MAC -- Philadelphia National Bank's
Strategic Venture
In Shared ATM Networks

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Abstract

Philadelphia National Bank owns and operates MAC, the largest single-owner shared ATM network in the U.S. PNB recently acquired CashStream and Treasurer, MAC's remaining competitors; thus MAC is the only local ATM network in its core Pennsylvania and New Jersey marketplaces. However, structural characteristics of the ATM network business appear to limit the opportunity for predatory or monopoly pricing: MAC's users feel it makes fair, not excessive, profits from the network.

1. Introduction

Banks now view their Automatic Teller Machine (ATM) networks as a necessity. Their initial hopes for cost savings through staff reductions have not always been achieved, but ATMs have been adopted and are used regularly by a significant portion of their customers. In most major metropolitan communities, they are used by at least one third of the population, and often by the most profitable segment of the banks' customers. At some banks, they are used for over half of monthly transaction volume [6].

There is some evidence that it has been difficult to gain competitive advantage through ATM networks, which are easily replicated and have become almost a commodity service [1]. There have been claims made that Citibank in New York gained significant market share with its extensive proprietary network, which was introduced before competitors. Similarly, it is claimed that BayBanks in the Boston area gained competitive advantage with its well managed proprietary network and well selected ATM locations, capturing a significant portion of young, up-scale accounts. These claims, while plausible, are difficult to substantiate. Counter claims from Linda Fenner Zimmer, independent electronic banking industry expert, indicate that such advantage is rare\(^1\). ATM networks certainly appear to have become strategic necessities, both in the U.S. and abroad. As Kenneth Grossberg, Citibank Vice-President in Tokyo, states, "If you don't have ATMs you're not a [retail] bank in Japan." [12] What he did not add is that if you do have ATMs you're just like every other bank in Japan. Janet Hartung, Senior Vice President of Mellon Bank and Manager of Network Services, agrees that such systems are essential but have limited competitive benefits:

"Competitive impact? ATMs are very important, so you don't lose market share. But you don't capture share.\(^2\)

Moreover, ATM networks offer significant economies of scale to banks that provide them, and significant network externalities to customers who use them. These conditions argue for shared ATM networks, rather than proprietary networks for competitive advantage [5]. The reasoning behind this is straightforward:

- Necessities **must** be offered
- Where competitive advantage is unlikely, these necessities should be provided at the lowest possible cost consistent with the desired service levels
- Shared development and cooperative operations often produce significant reduction in development costs, and often provide the least expensive means of achieving a desired level of geographic coverage (i.e., network externalities can be exploited)

For a number of reasons, this position is not fully accepted; principal among them is a tradition of competition, based on cultural norms and regulatory policies in most western nations.

However, Philadelphia National Bank has the unique position as the provider of a shared ATM service to **all** other banks in eastern Pennsylvania. PNB's MAC is the only single owner shared network remaining among the ten largest ATM networks. We address the following questions:

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2. Background

2.1. Current Status of the MAC Network

Philadelphia National Bank plays two principal roles in MAC: as the network owner, and as the switch. It is responsible for overall network strategy, for system design and implementation, for network maintenance, for product development and enhancement, and for marketing and advertising. Member banks are not assessed charges to cover these expenses; rather, these costs are covered out of normal charges assessed banks on transaction services provided by MAC. A secondary role is the provider of consulting services to MAC West, a consortium of Pittsburgh area banks operating another shared ATM network that is integrated with MAC but not owned by PNB.

The largest competitor to MAC in the Philadelphia area was CashStream, another single owner shared ATM network, and after MAC by far the largest such network. Girard was acquired by Mellon Bank of Pittsburgh, and George evolved into CashStream in 1982. Recently, in January 1988, PNB acquired CashStream, and CashStream member institutions began to come on-line with MAC in March and April of this year.

Before acquisition of CashStream MAC was already the fifth largest shared ATM network in the United States in terms of monthly transaction volumes and the seventh largest in terms of installed ATM base. MAC served Pennsylvania, New Jersey, Delaware, and parts of New York. The network's banks had over 6 million cards outstanding at the end of 1986, and card holders performed an average of over 15 million transactions monthly. Interestingly, due to MAC's origin as a generic service, and to PNB's initial insistence that MAC perform the ATM processing for all member banks, MAC is the largest processor of switched and interchange ATM transactions of any shared network, with volumes 50% higher than any other network. The network included 337 member financial institutions, with 2,983 Money Access Centers.

