motors and General Electric are some recent large non-bank issuers of credit cards. Such offerings by large manufacturers are attempts to get into a business that has been very lucrative for banks for many years and that can also help the manufacture market its own products.

3. Debit Card Issuers and Networks

In the mid-1980s, many financial institutions began joining regional point-of-sale direct-debit programs. Cardholders had been accustomed to using their ATM cards solely for quick access to cash at ATMs; but these POS programs allowed them to use their ATM cards as direct debit cards, replacing cash and checks at local merchants such as supermarkets and gas stations.

Debit card networks are part of ATM networks, which are formed by bank consortia throughout the country. There are approximately 75 ATM networks throughout the country today, but they have been consolidating and the consolidation trend is expected to accelerate through 1993 and 1994.

Today, there are three initiatives to make national debit card networks so that consumers can use a single debit card at any merchant location throughout the country. These initiatives are VISA's Interlink Network, Mastercard's Maestro, and the Electronic Payment Services, Inc. (which is a joint venture among CoreStates Financial Corp., Banc One Corp., PNC Financial Corp., and Society Corp.).

Exhibit IV-7 lists leading debit card networks.

EXHIBIT IV-7

Leading Debit Card Networks

Network	Operator
Interlink	VISA International (San Mateo, CA)
Maestro	Mastercard International
Electronic Payment Services, Inc. (CoreStates Financial Corp., Banc One Corp., PNC Financial Corp., Society Corp.)	
Most	Internet Inc. (Reston, VA)
Star	Star System Inc. (San Diego, CA)
Southeast Switch	
Money Station	
Quest	
GulfNet	
NYCE	New York Cash Exchange (Hackensack, NJ)
Yankee 24	
Cirrus System Inc.	
Plus System Inc.	

4. Transaction Automation Equipment and Systems

In the equipment arena, there are two categories of vendors. The categories correspond to the size of the retailer customer. For the big customer with IS organizations and that buy directly from equipment vendors, the principal vendors are IBM and NCR. Their systems typically start at $5,000.

The revenues on this equipment cannot be classified as solely transaction automation. The equipment performs information processing for many aspects of the retail business including inventory management, accounting, employee time scheduling, and others in addition to point-of-sale automation. INPUT, therefore, is not counting revenues earned by this class of equipment vendor as part of the equipment market for retail electronic payment automation.

For the small retailers, there are electronic cash register vendors and the bank card data-capture equipment vendors. Leading bank card data-capture equipment vendors and their U.S. revenues are listed in Exhibit IV-8 . These vendors' revenues constitute the equipment market for retail electronic payment systems.

EXHIBIT IV-8

Bank Card Data-Capture Equipment Vendors and Revenues

- VeriFone (USA)
- Hypercom (Australia)
- Omron (Japan)
- SPN Systems (Canada)
- International Verifact (Canada)

Small retailers subscribe to varying degrees of transaction automation services. Some just have a basic service in which they verbally call in to verify a credit card. Others have a swipe capability only. Still others have a full electronic draft capture capability where the amount of purchase as well as the card number are captured and sent to the processing network. The must fully automated are those with full credit card electronic draft capture as well as debit PIN (personal identification number) pads. The PIN pad allows the consumer to key in his or her ATM number. PIN pads are necessary for debit transactions.

Some segments within the retail sector are more saturated with electronic payment equipment and services than others. For the highly saturated segments, equipment vendors intend to sell new generation equipment and upgrade users. The new sectors, however, offer the greatest growth potentials. The growth potential (low, medium, high) of electronic payment systems and services at POS is shown by sector in Exhibit IV-9.

Although particular segments of retail show great growth potential, overall in retail it is the debit card that should be the engine of growth for retail systems and services.

VISA expects to increase its debit card base from 27 million cards in 1992 to 100 million cards in 1996 or a 38% annual growth rate over four years. Electronic Payment Services Inc., the POS debit processor/network incorporated in 1992, expects to achieve $200 million in revenues in a few years.

EXHIBIT IV-9

Market Growth Potentials of Retail Electronic Payment Systems and Services

	Supermarkets	Health Care Establishments	Gas Stations	Fast Food Restaurants	Other Retail
POS Debit	High	High	Medium	High	High
Credit Card	High	High	Low	High	Low

E
Issues and Conclusions

- Debit cards are the retail payment mechanism with the greatest growth potential in the 1990s. Credit cards are a saturated market in terms of numbers of cards owned by consumers, numbers of issuers, and numbers of merchants accepting credit cards. Growth rates in these three metrics are small for credit cards (in the low teens and below) compared with those for debit cards. In addition, the profitability of credit cards is falling with increased competition. In particular, cards with lower interest rates and no annual fees are putting downward pressure on credit card profits for banks and other issuers. Many bankers predict that the debit card will be the most important retail banking product of the 1990s.

- Debit cards offer consumers advantages over cash and checks including greater convenience and speed at the check-out counter, and a full record of all transactions. For merchants, they offer an opportunity to improve customer loyalty while reducing transaction time.

- Although debit cards have been around since the 1970s, it has been the spread of automatic teller machines (ATMs) and ATM cards during the 1980s that prepared consumers to now accept debit cards. The 200 million ATM cards in consumer wallets today as well as the now well-established custom of using ATM cards makes consumers able, aware, and willing to use debit mechanisms.

- The creation of a debit card services market, therefore, was a subsidiary result of the need by banks to reduce administrative costs. Banks implemented ATMs to reduce consumer visits to bank tellers. This has now set the stage for consumers to adopt the practice of paying retailers with debit cards.

- Banks (the sole issuers of debit cards) should not look upon debit cards as a profit center, as they do credit cards. Debit cards (as enhanced ATM cards) help banks reduce administrative costs, both in terms of keeping consumers out of bank branches as well as reducing the overhead of processing check and cash payments. Banks should not charge for debit card usage (at least not in the beginning). Let consumers see the value in debit card use. If banks charge for debit card use, they should follow the same principles as those used for check writing.

- In the mid- to late 1990s, debit card retail payment systems (including payment processing networks and services) could provide a platform for further, enhanced payment and commercial services to retailers, consumer goods manufacturers, banks, and consumers. For example, EDI purchasing and payment to retail store suppliers could be conducted over debit networks and processing service facilities. Consumer marketing information services (namely, electronically capturing merchandise sales data and selling it to merchandise manufacturers) could use the debit-POS network and processing industry. Expanded services will require a new generation of transaction automation equipment.

- The U.S. market for transaction automation equipment is fairly saturated, except for health care; but new services/applications can make retailers want to upgrade their systems.

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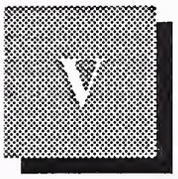


Business Electronic Payment Opportunities

Business payments are those payments that originate in an accounts payable department of a business, corporation, or government office. They can be made to other businesses, to consumers (typically as payroll payments or government benefits payments), or to government agencies (particularly in the form of tax payments). Bank-to-bank payments can be classified as business payments. However, INPUT considers bank-to-bank payments internal to the payment settlement system within the U.S. and among countries in the world. As they are an intra-industry phenomenon and have their own industry defined characteristics, INPUT does not study these kinds of business payments in this report.

Business electronic payment opportunities, therefore, are those opportunities for payors, payees, and vendors of information products and services to replace paper-based payment systems with electronic ones. In this chapter, INPUT assesses the opportunities and recent developments of electronic payments for businesses.

