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## The Emerging Role of Banks in E-Commerce

*John Wenninger*

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*How is the banking industry responding to the rapid development of on-line commerce? Evidence suggests that many banks are beginning to deliver credit and deposit products electronically. In addition, some large banks are developing products designed exclusively for e-commerce. As banks venture into the electronic arena, however, they are finding that new opportunities bring new operational and strategic risks.*

Many companies are embracing “e-commerce,” or business conducted on-line over computer networks, as a means of expanding markets, improving customer service, reducing costs, and enhancing productivity.<sup>1</sup> Companies have traditionally used computers to manage their product and customer data. Now, however, advances in networking technology have enabled firms to streamline their transactions with suppliers, distributors, and retailers through the electronic exchange of information.

Like other companies, banks are taking steps to expand the use of networking technology in their business operations. For these institutions, however, the advent of electronic commerce poses questions as well as opportunities. Will the role of banks in e-commerce basically mirror their role in traditional commerce? Or will banks offer new products that will change the nature of the banking business as e-commerce expands? What risks might accompany such a shift in banks’ traditional business?

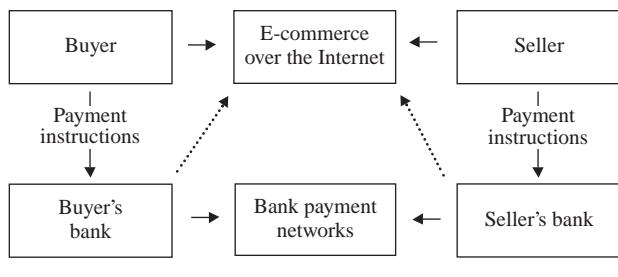
In this edition of *Current Issues*, we explore the possible implications of e-commerce for banks’ business activities. We find that banks are beginning to use the Internet to deliver traditional banking products in more efficient ways. In addition, we report that some banks have taken the further step of developing new products designed specifically to facilitate e-commerce participation by their customers.

Our analysis of banks’ entry into e-commerce includes a look at the strategic and operational risks banks may face in this arena. E-commerce will create new forms of competition and compel banks to make choices about the services they offer, the size of their branch networks, and the extent of their support for interbank payment networks. Participation in e-commerce will also increase banks’ exposure to technological problems. Banks’ success in coping with such challenges will help determine the scale of their influence in the electronic marketplace.

### Advantages of E-Commerce for Banks

Banks have an important reason to pursue the conduct of business on-line.<sup>2</sup> If they fail to respond to the opportunities posed by the Internet, they could be consigned to a largely secondary role as commerce shifts toward electronics over time. In that event, they would process payments for buyers and sellers engaged in e-commerce (Figure 1, solid lines), but they would have little chance to engage independently with buyers and sellers or to offer their own products in the electronic marketplace. By contrast, if banks do establish a presence on the Internet (Figure 1, dotted lines), they should be in a position both to market traditional banking products more efficiently and to develop and sell new products sought by e-commerce participants.

Figure 1  
Role of Banks in E-Commerce



### Banks' Changing Response to E-Commerce

A review of the banking industry's response to on-line commerce suggests that even as recently as five years ago, banks' involvement with the Internet was quite limited. A bank might set up a web site to provide consumers with information about its services. Actual banking transactions, however, still took place at the branch, through the mail, by telephone, or over the automated teller machine (ATM) network.

In the last few years, however, many banks have begun to use the Internet as a supplementary channel for delivering traditional products to consumers and businesses. Some banks are also investigating how they might expand their current service offerings to include some products designed exclusively for e-commerce.<sup>3</sup> In the remainder of this section, we describe both types of initiatives and the benefits they may bring to banks and their customers.

### Electronic Delivery of Traditional Banking Products

Many banks have established transactional web sites where individuals and businesses can perform many basic banking functions such as checking balances, transferring funds, or applying for credit cards. Small businesses can apply for loans, initiate wire transfers, and take advantage of cash management and payroll services.<sup>4</sup> When limited to such services, these web sites function as another access channel for basic banking services—one that is not all that different from the branch networks or telephone centers maintained by banks except that customers use personal computers and the Internet to communicate with their banks.

The transactional web sites offer banks and their customers notable advantages. Customers are attracted by the convenience of this access channel, while banks welcome the cost savings that arise when customers perform the transactions themselves rather than dealing with a bank representative at a teller window or over the phone. A recent estimate suggests that between 6 million and 7 million consumers are banking on-line, with high rates of new users interested in this service (*Microbanker* 1999).