Card holders can make withdrawals from savings or checking accounts at any member bank. Interstate banking laws impose some limitations on deposits; for example, while Pennsylvania and Delaware card holders can make deposits in machines in either state, New Jersey card holders can make deposits only in New Jersey machines. Withdrawals are, of course, the most common functions performed, accounting for nearly 75% of MAC transactions. Balance inquiries account for another 15%, and deposits, transfers, and credit card payments account for the remainder. There were another 2,675 MAC POS terminals; they perform direct debit of the purchaser's account, and transfer to the merchant's account, at the time a retail purchase is made.

After acquisition of Mellon's CashStream, and the conversion to MAC of those CashStream members that desired affiliation with MAC, MAC's numbers increased considerably. Even after rationalization, and the elimination of unnecessary machines, MAC will become the second largest ATM network in the U.S after NYCE in terms of transaction volumes, and the fourth largest in terms of ATM base. The acquisition produced a giant, with over 11 million card holders, over 500 member financial institutions, and over 4,200 ATM installations.

MAC provides three levels of service to member banks:

- turnkey
- authorization processor
- intercept processor

Turnkey service is most comprehensive. Smaller banks, with teller machines but no supporting network or ATM system software, require turnkey service; for these banks MAC provides validation of the card holder through personal identification number (PIN), authorization of requested service, and accounting of deposits made and withdrawals completed. At the other end of the service spectrum, intercept processors perform their own card holder identification and service request authorization. More significantly, us-on-us transactions, those of the bank's card holders on the bank's own ATMs, are processed and the accounting handled by the bank itself; these transactions are transparent to MAC, and MAC does not impose fees on the bank.

As noted above, MAC is unique as the only single owner system among the ten largest U.S. shared ATM networks. Additionally, it is the...
one of a very limited number of local networks that requires that those members not providing their own ATM management must use the ATM management services provided by MAC; MAC still drives over half of the ATMs connected to its network.

In the case of us-on-others and others-on-us transactions, inter-bank accounting for the funds deposited or withdrawn must be processed. That is, interbank transfers must be arranged to net out the difference between withdrawals and deposits made on one bank's machines by a second bank's card holders, and the withdrawals and deposits by the second bank's customers on the first bank's machines. MAC imposes two kinds of fees on member institutions. All transactions that use the MAC switch incur a switch fee; these include transactions on ATMs of banks for which MAC provides the ATM driving service, as well as interchange or on-others transactions in which the card used is from an institution other than the owner of the ATM. Switch fees decrease as volume increases, and range from 30 cents down to 6 cents; currently switch fees average 12.5 cents. Additionally, MAC imposes an interchange fee on all on-others transactions; these are actually transfer payments that MAC collects from the institution that issued the card used in the transaction and then pays to the institution that owns the ATM used. Interchange fees are set to reflect accurately the value of the service the use of another bank's ATM provides to the card issuing bank, which presumably needs fewer ATMs and less ATM servicing as a result of such use. Currently the fee for withdrawals and transfers is 30 cents, and the fee for deposits is 70 cents.

MAC does not provide physical ATM services like maintenance or cash restocking. Manufacturers or third parties provide the former, and armored car services can provide the latter.

2.2. Key Events in the Evolution of MAC

There were four key events in the evolution of ATM networks in Philadelphia:

- The introduction of George by Girard in 1976, and the apparent implications for retail banking
- PNB's decision to launch MAC as a shared ATM network, with itself occupying the position as owner and as switch
- Provident's decision to join a network, and its position as swing vote
- Mellon, which had acquired Girard, and its decision to sell its CashStream ATM network to PNB

3. Girard's George
Philadelphia's First ATM Network

Girard's 1976 deposits of $2.35 billion and assets of $2.83 billion ranked it third among Philadelphia banks, behind First Pennsylvania and Philadelphia National Bank. However, it had the strongest retail presence, and its name -- dating back to an influential financier and supporter of the Revolution -- gave it great visibility among consumers. Girard experimented early with ATMs for retail banking, and had installed a very limited number of machines in 1975.