A
Business Demographics and Payment Characteristics

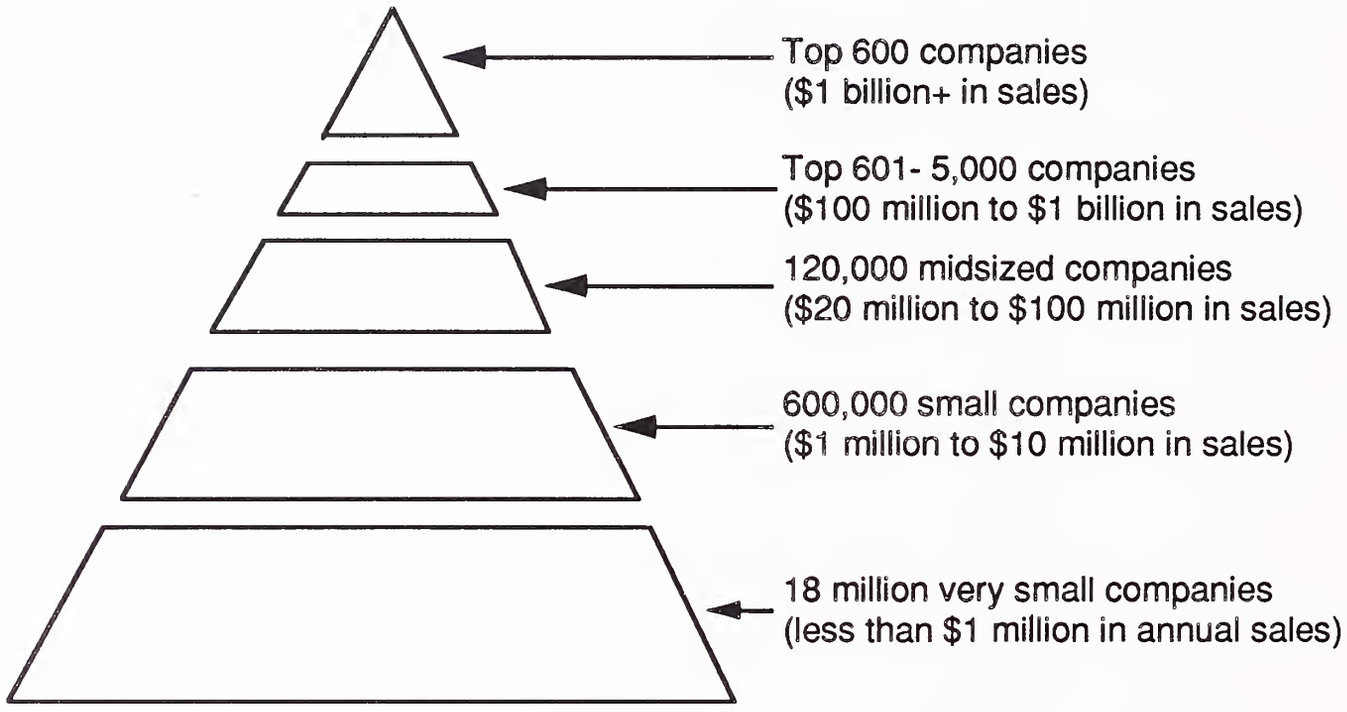
According to records from the Internal Revenue Service (IRS), there were 18.8 million business tax returns filed in the United States in 1991. This includes those establishments filing as corporations, partnerships, and proprietorships. Of these 18.8 million, only 727,000 had annual revenues in excess of $1 million.

According to Forbes 1992 500 poll (of all companies, industrials and services), only 500 companies in the U.S. have sales of $1.5 billion or more.

Exhibit V-1 summarizes the size and distribution parameters of U.S. businesses.

EXHIBIT V-1

Size and Distribution of U.S. Businesses
(Corporations, Partnerships and Proprietorship)



Sources: Internal Revenue Service, *Forbes*, *Fortune* and INPUT

Business demographics are important in determining where the greatest value can be realized in implementing electronic payment systems. The largest companies deal with the greatest number of suppliers and customers. These companies therefore are instrumental in investing in the electronic infrastructure and ushering in electronic settlement procedures.

Related business demographics include the following:

- The output of the Fortune 500 industrials (<1% of all businesses) accounts for 45% of GNP.
- There are thirty thousand EDI-using companies. EDI/EFT payments follow EDI implementation. Hub and spoke companies are very important. The targerts are the 1,000 possible hub companies in the U.S.
- Private and public sector employers pay out a combined $4 billion in income/wage payments per year to employees, according to NACHA.

- The federal government makes approximately 890 million payments every year including those for procurement, social security and welfare disbursements, and employee payroll. Eighty-five percent originate from the Department of Treasury's Financial Management Service (FMS). Total dollar value of the payments are over $1 trillion. Half of these are already handled electronically.

The major categories of payments are listed in Exhibit V-2.

EXHIBIT V-2

Payment Types and Media

Payment Type	Media
Corporate-to-corporate	EDI/EFT
Government-to-corporate	EDI/EFT
Corporate-to-government (tax)	EDI/EFT
Employer-to-employee	Payroll processing service vendor
Specialized payment services Freight bill processing Advertising bill processing Securities purchase settlements Equipment leasing Mortgage banking services Airline ticket settlements Factoring Student loan settlements	Processing service vendor, bank

B
Electronic Payment Mechanisms

A corporation has two basic options in conducting electronic payments: contract a third party to process its payments or initiate payments itself directly from its accounting/treasury office.

Third-party processors are popular for specialized payments. In particular, these are payroll, freight bill, and other industry-specific billing (e.g., the advertising industry). Often the accounts payable data required by the third party is sent in electronic formats (on magnetic tape, usually). EDI data formats are beginning to be used for these transmissions.

For paying suppliers (including government taxes), corporations use EDI/EFT. This section describes EDI/EFT mechanisms.

Buying and selling relationships involve inquiring, bidding, ordering, shipping, invoicing, and similar activities conducted directly between the two trading partners. The process culminates with a financial exchange that involves the trading partners and their banks. Whereas electronic data interchange (EDI) is the transfer of information regarding the first set of activities, electronic funds transfer (EFT) is the transfer of value regarding the latter activity—the financial exchange.

Corporate payments, electronic or paper, usually involve at least four parties: the buyer company, the seller company, and each of the company's respective banks. (Sometimes the two companies use the same bank, so that only three parties are involved.) Also, a third-party, value-added network (VAN) may be used as an intermediary to transfer EDI messages among the parties.

There are two basic procedures for enacting an electronic payment.

1. Credit Mechanism

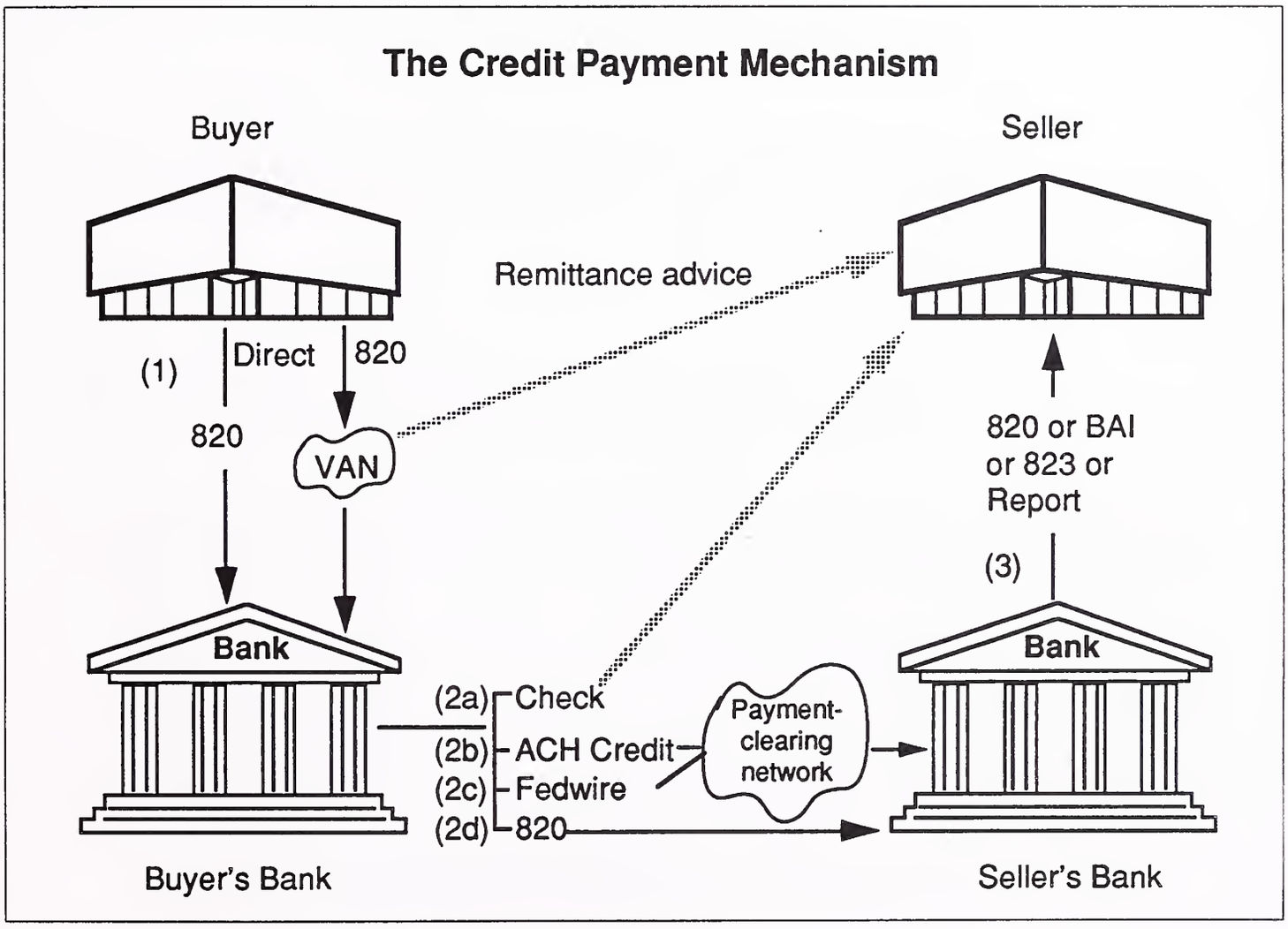
Upon receiving the invoice from the supplier, the buying company instructs its bank to transfer funds to the supplier's bank. The instruction is sent in either an ACH format (CCD, CCD+, CTX, or CTP), an ANSI X12 820 format, or a proprietary format agreed upon by the corporation and its bank.

The bank debits the corporation's account and sends the funds through the ACH to the supplier's bank. Remittance data that accompanies the payment can also be delivered electronically, along with the payment to the supplier company, but this usually depends on the capabilities of the receiving bank.

