

ELECTRONIC FUNDS TRANSFER

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The Revolution in Retail Payment Systems

by

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The acid test of whether banks are in danger of losing at least part of their traditional payments role is the degree to which nonbanking firms are successfully offering payment services. Changes in the economy and in communications technology, and the impact of interest rate deregulation on commercial banks certainly provide an opportunity for nonbanks to compete in a number of service areas. Our focus is retail payments services, leaving aside the area of corporate payments. Specifically, our survey identifies banks and nonbanks either testing or currently providing automated teller machines (ATMs), point-of-sale devices (POS), and home banking. Reviewing who the major players are and what they are engaged in gives some insight into how the market for these services is evolving.

It should be stressed that, although we endeavored to identify all firms and organizations actively involved with ATM and POS services in the retail environment or with testing home banking, our data may not be 100 percent inclusive. Our information sources included news publications, trade publications, and previous research. Furthermore, we personally contacted organizations offering

these services and asked them to identify others that were involved. The result is a good overall inventory of the players and their products.

ATM and POS

Through an ATM several banking functions can be obtained that previously required personal contact at a banking site. These services normally include cash dispensing (both from demand deposits and credit accounts), deposit taking, movement of funds among a limited number of accounts within the bank, and balance inquiries. ATMs may be located on or off the bank's premises. In a retail store the ATM is most often used as a cash dispenser only, allowing customers to obtain cash to acquire merchandise. With customer access to cash through an ATM, the retail firm may benefit from reductions in check volume, bad check losses, and time spent at the checkout counter verifying checks. Moreover, an ATM located at a retail site may attract customers into the store to take advantage of a convenient banking facility; while there the consumer also may purchase merchandise that otherwise may have been purchased elsewhere.

A POS terminal is a different animal, one that allows a consumer to initiate an automatic debit to his account and an automatic credit to the merchant's. Whereas POS does not offer the extensive array of banking services that an ATM does, it has many of the same benefits to the retailer, such as reducing checkout time and bad check losses. In addition, the retailer may reduce his cash holdings, thereby diminishing the store's attractiveness to robbers. Except for the benefit derived from attracting customers into the store to take advantage of a convenient place to make banking transactions, ATM benefits to retailers are inferior to those associated with POS; therefore, ATMs may simply be a first step as retailers move toward POS.

What types of firms are offering customer access to ATM and POS terminals today? We find that the leaders are gas stations, supermarkets, and grocery and convenience stores. Most other types of retail establishments, such as department stores and specialty shops, have yet to venture into this area. Some interesting differences exist among the retailers' approaches and, as might be expected, the largest firms are the bellwethers. They are most capable of identifying the advantages of ATM and POS terminals, and of funding the research and development necessary to implement their use.

Table 1 lists firms in the retail gas business using ATMs or POS, as well as the type of terminal being tested and the location and number of terminals involved. The institutions most active in testing POS and ATMs are among the industry giants--Exxon, Mobil, Gulf, Shell, and Amoco. Also note that none of these companies was involved earlier than 1982; in fact, the majority started as late as 1983-1984. It is obviously a new area of activity.

Table 1. Gas Stations
Type of Payment System and Locations

Name	Starting Date	POS or ATM	Location
Amoco	mid 84*	POS	PA(6)
Arco	9/83	POS	CA(25)
Carioca			
Oil	mid 83	POS	AZ(1)
E-Z Serve	mid 82	POS	TX(4),HI(12)
Exxon	7/83	POS	TX(10)
	11/83	POS	AZ(83)
Fina	9/83	ATM	FL(6)
Gulf	1/84	POS	TX(16)
	mid 84*	POS	PA(15)
Marathon	1983	POS	OH(9)
Mobil	8/83	POS	VA(58)
	9/83	POS	CA(477)
	4/84	POS	FL(55)
OK Oil	7/83	POS	GA(20)
Shell	1983	POS	OH(11)
Standard			
of Ohio	mid 84*	POS	PA(10)

* Estimated date.

SOURCE: Federal Reserve Bank of Atlanta, April 1984.

Gas stations tend to favor POS devices over ATMs. Both devices require a tremendous card base and gas stations already have large proprietary card bases. Gas stations are interested in reducing cash while facilitating the transaction. The POS serves their purpose better than does the ATM. Only one institution, Fina, is offering ATMs, testing six of them in Florida.