Girard clearly believed that a bold move with ATM introduction would give it a competitive advantage among retail banks in Philadelphia. Its George ATM network was the first widespread use of teller machines in Philadelphia, and these were aggressively placed for maximum impact. The launch of George was marked by an extensive and very effective marketing campaign: Center City Philadelphia was covered with billboards for George, creating an air of anticipation before George was announced. This campaign produced great marketplace visibility, and perhaps a market share gain. Since competitive advantage was anticipated, Girard's George was a closed network, and no other banks were invited or allowed to participate, or to share machines or transactions. The ATM strategy played to Girard's existing strength in retail banking. Moreover, it expected any advantage from ATMs to be sustainable. Thus, the strategy of maintaining George as a proprietary offering continued, even as PNB's competing shared network began to grow and to exceed George in ATM coverage and market acceptance.

4. The Formation of MAC

4.1. PNB's Decision to Launch MAC

At the time MAC was launched, Philadelphia National Bank was the second largest bank in Philadelphia, after First Pennsylvania. In 1977 its deposits of $3.34 billion, assets of $4.71 billion, and net income of $24.1 million placed it slightly ahead of Girard and Fidelity, and significantly ahead of Provident. Although it was a strong player in commercial and wholesale banking, its retail presence was quite minor. Like Girard, it had experimented with ATMs, and had a few machines installed by 1975.

In 1977 a marketing research study by PNB indicated two principal complaints among banking customers: teller lines, and the desire for more extensive banking hours and for after-hours access to their accounts. Moreover,
Philadelphia was still a largely cash-based society, with the monthly number of checks per account substantially below the national average. A comprehensive strategic plan was developed, focusing on EFT, ATMs, POS, and other retail banking services. Some additional pressure for this study no doubt came as a result of Girard’s George, and the perception that George could eventually erode PNB’s market share. The results of this study were a major factor in the decision to launch MAC.

Douglas Anderson, Executive Vice President of Core States Financial Corp, notes that MAC was always intended to be a premier, meaningful ATM offering. Anderson believed that to be meaningful:

"The network would require enough ATMs to be relevant, to significantly affect most of PNB’s retail banking customers. It would require enough ATMs to justify aggressive marketing. And the system would have to be on line, with access to real time account balances, so that member banks would feel comfortable offering card.

These requirements were seen to be incompatible with a proprietary ATM offering from PNB; retail operations at PNB lacked the scale, and the resources, to justify such a network. As Anderson explains:

"We found the bottom line implications of an aggressive proprietary offering unattractive, and realized that there had to be other banks in the same boat. This was the genesis of MAC."

There were two alternatives to reduce cost while meeting PNB’s very demanding requirements for retail service delivery: to reduce cost by shared development of a multiple owner, consortium ATM network, or to reduce final cost to PNB by developing the type of network PNB desired and aggressively marketing it to other Philadelphia area banks. The second alternative, marketing of services, was seen to have better "up-side" potential. Moreover, the consortium development appeared very difficult to coordinate. No more detailed formal analysis was done, and the decision to launch and market a single owner network was made in 1978.

PNB then proceeded to do its homework very thoroughly. Costs and benefits were estimated. An 18 page contract was prepared, including consumer marketing services, and regulatory problems were resolved, before a single potential member bank was approached. MAC was billed as a generic service "from day one," with all participating banks including PNB displaying identical advertising signs, and all receiving identical service. Thirteen banks originally chose to participate, and MAC was rapidly viable. The network went live in 1979.

4.2. Fidelity Bank’s Decision to Join MAC

Fidelity Bank was one of the earliest major Philadelphia area banks to join MAC. Fidelity was well balanced between retail and commercial banking, and was a major player in Philadelphia banking, with deposits in 1977 of $2.56 billion, assets of $3.12 billion, and net income of $12.9 million. However, at the time that Fidelity was offered membership in MAC the bank was in extremely poor shape financially, having taken losses in 1978 of 13.3 million dollars, slightly larger than the previous year’s earnings. Joining MAC was a way to demonstrate to their existing customers, and to the rest of the market, that they were still able to match offerings and to compete effectively.