Many receiving banks don't have the processing capacity to electronically receive and forward the remittance detail to the customer. If the receiving bank can at least electronically receive it, it can relay it onward to the selling company by mail. Otherwise, the remittance detail can be sent (1) by the buying company directly to the selling company (by VAN or mail) or (2) by the buying company's bank directly to the selling company (by VAN or mail).

Another option for the credit payment mechanism is for the buying company to send the payment instruction and remittance detail to a VAN, which delivers the payment instruction to the buying company's bank and the remittance data to the selling company. Exhibit V-3 depicts the credit mechanism.

EXHIBIT V-3



The major point of the credit mechanism is that the buyer's payment order pushes the funds through the payment clearing network.

Issues of the credit mechanism:

- Improved predictability of cash flow compared to checks
- Remittance information may be delivered to the seller prior to crediting the seller's bank account, depending upon the method chosen for delivery of both payment and supporting detail.
- Information is entered once, thus reducing the potential for human error.
- The seller must rely on the buyer to initiate the payment process.
- If the payment and remittance are separated, the two must be reconciled.

2. Debit Mechanism

The seller company, through its bank or VAN, requests funds from the buying company's bank. In contradistinction to the credit method, it is the seller's payment order (not the buyer's) that pulls the funds through the payment clearing network.

Issues regarding debit:

- The seller only needs to establish an ANSI ASC X12 relationship with one bank. There is no need to be concerned about the ANSI ASC X12 capabilities of any of the other banks involved in the payment process.
- This method of funds movement is much like the traditional paper check payment process. Depositing a check is similar to ordering a debit against the buyer's account.
- Possible resistance from the buyer to allow debit access to account.
- A reconciliation process may need to be performed for the payment and the remittance information, especially if the debit is not honored, for example, due to non-sufficient funds (NSF). (Note: the debit initiated to offset a credit transaction could also face an NSF condition.)
- Possible resistance from trading partners to allow another company access to their account.

There are a number of routes through which the payment instructions and remittance data can flow. Because the debit mechanism may possibly be a better mechanism for EDI/EFT payments than the credit mechanism, INPUT outlines below each basic debit flow (whereas, for the credit flows, only the essential data flow was outlined).

a. Seller Initiates Payment Instruction

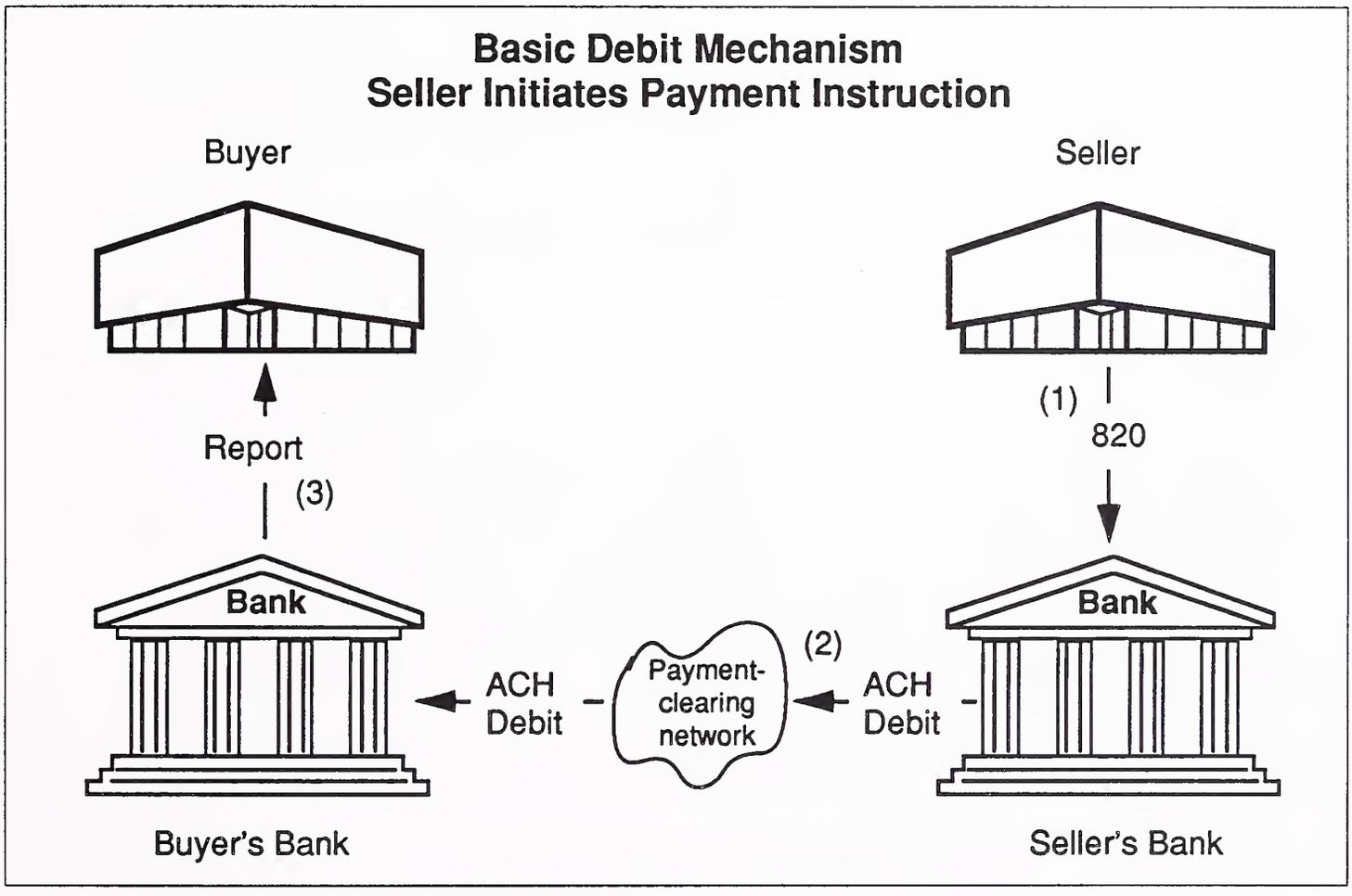
(1) The seller sends X12 820, CCD, or other payment instruction to its bank, via a VAN or directly.

(2) The seller's bank sends an ACH debit with remittance detail to the buyer's bank via the ACH.

(3) The buyer's bank reports debit and remittance detail to the buyer.

Exhibit V-4 depicts the communication flow for the basic debit mechanism.

EXHIBIT V-4



b. Buyer Delivers Remittance Data and Authorizes Payment Instruction

(1) The buyer sends an X12 820 to the seller either directly or via a VAN.

(2) Optionally, the buyer sends a "specifically authorized debit" file to its bank.

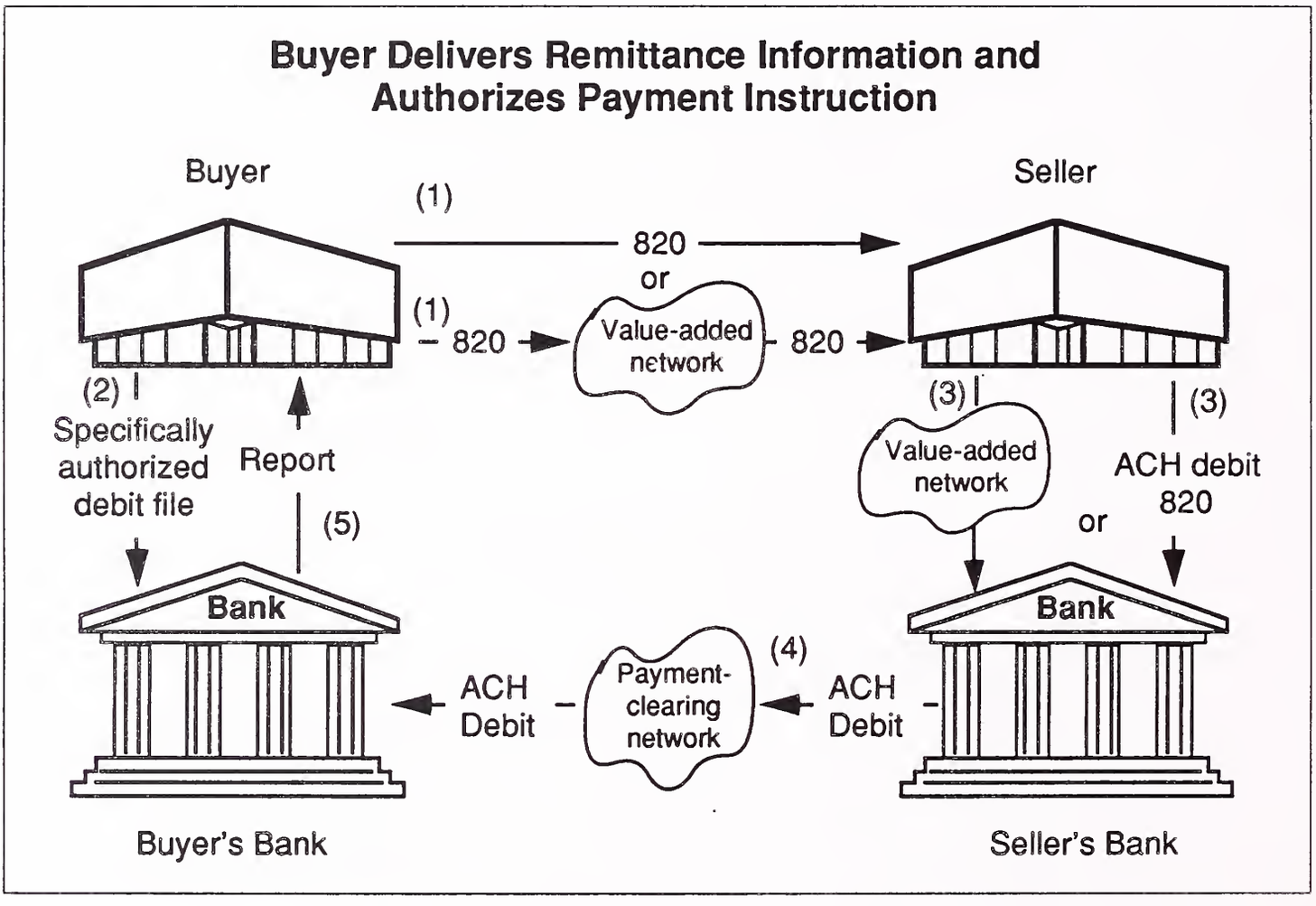
(3) The seller sends a debit instruction (in an X12 820, NACHA, or proprietary format) to its bank, directly or via a VAN.