### Development of E-Commerce Products

Banks are designing and deploying a range of new e-commerce products. If the products described below prove successful, the basic business mix of banking is likely to change. Banks may increasingly function as facilitators of on-line commerce and see a decline in their long-standing role as financial intermediaries.

**Establishing Internet Portals.** A number of banks are planning to participate in special Internet portals, "supersites" where many sellers will display their product offerings and large numbers of buyers will visit.<sup>5</sup> Some of these portals will feature a broad range of financial and nonfinancial product offerings; others will limit their offerings to financial services.

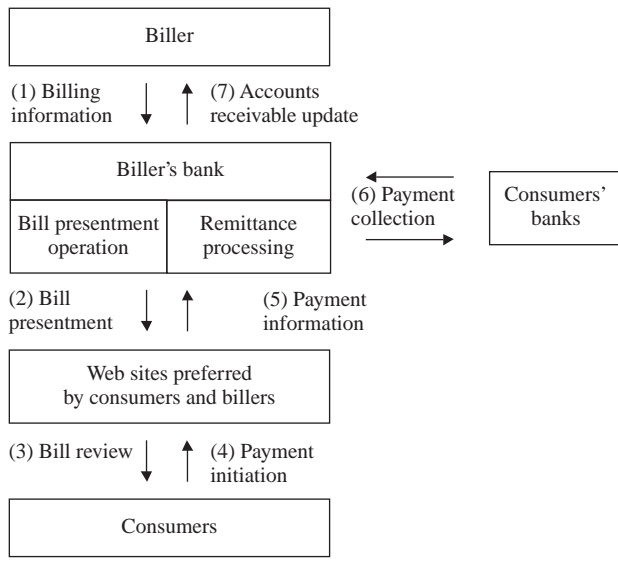
**Verifying Identities.** Banks are also planning to offer a product that would protect e-commerce participants against fraud arising from the misrepresentation of identities.<sup>6</sup> Using encryption technology, each bank would certify the identities of its own account holders and serve as the intermediary through which its account holders could verify the identities of account holders at other banks. In this way, both sides of an e-commerce transaction would have some assurance that they were not dealing with an impostor.

**Assisting Small-Business Entries into E-Commerce.** Another effort being undertaken by some banks involves helping smaller firms set up the infrastructure—interactive web site and payment capabilities—for engaging in e-commerce. In addition, a few banks are offering small businesses electronic procurement services, including the negotiation of volume discounts from vendors (Wilder 1999; Dalton 1999).

**Electronic Billing.** Electronic bill presentment and collection services are being developed as an enhancement to the existing cash management and remittance-processing services offered by banks to large companies that send out substantial volumes of recurring bills. In this effort, banks will combine the e-mail capability of the Internet to send out bills with their own ability to process payments electronically through the interbank payment networks.

Figure 2 illustrates how this cash management service would work.<sup>7</sup> First, the biller sends its bank an electronic file containing its monthly bills. The bank then distributes the bills electronically to web sites selected by the biller and consumers. Consumers review the bills on a web site and initiate payment by clicking on a special icon. Finally, the bank collects the funds electronically and updates the biller's accounts receivable. The entire billing and payment cycle is conducted electronically, without resort to paper documents of any kind.

**Figure 2**  
**E-Billing: Bank-Operated Cash Management Model**



**Facilitating Business-to-Business E-Commerce.** A few of the largest commercial banks have begun to offer firms the technology for electronic business-to-business commerce. These banks are essentially undertaking to automate the entire information flow associated with the procurement and distribution of goods and services among businesses.<sup>8</sup> From the banks' perspective, this service is a natural extension of the automated cash management services they already provide to large corporations.

**Issuing Electronic Money and Electronic Checks.** Two e-commerce products still in the planning stage are electronic money and electronic checks. As more computers become equipped with "smart card" readers, banks are considering issuing electronic money that could be stored on these cards and spent over the Internet. In addition, a banking technology organization is working with the U.S. Treasury and some banks to test an electronic version of a paper check. The check could be sent over the Internet from a buyer to a seller, electronically endorsed by the seller, and then forwarded on-line to the seller's bank for electronic collection from the buyer's bank.<sup>9</sup>

**Integrating the ATM and Internet Networks.** Some technology companies and a banking technology group are exploring the feasibility of allowing access to the Internet and to bank web sites from ATMs. If the integration of these two networks can be accomplished, consumers should be able to use ATMs to engage in e-commerce or to conduct their banking in the flexible environment of their bank's web site.<sup>10</sup>

In offering e-commerce products, banks have some key advantages over potential competitors. The public is likely to value the "brand names" of banks and to see these institutions as trustworthy third parties enjoying established account relationships with consumers and businesses. Moreover, if banks are sought out as vendors of e-commerce products, they may see some gains in their other lines of business. E-commerce would create opportunities for banks to strengthen their relationships with customers, sell additional services, and prevent encroachment on their business activities by the technology companies and other nonbank financial service providers active in e-commerce.