4.3. Germantown Savings Bank’s Decision to Join MAC

Germantown Savings Bank (GSB), though small, has always been a technologically aggressive bank. GSB is a solid second tier Philadelphia bank, with 1977 deposits and assets slightly in excess of $1 billion and market share ranking approximately at the midpoint of the area’s retail banking operations. They were the first bank in Philadelphia to provide on-line real-time service between branches, and the first bank in the city to offer pay-by-phone services. They recognized the potential of information technology early, and when Girard launched George were immediately concerned about its possible impact on their market share.

Early analyses concluded that GSB lacked the resources to develop a system to compete with George, and the initial requirements were too great, given the uncertain payback. They hoped to wait until it was possible to join a shared ownership consortium, but when the opportunity to join MAC arose they took it on defensive grounds. A simple explanation was given for joining MAC; GSB had to obtain an ATM capability.

"We entered the market as a defensive measure; it was purely defensive on our
They believed that it would be necessary to offer ATMs to remain competitive in Philadelphia. It was clear that PNB had made a long term commitment to develop MAC and to maintain it as a truly generic multi-bank offering despite its sole ownership.

5. Provident National Bank as Swing Vote in Network Consolidation

Provident National Bank, now part of Pittsburgh-based PNC Financial, is aggressively managed, provides differentiated quality retail service, and is quite profitable; PNC's figures are the best among the fifteen largest U.S. bank holding companies. In 1977, however, Provident was substantially smaller, with deposits of $1.42 billion, assets of $1.80 billion, and net income of $8 million. Provident was well balanced between retail and commercial operations. Like other major banks with retail operations, Provident had experimented with ATMs.

Though substantially smaller than Fidelity at the time of Girard's introduction of George, its better profitability in 1977 enabled Provident to respond independently, without joining MAC. Provident therefore launched its own ATM network, called Bank II. Ultimately, though, competitive pressures forced Provident to ally itself with a larger network. Unlike the earlier members of MAC, who were responding to the threat posed by Girard, Provident in large measure probably was responding to pressure caused by the success of MAC. Although Provident's ATM base of approximately 80 Bank II machines made it the largest independent network in Philadelphia in 1982, it could not match MAC's installed base at the time of over 400 ATMs, and thus could not provide its customers with the same level of ATM coverage as MAC member banks could. It was clear that ultimately Provident would be forced to affiliate with an existing network.

By the time Provident decided to join a network several options were available. Girard had been acquired by Mellon, and George had become CashStream and now also was accepting additional member banks. However, Provident itself became part of PNC Financial in 1984; Pittsburgh National, owned by the same holding company, was a co-owner of MAC West, and perhaps this tipped the scale in MAC's favor. In 1985 Provident joined MAC, and ultimately provided the additional ATMs and card holder to make MAC the dominant network in the region.

8 Austin P. Kelly Jr., Executive Vice President, Germantown Savings Bank, interview 1 June 1988.

6. Mellon's Sale of CashStream: Completion of MAC Consolidation

While MAC was the largest single owner shared network, interestingly, its major Pennsylvania competitor, CashStream, was after MAC the largest single owner shared network. CashStream was owned by Mellon, which had bought Girard, incorporated its George System, and allowed other banks to participate in its network. CashStream's George component was slightly older than MAC and CashStream itself was only slightly smaller in terms of member institutions, card holders and installed ATMs. While MAC was the market leader in Philadelphia, eastern Pennsylvania, and southern New Jersey, CashStream was clearly the dominant network in Pittsburgh.

Mellon's ATM operations had three principal thrusts:

- owner and operator of CashStream, a shared ATM network serving a five state area including Pennsylvania, New Jersey, Delaware, Maryland and parts of West Virginia
- operator of CashStream nationally as a gateway to other networks (Mellon currently provides interconnect service to over 20 networks)
- provider of a third party "ATM driver service," which sells ATM management capabilities that very rapidly enable any bank to gain processing capability that appears very similar to that of a MAC intercept processor (While Mellon never insisted that its CashStream customers use its ATM driver service, Mellon has developed a very competitive position in this industry and still provides this service to over 300 banks nationally)

Only the first portion -- the CashStream shared ATM network in the five state region -- was sold to MAC. While Mellon does not use the CashStream logo in the five state region, it still provides gateway services. And, as Janet Hartung, Mellon Senior Vice President and Manager of Network Services, explained, "We don't care what network you belong to. We'll drive your machines. We don't care what signs you put on them." When Mellon left the local network business its CashStream customers were given the option to join MAC, and except for some small West Virginia banks that selected OWL most chose to do so.