(4) The seller's bank sends an ACH debit to the buyer's bank.

(5) The buyer's bank reports the debit to the buyer.

Exhibit V-5 depicts a debit payment mechanism where the buyer delivers the remittance data and authorizes payment instruction.

EXHIBIT V-5



c. Seller's Bank Delivers the Remittance Data

(1) The buyer sends an 820 to the seller's bank either directly or via a VAN.

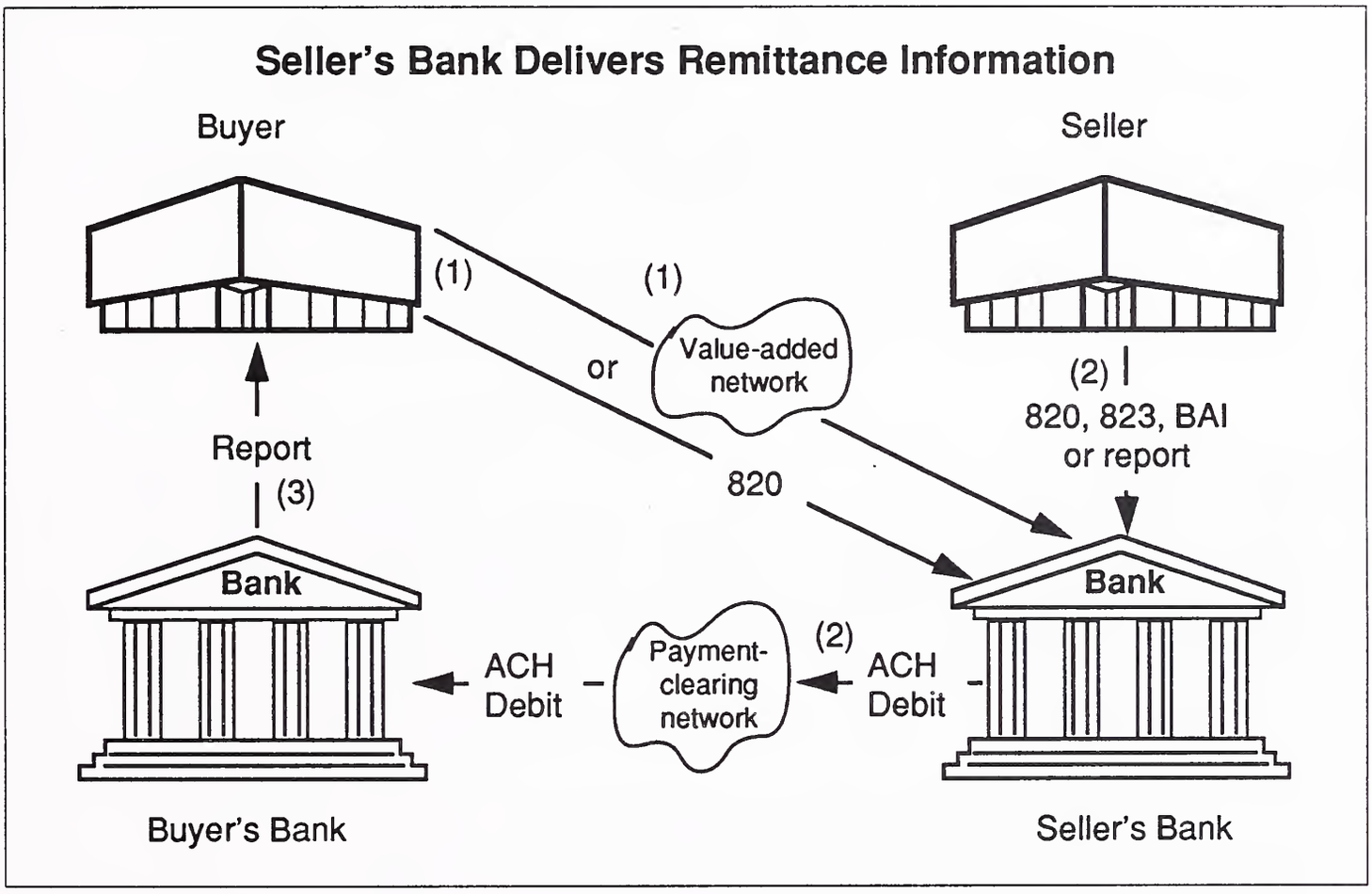
(2) The seller's bank forwards the debit information to the seller either directly or via a VAN.

(3) The seller's bank sends an ACH debit to the buyer's bank via the ACH.

(4) The buyer's bank reports the debit to the buyer.

Exhibit V-6 depicts the debit payment where the seller bank delivers the remittance information.

EXHIBIT V-6



d. The Buyer Delivers the Remittance Data and the VAN Generates the Payment Instruction

(1) The buyer sends an 820 to the seller via a VAN.

(2) The VAN sends an ACH debit to the seller's bank.

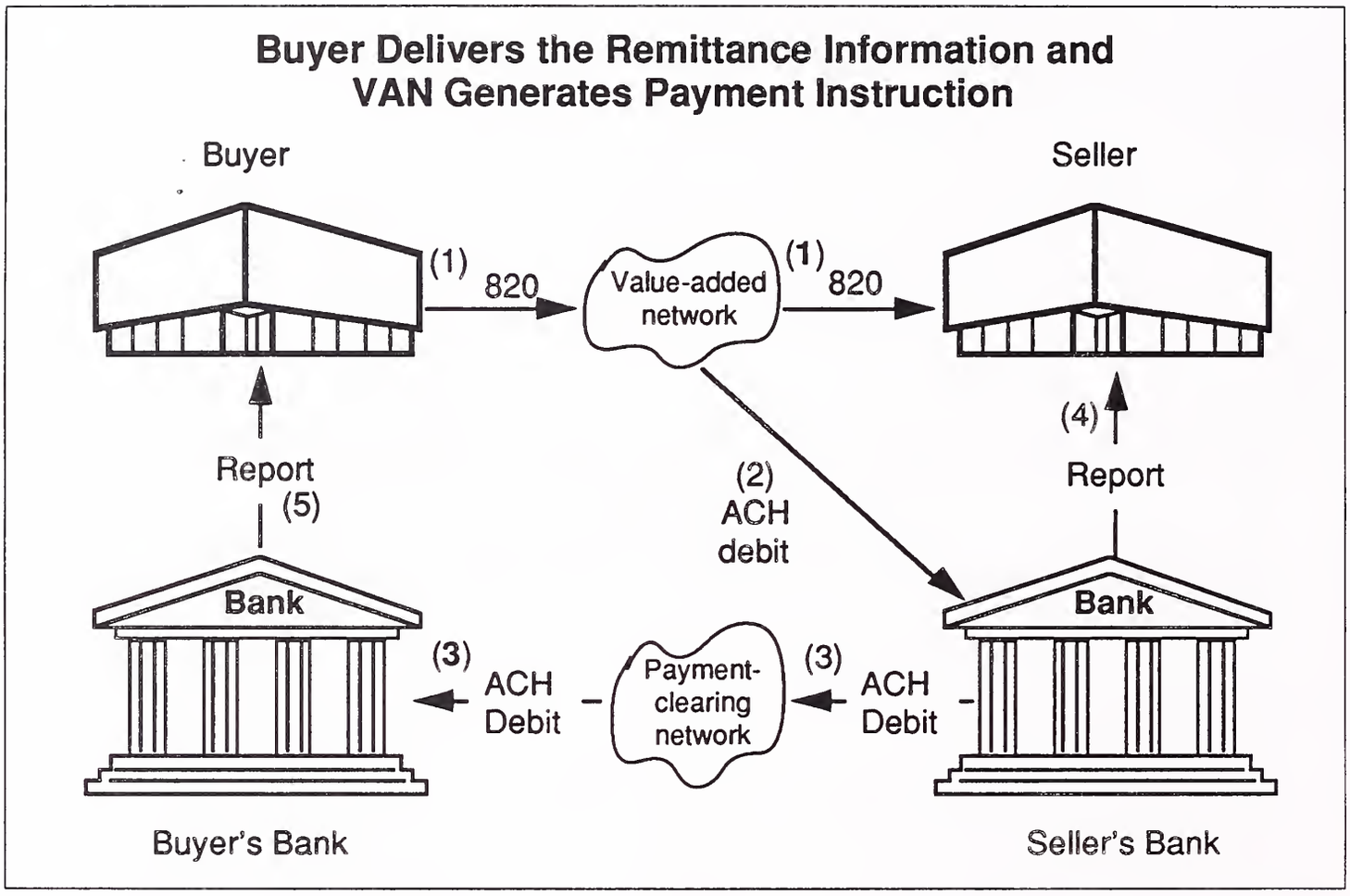
(3) The seller's bank sends an ACH debit to the buyer's bank via the ACH.