**Risk Implications**

Although banks stand to gain from e-commerce involvement, they will also face some significant new risks. Some of these risks are strategic—that is, banks may be unable to adapt successfully to the changes in the business environment created by e-commerce. Others are operational—meaning that the computers and network technology that support e-commerce could malfunction.<sup>11</sup>

**Strategic Risk**

E-commerce will surely transform the competitive landscape in banking and finance. One danger for banks is that they will be caught off guard by the changes, unable to anticipate new forms of competition or to respond to them in an appropriate way. We term this possibility *strategic competitive risk*.

Consider, for example, the challenge posed by the emergence of banks that operate exclusively on the Internet. Such banks will come to the electronic marketplace unencumbered by the need to support a costly branch network.<sup>12</sup> As a consequence, these Internet-only banks can offer attractive deposit and loan rates and perhaps waive many of the fees routinely charged by banks with large branch networks.<sup>13</sup> Similarly, on-line financial service providers such as mutual funds or discount brokers may expand their product offerings to include some traditional banking products. Operating free of branch networks, these providers may also offer very competitive rates on credit cards and transactions accounts.

Because the potential for Internet-only banking is still unknown, banks run the risk of under- or overreacting to these new sources of competition. A few large banks have chosen to create banking subsidiaries that operate primarily on the Internet and compete directly with the other on-line providers of financial services.<sup>14</sup> But these banks may find themselves spending large amounts of money on an approach to banking that never becomes

truly popular with consumers. Conversely, banks that are too slow to compete may find that they lose customers to their on-line rivals.

Banks will also have to respond to new competitive pressures created by nonbank firms that function as information aggregators in the electronic marketplace. These firms offer a search service, pricing similar products across a large number of competing institutions and making their findings available on-line. Hence, consumers seeking the most favorable rates on credit cards, deposits, and mortgages can obtain this information quickly over the Internet. Electronic comparison-shopping will reduce the geographic barriers to finding the best terms on banking products, depriving banks of market power in local regions.

In reaction to this development, banks have sought to retain customers by adopting a strategy of bundling products to fit individual preferences. While the information aggregators effectively transform banking products into commodities, making price the paramount consideration, banks are cultivating relationships with their customers and tailoring their services to meet their customers' needs. By persuading customers to purchase a range of financial products, banks bind their customers to them and create an opportunity to offer new services (such as financial planning) at different stages in their customers' life cycles.

However, this bundling approach has an important drawback: the need to gather and monitor data on customers' preferences raises privacy concerns. Potential customers may be reluctant to divulge information that banks could pass on to other business firms.

Another area of exposure for banks might be called *strategic adjustment risk*—the possibility that banks will misjudge the degree to which electronic banking will supercede more traditional forms of banking. At this time, it is not clear whether on-line banking will supplement the existing “brick and mortar” branch networks or substantially replace them. Certainly, there is considerable disagreement within the industry about the course that banking will take. Some argue that banks serve their customers best by giving them easy access to all the available banking channels—the “click *and* mortar” approach. Others contend that maintaining duplicate access channels is too costly and that branch networks should be sharply reduced as electronic channels gain acceptance.

Ultimately, customer preferences and competition will determine which approach will dominate. But whatever the final outcome, banks will have to make many interim decisions as they adjust to the growth of the electronic marketplace. They may choose to scale back the number of their branches, to locate smaller and

more efficient branches in large retail outlets such as supermarkets, or to find additional uses for existing branches. They will also have to decide whether it is better to expand geographically through mergers—a strategy that generates increased numbers of both branches and customers—or to expand their customer base by providing nationwide Internet access to banking products and e-commerce capabilities.<sup>15</sup> Large banks enjoying national brand name recognition and a national customer pool in credit cards or another product might pursue the Internet strategy because a partial relationship already exists with many potential full-service customers.

Much is at stake in the choices that banks make. If banks adjust the size and scope of their branch networks too quickly or dramatically, they run the risk of alienating those segments of their customer base that are not ready to rely fully on electronic banking.