Mellon appears to have sold CashStream for several business reasons:

- The consolidation was good for the retail delivery systems of all CashStream banks, including Mellon
- Mellon does not want to remain in the business of running a shared local ATM network
established after members have independently adopted and installed an innovation

哺 Servicer operations, in which a single player, either inside the industry or as an outside provider, sells services to numerous industry participants. This may yield economies of scale to the servicer and network externalities to customers

No doubt there are several factors that influence which of the four forms of rationalization an industry will undergo. Three seem to be especially important:

哺 Symmetry among principal industry participants -- the degree to which players within the industry have similar resources and strategies

哺 Significance of entry barriers -- barriers that restrict a company from entering the industry, and limit the ability of companies already in the industry to offer the product or service

哺 Timing considerations, including competitor awareness of the importance of the product or service to competitive position within the industry at the time of its introduction

Thus, for drug distribution, where the cost of a system for customer order entry, distribution management, and customer information systems support posed significant barriers to entry, and where the initial distribution of power within the industry had four or five large players and over a hundred and fifty much smaller ones, rationalization was through consolidation. In the decade since the introduction of computerized systems for drug wholesalers, the number of participants in the industry has been reduced by over 50% [4]. In contrast, in retail banking the cost of ATM management systems is much lower, and the presence of third party providers of ATM management software significantly reduces entry barriers; thus, we would not expect significant consolidation to result from the introduction of this technology.

The emergence of MAC as a servicer network, unique among the major shared ATM systems, seems to be explainable largely as a result of competitor awareness: at the time that MAC was being established, the critical importance of ATMs in retail distribution of banking services was not fully apparent; otherwise, consortium development may have been preferred. Similarly, the emergence of American Airline's Sabre and United's Apollo as servicer providers of computerized travel agent reservation systems to the airline industry probably would not have occurred if competitors realized how seriously disadvantaged they could be with their distribution channel firmly in the hands of two major industry participants.

Finally, two factors appear to determine the stability of the rationalized industry structure and its profitability:

哺 Customer Exit barriers, which determine how difficult it is to leave a coalition or consortium, and how credible a threat to defect will appear

哺 Control of complementary assets, as described by Teece [11]

High exit barriers, whether due to legal contractual obligations or to the high cost of duplicating the offering will increase the strength and stability of the consortium, coalition, or servicer organization. Probably the most important complementary asset is control of the customer contact; the party that can exercise this control enjoys considerable power.

In ATM networks, exit barriers are not great. Major players already are intercept processors, and could continue to operate without participation in local shared networks. While leaving a network would no doubt reduce the network externalities provided by shared access to other institutions' ATMs, factors like excessive prices that caused one player to leave would no doubt result in multiple defections; these defectors could readily form a competing coalition and interconnect their ATMs. Smaller banks also have the opportunity to defect, to use one of several third party ATM servicers in a competitive industry, and to seek direct connection to one of the major national networks like Cirrus or Plus. Moreover, control of a customer contact is still with the banks and not with the network servicers. Thus we would expect that servicer organizations like MAC will evolve to look more and more like consortia. Indeed, MAC's pricing options are limited, and MAC has recently introduced an advisory council, much like a consortium's.

In contrast, travel agent reservation systems appear to be much more powerful and more stable servicer organizations. Contractual obligations impose a serious financial penalty on travel agencies that defect, only one of several exit barriers that to date have left most major agencies affiliated with Sabre or Apollo. Most significantly, Sabre and Apollo control access to their travel agencies, and thus to the ultimate traveler; the airlines listed in their travel agent reservation systems do not. Technical complexity and system cost are no longer insurmountable obstacles to competitors; TWA/Northwest and Texas Air now offer competing systems. But an airline that removes its flight listings and drops out of Sabre or Apollo will do itself more damage through lost passenger revenues than it will do to American or United through reduced booking fees: until a significant number of travel agencies use TWA's PARS, TWA will remain dependent upon the two major reservation systems, and can expect to continue paying tens of millions of dollars to these systems annually. Of course, the value of Sabre and Apollo to travel agencies is in large
o PNB wants to be in this business, and increasing its strength and market share are essential aspects of its strategy.