(4) The seller's bank reports payment to the seller.

(5) The buyer's bank reports the debit to the buyer.

Exhibit V-7 depicts the use of a VAN in a debit payment relationship.

EXHIBIT V-7



3. Electronic Payment Data Formats

A critical element in electronic payments is the data that is transmitted from one party to another and the format for that data. The data transmitted must be sufficient to identify all relevant aspects of the transaction and ensure that the correct parties are credited and debited appropriately. The data must also be formatted in a particular fashion so that the receiving party can understand the meaning of the various data elements. Standardization of data formats is essential if a particular method of payment is to be used widely across a broad range of parties.

Not counting Fedwire transfers (which have no standardized format anyway), ACH transactions are the standardized formats for the electronic transfer of funds for trade payments. The formats are developed and maintained by the National Automated Clearing House Association

(NACHA), which is an umbrella organization composed of regional ACH Associations. NACHA is responsible for establishing rules and policies governing the use and operation of the national ACH system.

There are several different types of data formats that can be used to make ACH credit or debit transactions. Basically, the formats differ in the amount of payment-related information they carry and the degree of flexibility they afford a user. The data formats are as follows:

a. Cash Concentration or Disbursement (CCD)

CCD format is the most basic form of ACH payment. It is widely used in the corporate community for moving cash from various accounts into a single cash management account. The CCD format contains only a limited amount of space for including data about the payment. The length and content of each data element is specified in NACHA rules and is standard among all applications using the CCD format. CCD formats can be processed by all ACH member banks, but the limited amount of information that may be transmitted in a CCD format limits its utility for a wide variety of business payments.

b. CCD Plus Addenda (CCD+)

The CCD+ format combines the widely used CCD format with a single addenda record that can carry 80 characters of payment-related data. CCD+ formats can be processed by most ACH member financial institutions, and the single addenda record can carry a significant amount of ancillary payment information.

c. Corporate Trade Payments (CTP)

The CTP format was designed to overcome the data limitations of the CCD format by allowing each payment to be accompanied by up to 4,990 addenda records, each of which could carry 80 characters of additional information. The CTP format has received relatively limited use because few banks process CTP transactions, and corporations have begun moving toward transactions using standards developed by the American National Standards Institute (ANSI).

d. Corporate Trade Exchange (CTX)

The CTX format combines the desirable features of the CTP format (multiple addenda records) with the standards and approaches developed by the American National Standards Institute (ANSI) to govern the data transmitted among corporations in the general electronic data interchange (EDI) world. The CTX format consists of the standard ACH payment formats with up to 4,990 addenda records per payment transaction. Each addenda record is formatted in a manner consistent with the ANSI-approved Payment Order/Remittance Advice (ANSI X12 820).

e. American National Standards Institute (ANSI) X12 820: Payment Instruction/Remittance Advice

The X12 820 is a data format that is generated by corporations (not necessarily banks). The format specifies the amount of payment, the recipient corporation, the recipient bank, and the account to be credited. It includes variable-length space for remittance details. Corporations will generate this format and send it to their banks. The banks in turn will either insert it into a NACHA CTX format (and send everything through the ACH) or translate it (breaking apart the remittance advice from the payment portion, formatting the payment data into one of the other NACHA formats, and sending the remittance advice via mail or VAN).

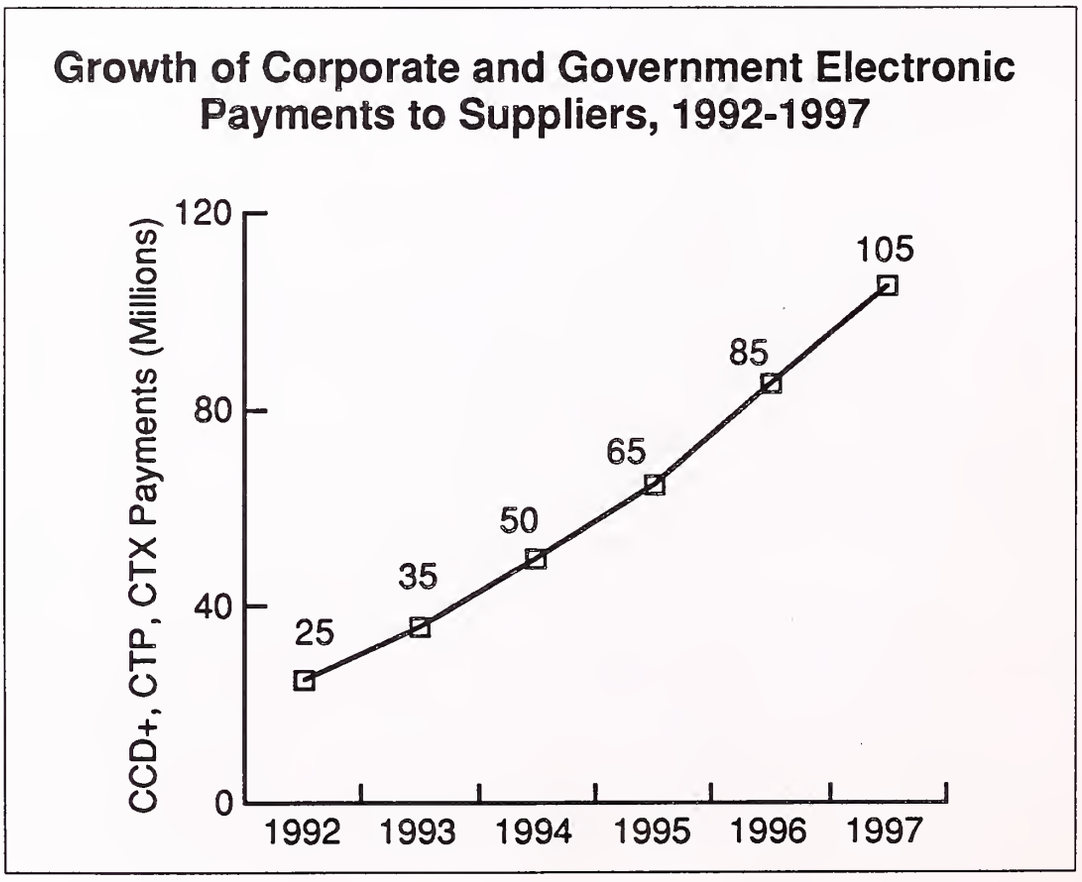
C

Activity Levels of Business Electronic Payment Mechanisms

1. Corporate-to-Corporate Payments: EDI/EFT (Financial EDI)

Electronic payments by a corporation (or government agency) to another corporation are increasing at a rate of 33% per year, INPUT estimates. Exhibit V-8 shows INPUT's forecast of volume growth of corporate electronic (EDI/EFT) trade payments.

EXHIBIT V-8



The reason that corporate electronic payments are increasing at such a rapid rate is that the growth is on top of such a small base.

NACHA is monitoring corporate electronic trade payments over the ACH and periodically releases data. In the fourth quarter of 1992, it reported volume growth figures for the various EDI/EFT-related ACH formats. For the first six months of 1992, corporate-to-corporate payments that utilized the Corporate Trade Payment (CTP) data format rose 17% over the same period in 1991. Payments using the Corporate Trade Exchange (CTX) format rose 122%. And the number of remittance addenda attached to a payment instruction (whether the instruction took the form of CTP, CTX, or CCD+) rose by 18%.

About 20% to 25% of the total number of corporate-to-corporate electronic payments made are the federal government paying suppliers via the Vendor Express program (see below).

a. Corporate-to-Government Electronic Payments: Corporate Tax Payments

Usage of the ACH and other electronic payments for state taxes has been implemented in 32 states, and a new federal government pilot program will boost usage of the ACH for paying state withholding taxes.