As Table 2 shows, most of the tests by gas companies utilize true debit cards. Only five of the tests involve POS where the sale is activated by a credit card. Mobil is sponsoring the largest test, using both the direct debit and credit debit to activate the transactions. Because bank debit cards are used to activate transactions, the

Table 2. Gas Stations
Type of Card and Network

Name	Type of Card	Type of Network	Who Owns Machines
True Debit Card			
Amoco	bank debit	shared	retailer
Arco	bank debit	proprietary	retailer
E-Z Serve	bank debit	proprietary	retailer
	bank debit	shared	retailer
Exxon	bank debit	proprietary	retailer
	Exxon debit	proprietary	retailer
Gulf	bank debit	shared	retailer
Marathon	bank debit	proprietary	retailer
Mobil	bank debit & Mobil credit	shared	retailer
OK Oil	Bypass debit	proprietary	retailer
Shell	bank debit	proprietary	retailer
Standard of Ohio	bank debit	shared	bank and retailer
ATM			
Fina	bank ATM	proprietary	bank
Debit to Credit Card			
Carioca Oil	bank credit		retailer
Gulf	Gulf credit		retailer
Mobil	Mobil credit		retailer
OK Oil	bank credit		retailer
Standard of Ohio	Boron credit		bank and retailer

SOURCE: Federal Reserve Bank of Atlanta, April 1984.

gas companies maintain a relationship with banks that provide these services. The tests using direct debit cards are split evenly between shared and proprietary networks. (Shared systems link a number of banks together in the network, increasing the customer base by allowing card holders of different banks to use the same system.)

Who owns the POS or ATM is important because it points to the moving force behind the test. In all but two of the tests, the gas companies own the POS or ATM terminals. Quite obviously, banks are not taking the lead here.

In adopting POS the gas companies' objectives are to induce consumers to purchase full tanks of gas and to reduce costs associated with cash, check, and credit transactions. These retailers are less interested in attracting customers by presenting a convenient opportunity for them to bank when they purchase gas. Gas companies have established a broad credit card base and to some extent have developed customer loyalty. Their motives for using this new technology are thus quite different from supermarkets'.

Table 3. Supermarkets and Grocery Stores
Type of Payment System and Locations

Name	Starting Date	POS or ATM	Location/Stores
Albertson's	1983	ATM	FL(28)
Allied Supermarkets	1983	ATM	MI(3),OK(9)
Dahl's Foods	1975	ATM	IA(10)
Food Giant	1983	ATM	GA(6)
Food Lion Supermarkets	fall 84*	ATM	NC(150)
	future	ATM	SC,VA
Giant Food Stores	mid 84*	ATM	DC ¹ (24)
Goodings	1983	ATM	FL(3)
Jewel Food Stores	9/81	ATM	IL(17)
Kroger	mid 70s	ATM	AR,FL,GA,IN,KY,LA, OH,TX,WV,VA(200)
Mid Atlantic Food Dealers Association	mid 84*	ATM	DC ¹ (11)
Pantry Pride	1983	ATM	FL(24)
Pathmark Supermarkets	mid 84*	ATM	NY(5)
	future	ATM	CT,DE,NJ,PA
Publix Supermarkets	12/82	ATM	FL(225)
Randall's Food Markets	1981	ATM	TX(6)
Safeway Supermarkets	1983	ATM	CA(60)
	1983	ATM	TX(75),DC ¹ (92)
Smitty's Supermarkets	1983	ATM	AZ(20)
Wegman's Food Markets	6/83	ATM	NY(30-40)
Winn-Dixie	12/83	ATM	FL(26)
	1983	ATM	FL(60)
Angelo's	1976	POS	MA(18)
Dahl's Foods	1981	POS	IA(1)
Hyvee Food Stores	1981	POS	IA(12)
Mid Atlantic Food Dealers Association	mid 84*	POS	DC ¹ (12)
Starmarket	1976	POS	MA(43)

*Estimated date

¹DC includes the surrounding area of Virginia and Maryland.

SOURCE: Federal Reserve Bank of Atlanta, April 1984.

Supermarkets

Table 3 lists the supermarkets and grocery stores currently using or testing POS or ATM. It also indicates the starting date, the type of terminal used, the state, and the number of stores involved. Supermarkets inaugurated their electronic payment systems earlier than the gas companies. Some of the players, like

Kroger, Dahl's Foods, Starmarket, and Angelo's, started their experiments in the mid-1970s, but the rest are relatively recent. Again, the major supermarkets tend to be the leaders in testing or adopting the new technology.