CashStream's customers wanted the sale to go forward. Currently, with MAC and CashStream machines side-by-side in popular locations, there are more ATMs in Pennsylvania than necessary; the consolidation of the two networks should allow banks to reduce the number of installed ATMs without reducing customer service. Economies will arise in advertising, and customers will enjoy greater coverage and simplicity in identifying an eligible ATM.

Bonnie E. Hill, Senior Vice President of CoreStates, the holding company that owns PNB, disputed claims that CashStream had lost the marketing war.

"We don't see this as a win-lose situation. It's good for all the parties -- both networks, bank participants, and, ultimately, consumers."

Mellon's Janet Hartung concurred, referring to the sale as a "clear win-win-win-win situation," yielding benefits for network owners, for participating banks, for merchants considering POS terminals, and for retail banking customers.

However, Mellon sees a very limited upside to managing local ATM networks, and believes that consolidation is the least exciting part of the business. As Janet Hartung explains,

"It was very important to MAC to be in the network business. It was much less important to Mellon."

MAC obviously intends to remain in this business, and to be one of the survivors among the local networks. Thus, its strategy appears to be geared at developing critical mass now: It is unique among local networks in that it does not share transactions with other networks in its region, placing pressure on customers of smaller networks to defect. And it is exploiting this pressure, buying up networks to increase market share. With the acquisition of CashStream from Mellon, and the recently announced acquisition of Treasurer in New Jersey, its consolidation in Pennsylvania and New Jersey appears complete. Moreover, the addition of the Treasurer's institutions and their installed ATMs will be sufficient to place MAC among the three largest ATM network in the U.S. in terms of number of installed ATMs, and to solidify its ranking as second largest in terms of total monthly transaction volume.

7. Competitive Implications of ATM Service in Philadelphia

Everyone we spoke to considered ATMs a necessary part of doing business as a retail bank in Philadelphia. And no one felt that his bank had gained market share by joining MAC. Austin Kelly of GSB summarized this most succinctly:

"Competitive advantage or increased market share from ATMs? No way!"

Such statements are very difficult to verify, since numerous factors can influence the relative competitive position of a bank, and it is difficult to attribute a single cause to a change in position; still, we find this more plausible than claims of competitive advantage. In fact, this is fully consistent with MAC's stated intentions: From the beginning all members of MAC had parity with each other. This parity, and the generic nature of MAC, are reflected in MAC's interchange statistics, a measure of cardholders' use of other banks' machines. Less than half of MAC transactions are us-on-us; 56% are interchange transactions. MAC cardholders are by far the greatest users of other banks' ATMs, supporting Anderson's claim that cardholders do not view MAC as a service primarily tied to their banking institution. Early members of MAC claimed to have joined as a defensive move, to meet the threat posed by Girard, or by other large banks' ATM networks. In time MAC more than matched George, and the CashStream system that followed it, becoming the largest and most widely used network in its region; it easily dominated the ATM coverage available to independent financial institutions. But PNB did not intend for this to be exploited by MAC members in their competition with other retail banks; rather, it provided leverage to bring the rest of the banking community into MAC.

8. Conclusions

8.1. Analysis of MAC

Why was PNB able to succeed with MAC? And why are there no other shared ATM networks with a single owner? Timing is probably the key factor here. Fortuitously, financial problems at Fidelity Bank, and later at First Pennsylvania, limited their ability to respond institutions joining MAC will be able to offer retail customers greater convenience. And, as Paul Levine, a spokesman for First Fidelity, indicated, "We're dealing here with how you deliver service to your customers. Convenience is the final issue."
works like NYCE in New York, MAC members were willing to have ATM service in the hands of a competitor. By the time later members of MAC like Provident had joined, the critical nature of ATM service had become evident; this is probably why Provident insisted on entering as an intercept processor, to retain some control over this key service.