Prior to 1986, using the ACH or Fedwire to pay tax payments was an idea that only a handful of companies and governments had thought about. But after two programs were implemented in Indiana and New Mexico in 1986 and 1987, other states started to see the benefits of collecting all or some of the major business taxes in their jurisdictions. The electronic collection of taxes has been hailed by states as a cash management tool to accelerate funds availability and delinquency notifications, as well as to improve cash forecasting.

The restrictions of program and types of taxes collected vary from state to state. The taxes collected via the ACH or Fedwire across the country include the following:

- Motor fuel or gasoline tax
- Severance tax
- Withholding tax
- Income tax
- Sales tax
- Use tax

In order to convert paper payments for state withholding taxes to the ACH, the U.S. Department of Treasury's Financial Management Service (FMS) and the Department of Defense (DoD) has implemented a state withholding tax pilot to send withholding taxes from government agencies to state governments using a CCD+ credit item.

Federal agencies presently remit employee withholding tax payments to states by means of a paper check and deposit form. The electronic state tax pilot is a new application of the Vendor Express program, which allows federal agencies to electronically pay companies doing business with the government. The single 80-character addendum record of the CCD+ application will be structured with the Tax Payment (TXP) convention. The TXP convention is a recent development by NACHA's Bankers EDI Council in cooperation with Federation of Tax Administrators and the Committee on State Taxation to standardize the addenda data for tax payments using the CCD+ format.

The state laws regarding electronic tax payment for businesses in their jurisdiction requirements do not apply to federal government payments for employee withholding taxes. However, the intent of the legislation is consistent with the federal government's goals in the area of financial management and payment processing and will be supported by the FMS and the DoD, according to officials at FMS.

Any State that can accommodate the ACH CCD+ credit payment option with the TXP addendum convention and is presently receiving state withholding tax payments from one of the pilot agencies is encouraged to participate. If the federal tax pilot program is successful, FMS will develop an implementation strategy and work with various other federal agencies to convert state withholding tax payments to ACH.

b. Government-to-Corporate Electronic Payments: Government Payments to Suppliers

The federal government, including the Department of Defense, transacts business with approximately 200,000 to 500,000 private sector suppliers. Ninety percent of all transactions are with small businesses. The government makes roughly 22 million solicitations (requests for bid) per year to the private sector for purchases under $25,000. This is 70,000 solicitations per day. Seventy percent of these are made by the DoD. Another 500,000 solicitations per year are made for procurements above $25,000. The government wants to make half of its transactions electronic by 1996, but the project has been slower than anticipated.

Seventy percent of all government purchases are made by the Department of Defense.

In 1989, the U.S. Treasury inaugurated the Vendor Express program by which government agencies pay suppliers electronically. Originally, GEIS received the contract to supply network services. In 1992, the contract was recommissioned to U.S. Sprint. Originally, the Vendor Express program was intended to be used to pay civilian suppliers of the government. According to some officials, the government wants to now use it to pay military suppliers as well.

Currently, the Department of Treasury sends approximately four million CCD+ Vendor Express payments per year. More than 70 branches of various government agencies now participate in the program. Eventually, all government agencies are expected to participate.

In 1990, the General Accounting Office (GAO) issued guidance (*GAO Policy and Procedures Manual for Guidance of Federal Agencies, Title 7—Fiscal Guidance*) to all government agencies on the use of electronic technologies in support of voucher examination and payment processes. More recently, the GAO counsel issued a legal opinion (Electronic Contracting, 19 June 1991) on the acceptability of electronic contractual documents and signatures. These GAO positions have removed many of the legal and regulatory issues associated with using electronic documents and signatures.

Medicare payments by the Health Care Financing Administration (HCFA) can be made electronically. There are 110 million Medicare checks issued a year. Medicare and Medicaid are the principal payors for health care in the country accounting for approximately 54% of the nation's hospital bill while private and other sources account for the remainder. Hospitals have approximately $4 billion tied up in accounts receivable.

2. Corporate-to-People Electronic Payments: Payroll Processing (Direct Deposit of Payroll)

Approximately 4 billion payroll checks (including electronic payments) are cut every year. According to NACHA, 27% are now made electronically through a direct deposit of payroll program. This is more than double the participation in direct deposit of payroll over 1988, when only 12% of the private sector work force was paid electronically. The number of private sector workers using direct deposit in the U.S. has increased from 12.9 million in 1989 to 30 million in 1992, according to NACHA. This amounts to a 32% annual growth rate in the use of direct deposit.

In 1988, less than 40,000 corporations were offering direct deposit to their employees. In contrast, in 1992 over 150,000 corporations are offering the service.

From very small companies (sales less than $5 million) to the largest U.S. corporations (sales over $500 million), usage of direct deposit is rising rapidly, according to NACHA.

The largest growth in direct deposit use has been among the very small and small companies. Very few businesses with under $5 million in annual sales were using the ACH network for direct deposit as of 1989. Statistics collected from payroll processors show that about 1% of these companies

used direct deposit in 1989. But with the advent of NACHA's national marketing campaign in 1989, as well as more inexpensive payroll software, the number of these very small companies using direct deposit increased 800% by 1991 to a total of about 9% of all these businesses.

In addition, direct deposit use among companies with annual sales between $5 million and $50 million has posted a 36% increase since 1989. Figures from last year show that about 15% of all these small companies use direct deposit.

Mid-sized and large corporations' use of direct deposit is also on the rise. Usage of direct deposit at companies with annual sales between $50 million and $500 million has posted a 17% increase since 1989. More than half of all mid-sized companies had direct deposit programs in place as of last year.

Businesses with more than $500 million in annual sales are the highest per-business user of direct deposit services. Nearly three-fourths of these companies had implemented direct deposit programs by last year.

A new mandatory direct deposit policy implemented by the U.S. Department of Defense in August will affect virtually all of the 4.4 million DoD military and civilian personnel, according to the policy statement released by the Department of Treasury's Financial Management Service.

The Financial Management Service (FMS) and DoD have promoted direct deposit for more than a decade. The DoD has more than 80% participation in its program. With more than 70% of all government workers using the service, FMS estimates that the federal government saves more than $100 million each year. By requiring direct deposit participation for most DoD employees, those savings figures should continue to increase.

3. Government-to-People Electronic Payments: Government Electronic Benefits Programs

According to NACHA, more than 30% of the 80 million government benefit payments sent each year are disbursed via direct deposit. A majority of social security recipients already use direct deposit for their payments, and many other federal benefits programs have active direct deposit participation.

Electronic benefits transfers (EBTs) are being used to disburse other kinds of government benefits to people, including food stamps, Aid to Families with Dependent Children, Supplemental Security Income to Retirement Benefits. EBTs are also disbursed through automated teller machines at banks and through point-of-sale machines at grocery check-out counters. Recipients use a card to receive their benefits.

4. Specialized Payment Processing Services

Specialized payment processing services exist in many different industry niches and for many kinds of applications. Payroll processing is an example but because payroll processing applies across all industries, INPUT covered it separately in the section above. Examples of specialized payment services are:

- Freight bill processing
- Advertising bill processing
- Securities purchase settlements
- Equipment leasing
- Mortgage banking services
- Airline ticket settlements
- Factoring
- Student loan settlements

Bill paying and/or settlement in these niches is often an industry unto itself, with third-party service bureaus and banks performing the accounting functions for the corporate customers. In some cases, such as securities market purchases and airline ticket settlements, an industry-sponsored clearinghouse takes care of intercorporate settlements.

Activity levels and competitive environment issues for these specialized payment services are covered in more detail in other INPUT reports (see Chapter I, Section D, *Related INPUT Reports*).

D
Software and Services Markets, and Competitive Environment

EDI/EFT electronic payments among corporations require network and processing services and software. Software is installed at corporate sites and bank sites. Corporate site software allows for the origination and receipt of payment instruction/remittance advice messages.

Bank-site software, in turn, receives/sends this information to and from corporations. In addition, bank software interfaces with the ACH network, which is where banks settle payments.

Network services consist of the banking system's ACH network, which is an interconnected collection of bank networks that only banks can access. To connect corporations with banks, third-party value-added networks as well as direct connections (over leased or dial-up telephone lines) are used.

There are at least 25 companies selling ACH software packages to financial institutions and corporations. There are 22,500 financial institutions and over 130,000 corporations that participate in the ACH network.

The software ranges from simple packages that support the use of PCs to originate and receive ACH transactions to more complex packages that map and translate the different corporate trade payment formats. Some of the packages are designed to be used by community banks and credit unions that are just starting to originate ACH transactions. Other packages are designed to be used by financial institutions, and corporations can choose from a wide variety of software packages that range in price from $150 to more than $100,000.

EDI/EFT software packages are generally manufactured by software vendors and sold to corporations and banks. However, many banks resell the software of these vendors to their corporate customers. Often, the EDI/EFT software vendor also sells bank cash management/treasury software. This latter software allows treasury managers to move funds around different corporate bank accounts held at the bank.

Exhibit V-9 lists leading vendors of EDI/EFT software.