In all, 18 supermarkets are using ATM terminals and 5 are using POS. Thus there is a clear preference for

Table 4. Supermarkets and Grocery Stores
Type of Card and Network

Name	Type of Card	Type of Network	Who Owns Machines
Albertson's	bank ATM	shared	third party
Allied Supermarkets	bank ATM	shared	bank
Dahl's Foods	bank ATM	shared	retailer
Food Giant	bank ATM	proprietary	retailer
Food Lion Supermarkets	bank ATM	N.A.	third party
Giant Food Stores	bank ATM	shared	joint venture
Goodings	bank ATM	shared	third party
Jewel Food Stores	bank ATM	shared	retailer
Kroger	bank ATM	shared	bank
Mid Atlantic Food Dealers Association	bank ATM	shared	joint venture
Pantry Pride	bank ATM	shared	third party
Pathmark Supermarkets	bank ATM	shared	joint venture
Publix Supermarkets	Publix ATM bank ATM	shared	retailer
Randall's Food Markets	bank ATM	shared	bank
Safeway Supermarkets	bank ATM ¹ bank ATM	proprietary shared	third party bank
Smitty's Supermarkets	bank ATM	proprietary	bank
Wegman's Food Markets	bank ATM	proprietary	retailer
Winn-Dixie	bank ATM bank ATM	shared shared	bank third party

¹Merrill Lynch CMA cards also have access.

SOURCE: Federal Reserve Bank of Atlanta, April 1984.

ATMs on the part of supermarkets. In offering convenient banking, supermarkets are giving their customers another reason to enter the store; they are creating the potential for additional sales while providing customers with the means of purchasing their goods.

Table 4 shows types of cards used to activate the supermarket terminals, and type of network to which the terminals are linked, as well as ownership of the terminals. Not surprisingly, in an overwhelming number of cases the supermarket ATMs are tied to shared systems that allow customers from numerous financial institutions to activate transactions. This arrangement tends to extend the card base, making the service more widely

available to the supermarket's customers.

Terminal ownership also has the potential to produce profits. In the case of supermarkets, the ownership is split fairly evenly among banks, the supermarkets, third parties, and joint ventures among the three groups. Apparently, all players view providing electronic payments and banking-type services in supermarkets as a fertile area.

Convenience Stores

Like supermarkets, convenience stores favor ATMs over POS, and ownership of equipment is split almost evenly among retailers, banks, and network operators (see Table 5 and 6). The

Table 5. Convenience Stores
Type of Payment System and Locations

Name	Starting Date	POS or ATM	Location
Conna Corporation and a group of other convenience stores	9/82	POS	FL, IN, KY(124)
Circle K	4/83	ATM	AZ(50)
Family Mart Stores	10/83	ATM	FL(12)
Kash 'N' Karry	1/84	ATM	FL(27)
Little General	mid 84*	ATM	FL(20)
Qwik Stop	mid 84*	ATM	AK(12)
Quik Trip	3/84	ATM	KS(42)
Shop and Go	mid 84*	ATM	FL(20)
Southland Corporation	10/83	ATM	FL(26)
	mid 84*	ATM	TX, DE, PA, IL
National Convenience Stores	1983	ATM	TX(81)
U-Save	1/84	ATM	FL(10)
Xtra	1983	ATM	FL(1)

*Estimated date.

SOURCE: Federal Reserve Bank of Atlanta, April 1984.

Table 6. Convenience Stores
Type of Card and Network

Name	Type of Card	Type of Network	Who Owns Machines
Conna Corporation and a group of other convenience stores	Conna debit bank credit	proprietary	retailer
Circle K	bank ATM	shared	network
Family Mart Stores	bank ATM	shared	bank
Kash 'N' Karry	bank ATM	shared	bank
Qwik Stop	bank ATM	shared	network
Quik Trip	bank ATM	shared	retailer
Southland Corporation	bank ATM	shared	bank
National Convenience Stores	bank ATM	shared	retailer
U-Save	bank ATM	shared	bank

SOURCE: Federal Reserve Bank of Atlanta, April 1984.

Table 7. Shared Networks

Area Covered	Name	Number of Cardholders
California	Interlink	6,814,000
Texas, Oklahoma, Louisiana, Arkansas, New Mexico	Mpact and Pulse	5,500,000
Maryland, Virginia, Washington, D.C.	Most Exchange Network	5,000,000
Florida	Honor	4,000,000
Michigan	Magic Line	2,400,000
Colorado	Plus	2,000,000
Wisconsin	Tyme	1,700,000
Oregon, Washington, Idaho, British Columbia	The Exchange	1,700,000
New York and part of Connecticut	New York regional switch	1,600,000
Georgia	Avail	1,400,000
Massachusetts	X Press 24 and MONEC	1,200,000
Minnesota	Instant Cash and Fast Bank	1,025,000
Chicago area	Money Network and Cash Station	987,000
Iowa, Illinois, Missouri, South Dakota, Nebraska	ITS	800,000
Missouri, Kentucky, Kansas, Iowa, Illinois	Bankmate	250,000

SOURCE: Federal Reserve Bank of Atlanta, April 1984.