Additionally, PNB's strategic positioning within the Philadelphia banking market was probably a factor. PNB enjoyed a good reputation for professionalism -- "a banker's bank." It seemed likely that MAC could succeed. And PNB, although strong in commercial banking, was not seen as a threat to other banks' retail customer base.

Is MAC a stable business relationship among competing retail banks? We believe that it is, as long as MAC's service to all members continues to be seen as comparable to the service it provides to PNB, and as long as MAC's charges to members remain reasonable. Still, Provident and Mellon already are intercept processors, and Fidelity is becoming one, greatly reducing exit barriers if they choose to leave the network; if MAC becomes exploitive, an alternative coalition of independent intercept processors, or a shared ownership consortium can readily be formed. Some MAC members want to see MAC evolve into a shared ownership network, and would consider defecting if a competing shared network were formed. Even the threat of this limits PNB's pricing options.

Were PNB's objectives for MAC achieved? Is MAC profitable for PNB? Some objectives clearly were met: the threat from Girard was countered, and PNB was able to offer premier ATM service to its own retail customers, at a cost that it found manageable. The profitability of MAC is more difficult to judge, since MAC profits are not listed separately in public reports. The informal assessment, by MAC officers and senior officers of participating member banks is that MAC now appears to be moderately profitable, but not wildly so, and that current profits are deserved. PNB continues to put money into advertising, service enhancement, and new product development. The "trough" during which MAC revenues failed to cover PNB expenses, continued longer than expected, and positive payback began later than expected. Thus, while MAC is now the only game in town, PNB's current level of profits from MAC are seen as fair, given the investment made and the risk assumed. In fact, the near unanimity among MAC members in this assessment is striking: PNB is seen as having made a sound business decision, accepting the risk and sticking with the venture, continuing its investment, and mastering its execution as a network provider. Kelly at GSB sounded most upbeat:

"They put the right guy on it and stayed with it. They took the risk. My hat's off to them."

Still, members appear wary of MAC's new strength; the reduction of exit barriers for member banks that may wish to leave the network limits prices that can now be charged, and MAC's members are watching carefully to see that prices remain acceptable and service levels uniform among network members.

8.2. Generalization to other Shared Services

In environments where some expensive service is demanded by the market place and must be offered, but where competitive advantage from this service is limited, it is reasonable to expect some form of rationalization in the development or management of the offering to control costs throughout the industry. There are two principal forces leading to industry rationalization:

- **Economies of scale or scope**, in which average costs decrease simply as the size of operations increases
- **Network externalities**, in which costs decrease as the number of participants increases, because each participant needs to provide fewer installations or facilities to achieve the same level of coverage or service to customers

Such industry rationalization can assume at least four different forms:

- **Consolidation**, in which the larger players, enjoying the advantages their size provides, earn larger profits and drive out or acquire smaller competitors, reducing the number of companies in the industry
- **Consortium** operations, with shared development, operation, and ownership, in which many players cooperate to gain the advantages offered by consolidation, but without losing their separate ownership of their core businesses.
- **Coalition** formation, in which independent parties cooperate in the operation of their separate systems, gaining scale economies in their operation but not necessarily in their development. Coalitions are usually es-

10 A similar classification, with slightly different definitions of the terms, is offered by Michael Sager in his study of Australian retail banking services [10].
measure due to the fact that all major airlines are listed, and a sufficient number of airline defections would loosen their grip over travel agencies. But such coordinated industry action, while perhaps ultimately inevitable, appears remote at this time.

8.3. Predictions for the Structure of ATM Networks

It appears that the expected outcome under today's technology is a limited number of ATM networks, perhaps a single dominant network, in each major community. MAC's acquisition of CashStream, leaving Philadelphia with one shared network, is not unprecedented, and the benefits of such mergers should make them increasingly common. However, past a certain point, both scale economies and network externalities diminish; thus neither a single local network nor a single national interconnection network is inevitable. Moreover, as the cost of acquiring ATM software decreases, reducing the entry barriers, more banks will have the option of becoming independent network operators, loosely federated through interconnection of their networks; this may render single owner networks unstable, increasing the trend to shared ownership. These shared networks will then form national coalitions, offering their card holders access to their accounts anywhere in the country. All cards will be equivalent, and ATMs will fully be a commodity service.

9. References


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