EXHIBIT V-9

Leading Vendors of EDI/EFT Software

- Sterling Software (Dublin, OH)
- Advantage Systems, Inc. (Waltham, MA)
- GEIS (Rockville, MD)
- Stockholder Systems Inc.
- Maxxus Inc. (San Francisco, CA)
- Federal Reserve
- Harbinger*EDI Services (Atlanta, GA)

In order to participate and originate/receive electronic funds transfers over the ACH, banks and financial institutions connect to ACH processors.

The main ACH processors are listed in Exhibit V-10.

EXHIBIT V-10

The ACH Processors

- Federal Reserve
- Deluxe Data Systems (Milwaukee, WI)
- New York Automated Clearing House
- VisaNet (San Mateo, CA)

Following are some of the basic product/services and associated fees of the ACH processors.

Deluxe Data offers the following products:

- Deluxe Connect, a regional ACH processing service for groups of financial institutions. This service is a full-scale ACH processing service, much like VisaNet's national service, for low-to-high volume users within a particular region. Monthly fee is $50. Per item fees are

  $.01 per transaction received (after first 1,000/month)
  $.001 per addenda received (after first 1,000/month)
  $12.50 per hour communications
  $12 per hour electronic research

- Deluxe Access, a service for institutions with medium-to-high ACH transaction volumes has a variety of options and fees.

The Federal Reserve offers the following products:

- Federal Reserve Connection series:

  - FlashLight: Software for small ACH volumes. Monthly fee is $30; installation/training is $100; and communications/modem/encryption board is $1,200. Per item fees, listed below, apply.

  - FedLine: IBM-PC compatible software for low-to-medium ACH volumes. Monthly fee starts at $65; installation and training is $300; and the communications/modem/encryption board is $1,200. Per item fees, listed below, apply.

  - Bulk Data Computer Interface: Software for IBM and Unisys mainframes. Starts at $700; installation and training is $300 and other fees are $4,000. Per item fees, listed below, apply.

- Per Item Fees:

  $.01 per intraregional item
  $.015 per interregional item
  $.012 per presorted item original
  $.004 per intraregional addenda
  $.005 per interregional addenda
  $.010 night cycle value debit surcharge
  $.040 return-item surcharge
  $1.25 per file origination fee
  $10 monthly maintenance fee

Visa International offers the following VisaNet Connection products and services:

- Panache: Software that runs on IBM-compatible PCs. Monthly software fee is $55. Per item fees are $.10 per return entry originated, $.03 per entry received, and $.01 per addenda.

- MIP/PC: Visa hardware, software and telecommunications gear for financial institutions with medium-to-large ACH volumes (25,000 NACHA format records an hour). Monthly fee is $500, $150 per tape drive, or $25 per copy of Panache software. Per item fees are $.0095 per intra-Visa item, $.0050 per Federal Reserve exchange item, $.0010 per government item received, and $.0010 per addenda item.

- MIP/Series 1: For large-volume originators and receivers (up to 250,000 records per cycle). Per item fees are $.0095 per intra-Visa item, $.0050 per Federal Reserve exchange item, $.0010 per government item received, $.0010 per addenda item. Access fees dependent on configuration.

- Direct Connect: Host-to-host connections for extremely large-volume ACH users. Institution works with VisaNet ACH to design and configure system. Access fees are dependent on configuration.

- Certification Fee: A one-time $2,000 certification fee is charged to all users of VisaNet. The fee is applied to future access fees.

EDI/EFT software and the capacity to electronically settle payments through the ACH are made available through a bank. Electronic payments are the last component a company installs when it implements electronic data interchange. To sell electronic payment software and services, an IS company needs to sell to both an EDI-using corporation as well as to the corporation's bank. The two services of EDI and bank processing come together with electronic payments. Thus, electronic payments capabilities are being sold through banks to their largest corporate clients.

The top 200 banks in the country are the providers of most EDI/EFT capability. Generally speaking, the top 100 banks have the Fortune 1,000 corporate clients. The next 100 are the large regional banks that cater to the mid-sized corporations. This second tier of banks may garner the greatest business in EDI/EFT during the 1990s.

Appendix B lists the top banks in the U.S. and their market value as of November 1992.

Some of the specialized payment processing service providers are listed in Exhibit V-11.

EXHIBIT V-11

Specialized Payment Processing Service Vendors

Company	Payment Category
ADP	Payroll
Cass Logistics	Transportation
Tranzact	Transportation
Donovan Data Systems	Advertising
Airline Reporting Corporation	Airline
Hotel Clearing Corporation	Hotel
H&R Block	Tax

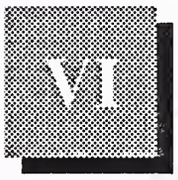
E
Conclusions and Issues

- The largest kind of corporation-originated electronic payment is for the payment of employees in direct deposit of payroll programs. But this is one of the least attractive opportunities for banks and software and services vendors to pursue because there is already an established vendor community serving this niche.

- Corporations are slowly adopting electronic business payments for payment of suppliers, but this is a promising new area for electronic payments. There are no dominant players and the area is ripe for new entrants.

- Providing corporations with mechanisms to electronically pay their suppliers must be approached industry by industry and focused around hub (large) companies and their spoke suppliers. Very focused targeting of companies and industries is a must for banks and IS software and services providers to be successful here.

- Banks have an opportunity to bundle a number of banking services with electronic payment and treasury management services including credit services, factoring, and others.



Conclusions and Recommendations

A
Assessments of Electronic Payment Opportunities

In general, the rapid adoption of electronic payment mechanisms by consumers and businesses over the next few years appears to be likely.

INPUT believes the fundamental stimulus driving this rapid adoption is the widespread proliferation of microcomputers and other digital devices/ applications (such as ATM machines, voice response telephone applications, etc.) in businesses and homes that took place in the 1980s and continues today.

The "hands on" use of these applications and devices by, what is now, hundreds of millions of people has, consequently, educated the business person and the consumer in the practices of using such devices. People are comfortable, or at least functional, in using computer devices. Thus, they are ready to apply them to one of the most basic of activities: paying bills.

But not all markets for electronic payment services/applications are equally attractive. Although all are growing at rates above normal information services growth rates (in the 20% and 30% and higher ranges versus the IS average in the low teens), some are growing faster than others. And while some applications (such as payroll processing) might exhibit high growth, their opportunity may be limited because of a restricted overall potential market, the existence of several large competitors, or a combination of these and other factors.

Exhibit VI-1 summarizes the growth in adoption of electronic payment mechanisms for the several payment segments examined in this report.

EXHIBIT VI-1

Annual Activity Growth Rates for Electronic Payment Applications

Payee \ Payor	Corporations	People	Government
Corporations	33%	Home: 111% Retail: 38%	33%
People	32%	N/A	25%
Government	50% - 100%	32%	N/A

N/A = not applicable

The percentages in Exhibit VI-1 refer to the growth of either transaction volumes for electronic payments or the number of people adopting payment services or the number of debit cards to be issued. They do not refer to the growth in vendor revenues of payment services, related software, or equipment.

INPUT believes that the leading and most attractive markets for electronic payment services, software, and equipment are those for the following:

- Corporate-to-corporate payments (EDI/EFT)
- Home banking/bill paying (including all modes, computer, telephone, and television based)
- Retail payments at the point of sale, particularly debit card payments
- Electronic payment of corporate taxes to state and federal authorities

Exhibit VI-2 summarizes INPUT's assessments of the opportunities for electronic payment services.

EXHIBIT VI-2

Bank and IS Vendor Opportunity Rankings for Electronic Payment Applications

Payee \ Payor	Corporations	People	Government
Corporations	High	Home: High Retail: High	Medium
People	Low to medium	N/A	Medium
Government	Medium to high	Medium	N/A

N/A = not applicable

The corporate-to-corporate EDI/EFT payment segment shows high opportunity because it is, relative to some of the other fields, a new kind of payment mechanism. First started in the mid-1980s by auto manufacturers, it has developed slowly. But in the last two years a greater number of "hub" type companies—in retail, manufacturing, petroleum, utilities, and government—have begun instituting EDI/EFT payments. A critical mass of hub and spoke companies has been attained, which can carry over and stimulate adoption by other companies in other industries that trade with these initial adopters.

The EDI/EFT segment is made more attractive by the relative absence of any dominant players. Hundreds of banks, a score of software companies, and a handful of value-added networks are offering services in this niche. Not one has emerged as the all-service provider.

The home market is also a high-growth market for electronic payment services. The market is young and many generations of systems are yet to come. Computer-, telephone-, and television-based payment systems exist today. No one medium has the advantage yet. With the technology of these three media rapidly evolving, it is very possible that in the near future, the three will converge into a single video-telephone-computer. Payment services out of the home will have to respond to this changing technological dynamic.

Home electronic bill-paying systems and services are being driven also by the increasing numbers of professionals and small businesses that operate out of the home. Also, electronic bill payment systems and services for the home are being driven by the rapid growth of home shopping services (again via the three modes, but in particular via television). As home shopping becomes more widely practiced, home electronic payment of bills will follow.

In the retail segment—people paying corporations at the point of sale at retail outlets—there is a great potential for growth. Growth here is coming in the areas of debit cards, whose use has begun at the consumer's two most frequented retail points: the grocery store and the gasoline station. Also, growth is coming in new retail segments, in particular, health care. There appears to be a large potential for point-of-sale card payment systems and services in health care (for both credit and debit cards, and even smart cards).