Conna Corporation, based in Louisville, is the only convenience store we identified as using POS terminals.

Again, ATMs began to appear in convenience stores only recently. Given the problems that convenience stores have experienced with robberies, it is surprising that they are not moving more quickly to POS to reduce cash in the stores. But the ATMs may simply be an interim step for them.

Shared Networks--the Key

The profitability of POS or ATMs depends on the number of transactions, consumer convenience, and, for the retailer, the ability to serve the largest segment of the market. Therefore, shared networks are obviously the key to success, and that is exactly what we are seeing in the marketplace. Table 7 lists some of the larger shared networks and number of cardholders for each. The

Interlink network in California is the largest with well over 6.5 million cardholders. A shared system is necessary to make ATM/POS work for retailers, because without a large cardholder base the system will exclude too many potential customers, reducing its efficiency and profitability. The shared system is a necessity if ATMs or POS are to thrive in a retail environment.

Home Information Systems and Videotex

Home banking may take many forms, but generally it constitutes an electronic system that allows the customer to access banking account information from his home. The consumer may be able to initiate preestablished bill payments and move funds among accounts; otherwise, it is simply a static information system. Table 8 catalogs the players involved in home banking or home information services--banks, retailers,

Table 8. Organizations Involved in Home Banking Projects

Organization	Project	Who Operates Switch
Banks		
Chase Manhattan Bank	Home Banking	proprietary
Chemical Bank	Pronto	proprietary
Citibank	Homebase	proprietary
First Interstate Bank of California	Day & Night Video Banking	Tymshare
Horizon Bancorp	Horizon Home Banking and Information System	CompuServe
Huntington Bank	Banc Share	CompuServe
Madison National Bank	Hometeller	proprietary
National Bank of Detroit	Video Information Provider	proprietary
Shawmut Bank of Boston	Home Banking	CompuServe
Toledo Trust	Vistabanc	proprietary
Retailers		
J. C. Penney	First Hand	Tymnet
Sears ¹	Trintex	N.A.
Communications Companies		
CBS	Venture One	The Treasurer, Inc.
Continental Telecommunications	Contelvision	proprietary
Cox Communications	Indax	Chase Manhattan
Times Mirror Videotex	Times Mirror Videotex	VideoFinancial Services
Viewdata Corporation (subsidiary of Knight-Rider Newspapers)	Viewtron	VideoFinancial Services
Other Organizations		
ADP	Home Banking Interchange	proprietary
Keycom Electronic Publishing	Masterkey	VideoFinancial Services
Financial Interstate Services	Bank-at-Home	CompuServe
Macrotel	Macrotel	Metroteller
Shuttle Corporation	Shuttle	proprietary

¹Newly formed joint venture with CBS and IBM.

SOURCE: Federal Reserve Bank of Atlanta, April 1984.

communications companies, and system operators. The banks and retailers are some of the largest firms in their respective industries. For example, the list includes Chase Manhattan Bank, Citibank, and Chemical Bank, and, on the retail side, J. C. Penney and Sears, which is a joint venture with CBS and IBM. These firms are testing the market,

assessing the feasibility of offering home information products. The companies are major factors in their respective industries and they are at least interested enough to test the water. The early results are mixed, and their import is not clear to an outsider.

One thing, however, is quite obvious: home banking cannot stand alone. Offered in conjunction with a number of other home information services, it may in fact be viable. Table 9 shows the other types of home information services currently offered along with home banking.

Table 9. Services Frequently Offered

- I. Banking
 - Balance Inquiry
 - Bill Payment
 - Funds Transfer
 - Statements
 - Rate Information
 - Stop Payments
 - Messages for Bank Services
 - Loan Applications
 - Purchase Travelers Checks

- II. Other
 - Shopping
 - News
 - Advertising & Classified Ads
 - Weather
 - Electronic Mail
 - Sports
 - Games
 - Ticketing

SOURCE: Federal Reserve Bank of Atlanta, April 1984.

The larger banks are proceeding with their tests, as are the communications firms and system operators. The retailers, on the other hand, are showing mixed interest. J. C. Penney's experiment is no longer active, but Sears is just establishing a joint venture. The communications companies remain involved. Electronically supplying information, including banking information, to the home is a new business and evidently of major interest to some of the largest companies in the country.

Conclusion

This brief review of who the players were in April 1984 and what they were providing in the area of retail ATM, POS, and home banking systems indicates that retailers, system operators, communications companies, vendors, and data processors all are interested in providing some financial services that have traditionally been the province of banks. The roster of players is rapidly changing. The relevant question then seems to be: "Are banks in danger of losing at least a part of their traditional role in the payments area?" The race is on!