The next most lucrative opportunity for electronic payment systems and services is in the area of corporate tax payments to state and federal government agencies. This is a medium-to-high opportunity area in INPUT's judgment. It is high because state governments are mandating or will shortly mandate electronic tax payments (given certain qualifications) by corporations. It may be a limited market, however, compared to the corporate-to-corporate and consumer payment segments.

The government-to-corporate segment (government paying its suppliers electronically) is a component of the corporate-to-corporate payment market. While growing at the same rate and having the certainty of a government mandate behind it, it is only a medium opportunity because experience to date with the federal government's Vendor Express has been unspectacular. Government contracts with IS and financial service vendors can take advantage of scale discounts and other exceptions. This special status of government projects makes them a less attractive opportunity than those in the commercial and consumer sectors.

Payroll processing and direct deposit of payroll, though growing at a strong clip, is a low-to-medium opportunity because it is an established industry niche with established players. The technology and infrastructure is largely in place so there is no opportunity in developing the infrastructure. It is only a matter of bringing on more employers and employees to the existing systems.

Electronic benefit transfers appears to be a medium opportunity. The fickleness of government welfare programs may impinge on this sector providing a steady expansion of opportunity.

Tax preparation services and electronic filing of taxes for individuals appears to be a steadily and quickly growing area. Though quickly growing, it has established players, which makes it a challenging market to enter.

B

Bank and IS/IT Vendor Offerings and Actions

Providers of networks are in central positions because they carry the traffic of transactions, which is only increasing. The networks for electronic payments range from EDI value-added networks, POS debit/ATM networks, credit card authorization networks, bank clearinghouse networks to telephone, cable television, and wireless networks.

Software and equipment vendors face many opportunities, but many of their opportunities are reliant on network services.

Banks are somewhat caught in a bind in that many of the new electronic payment services (EDI/EFT and debit cards, especially) do not offer lucrative profits—at least right away. The opportunities for banks with electronic payment services are in the areas of enhancing customer satisfaction, increasing the number of bank customers, and introducing/bundling other bank services to existing service customers (particularly credit services).

While network traffic will rise indefinitely, the number of network providers in each category of network is consolidating.

Owners of these networks are looking for ways to leverage them by adding more processing and value-added services to them and to exploit new potentials among their existing customer bases.

Some credit card processing companies, such as National Data Corporation, are offering EDI/EFT services. First Financial Management Corp. could do the same.

Some EDI value-added networks are offering EDI/EFT services (either directly to corporate customers or through alliances with banks) as well as credit card processing services. GEIS, BT North America and AT&T are examples of this.

Television and telephone networks, such as AT&T and TV Answer, are offering home banking services in conjunction with banks.

ATM/POS networks, such as Maryland National Bank and its MOST ATM network, are offering debit services not only to retail establishments but to homes as well.

Credit card processors are offering telephone calling cards (so that the telephone charge appears on the credit card monthly statement, not the telephone company's monthly statement).

Telephone companies, such as AT&T, Ameritech, GTE, are offering credit cards.

And some commercial and consumer information network services, such as Prodigy and America Online, are offering home electronic payment services.

Network operators and banks are wise to seek and exploit new service and customer add-ons to their business. The payment mechanisms are converging to some extent because corporations, consumers, and the government are naturally intertwined (by virtue of continually transacting with each other). Electronic communication technologies only bring these groups closer together. Electronic communication technologies eliminate the paper-processing institutions that have given rise to and have kept isolated the different kinds of payment practices. Now, the inherent interconnectedness of the three categories of payor/payee can be matched more closely with digital systems keeping records of transactions.

There are many opportunities for banks to offer electronic payment services, but only the most aggressive banks will capitalize on these opportunities. The banking industry is consolidating and this should bring efficiencies to the payment processing and network services businesses of those banks that survive.

Hub and spoke marketing of electronic payment services is particularly mandatory in the corporate payments and home payments sectors. Companies that receive payments from millions of customers are ripe for extensive electronic payment services. Their investment in systems will make it easier for their millions of customers to also invest in systems.

Megatrends that are affecting electronic payments today are:

- The growing computer literacy and competence in the business and consumer economies
- The restructuring and consolidation of the banking industry
- The changing landscape of the retail industry, with more shopping made available through television, computer, and telephone media
- The expanding number of professionals and small business entrepreneurs whose homes are also their businesses
- The continuing evolution of computer and communications technology including falling price-performance ratios.

These trends are all positive influences in the adoption by the business and consumer public of electronic payment practices and mechanisms.

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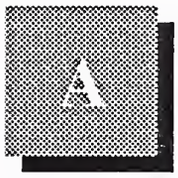

ACH Processing Fees Schedule

EXHBIT A-1

ACH Processing Fees Schedule
(Effective January 1, 1993)

Participation Fee		$10.00
Nonelectronic Input/Output:		
Tape Input/Output		$25.00
Paper Output		15.00
Diskette Output		15.00
Return Item/NOC Fees:		
Paper Returns & NOCs		$10.00 [2]
Government Paper Returns		5.00
Off-line Telephone Returns		10.00 [2]
Voice Responses Returns		2.00 [2]
Telephone Advice:		
Including first ten pieces of information		$10.00
Each additional piece of information		0.05
	Originations	**Receipts**
Intraregional		
Transaction	$0.010	$0.010
Addenda	0.004	0.004
Interregional		
Transaction -	**	$0.015
sorted	0.015	**
presorted consolidated	0.012	**
Addenda -	**	0.005
unsorted & presorted consolidated	0.005	**
New York	**	$0.012
Night Cycle Value		
Debit Surcharge [1]	$0.010	**
Return Item Surcharge	$0.040	$0.040
File Processing Fee (per file)	$1.50	**

[1] The surcharge does not apply to prenotes or NOCs

Source: NACHA

[2] The fee includes the transaction fee and the return item surcharge (for returns only) in addition to the conversion or voice response fee.

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B

Top U.S. Banks by Region and Their Market Value

EXHIBIT B-1

Top U.S. Banks by Region and Their Market Value—East

Bank	Market Value* ($ Millions)
J.P. Morgan	10,922
Chemical Banking	5,679
Citicorp	5,535
PNC Financial	5,277
Bankers Trust New York	4,832
Fleet/Norstar Financial Group	3,376
Chase Manhattan	3,077
Bank of New York	2,701
Corestates Financial	2,418
State Street Boston	2,317
First Fidelity Bancorporation	2,286
Keycorp	2,176
Republic New York	2,108
Mellon Bank	1,995
MBNA	1,863
Bank of Boston	1,401
Merdian Bancorp	1,126
Shawmut National	977
Wilmington Trust	890
Integra Financial	862
First Empire State	848
UJB Financial	809
Mercantile Bankshares	786
MNC Financial	699
Dauphin Deposit	476

*As of November 1992

EXHBIT B-2

Top U.S. Banks by Region and Their Market Value—Midwest

Bank	Market Value* ($ Millions)
Banc One	8,324
Norwest	4,588
NBD Bancorp	3,463
Fifth Third Bancorp	2,721
National City	2,482
First Bank System	2,019
First Chicago	1,970
Society	1,841
Comerica	1,815
Northern Trust	1,768
Firstar	1,628
Boatmen's Bancshares	1,624
Manufacturers National	1,439
Ameritrust	1,368
Huntington Bancshares	1,260
Marshall & Ilsley	1,138
Old Kent Financial	1,081
First Of America Bank	1,045
Star Banc	838
Continental Bank	813
Mercantile Bancorporation	704
Commerce Bankshares	698
Merchants National	659
INB Financial	651
Michigan National	639
United Missouri Bancshares	531

*As of November 1992

EXHBIT B-3

Top U.S. Banks by Regionand Their Market Value—South and Southeast

Bank	Market Value* ($ Millions)
Nationsbank	10,319
Wachovia	4,853
Suntrust Banks	4,809
First Union	4,222
Barnett Banks	2,311
Amsouth Bancorporation	958
Southtrust	944
First Alabama Bancshares	896
First Virginia Banks	832
Signet Banking	807
Central Fidelity Banks	791
Crestar Financial	790
First Tennessee National	732
Banponce	722
Central Bancshares of the South	665
BB&T Financial	608
Synoyus Financial	581
Dominion Bankshares	559
Liberty National Bancorp	519
First American	474

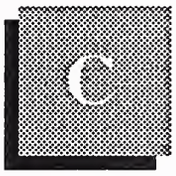
*As of November 1992

EXHBIT B-4

Top U.S. Banks by Region and Their Market Value—West and Southwest

Bank	Market Value* ($ Millions)
BankAmerica	9,467
Security Pacific	4,788
First Interstate Bancorp	3,875
Wells Fargo	3,341
U.S. Bancorp	2,074
Bancorp Hawaii	1,411
First Hawaiian	850
First Securtiy	756
Valley National	710
Puget Sound Bancorp	702

*As of November 1992



Index of Companies

H

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J

M

N

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P

R

S

T

U

V

W

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