Adjustment risks will also arise as banks adapt to changes affecting interbank networks. The development of electronic money, electronic checks, and electronic bill presentment, along with the increased ability to initiate electronic payments over automated clearinghouse and Fedwire systems from personal computers, could significantly reduce the use of cash, paper checks, and even credit cards. The consequent shift in the relative volumes of payment instruments may prompt banks to reconsider their support of the existing paper check clearing network and the ATM and credit card networks. Although in the past, new payment instruments and technology have often been added without making existing ones obsolete, the strategic question banks face is whether the outcome could differ this time around. If one or more of these networks do become redundant, banks will have to decide how extensively they will invest in networks and technology that may not be viable long enough to permit a full recovery of their investment.

### **Operational Risk**

Banks' entry into the electronic marketplace brings with it increased exposure to technological failure. The success of banks' efforts to market products over the Internet will depend on the continued smooth functioning of their computers and the underlying computer network. If individual computers fail, causing customers inconvenience, the reputations of individual banks may be damaged; if the network fails, a large amount of business may be lost. Banks could also suffer financial losses if hackers entered fraudulent transactions that compromised bank systems, forcing the institutions to shut their systems down.

One strategy often thought to minimize banks' operational risk is the outsourcing of e-commerce systems to third-party vendors. This strategy frees banks from

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much of the responsibility for system maintenance and system breakdowns and presumably leads to cost savings through economies of scale.<sup>16</sup> However, banks that outsource their systems give up a certain amount of control over security and other critical aspects of system management. In addition, if a large number of banks outsource their e-commerce systems to the same vendor, an operational problem at this vendor could have a pervasive effect on the ability of banks to engage in e-commerce.

### **Risk Management**

To manage strategic and operational risks effectively, banks will develop information systems to monitor the financial exposure resulting from their involvement in e-commerce. On the wholesale side, banks have made advances in setting up risk management systems that model how much value is at risk under alternative assumptions about interest rates, the relative values of financial instruments, and other market conditions. With e-commerce, placing a dollar value on the exposure associated with strategic and operational risks is more difficult—particularly if legal as well as regulatory action is required to resolve any problems that might arise. In addition, e-commerce is still a relatively new phenomenon without a long history of results from which to formulate expectations about risk.

Banks do have considerable experience, however, in managing certain aspects of operational risk. For example, if banks draw on their experience with wholesale payments systems, they will establish back-up computer systems for their on-line activities. These systems will be located at remote contingency sites that do not rely on the same infrastructure support as the primary site. Furthermore, in monitoring e-commerce systems and transactions for evidence of tampering or fraudulent activities, banks might look to the technology they use in checking credit card transactions for unusual patterns that could indicate a lost or stolen card.

The way in which banks manage the risks associated with e-commerce will clearly be of interest to bank supervisors. The U. S. Comptroller of the Currency (1999) has published a handbook on Internet banking for national bank examiners, and the Federal Deposit Insurance Corporation (1999) has issued a letter addressing system security issues. Both documents cite the growing importance of Internet banking as a reason for increased supervisory interest, and both review the risk issues, especially the information security issue, in much more detail than can be presented here.

### **Conclusion**

How are banks responding to the opportunities created by the rise of on-line commerce? Many banks have already

put in place a cost-efficient electronic access channel for traditional banking products. In addition, a number of banks are planning to offer new products designed specifically for e-commerce. If these initiatives are widely adopted within the industry, the composition of banks' business activities will change. Indeed, banks may increasingly act as e-commerce facilitators while their long-standing business lines decline in importance. Such a change would probably prompt banks to scale back the size or alter the scope of their branch networks and to devote more resources to the development and maintenance of computer networks and software. The precise role that banks ultimately play in e-commerce, however, will depend in large part on how well they manage the strategic and operational risks associated with doing business in the electronic marketplace.

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### **Notes**

1. See Wenninger (1999).
2. In this article, the term "banks" principally refers to the twenty-five largest U.S. banks—a group that collectively holds more than 50 percent of total banking assets.
3. Many of the large banks are developing on-line banking and e-commerce services through their participation in industry technology consortiums such as the American Bankers Association's ABAECOM, the Financial Services Roundtable's Banking Industry Technology Secretariat (BITS), the Financial Services Technology Consortium (FSTC), the National Automated Clearing House Association (NACHA), and Integrion Financial Network. A survey of the e-commerce activities of several large banks can be found in Morgan Stanley Dean Witter (1999). Additional information can be found in Furst, Lang, and Nolle (1998) and Eglund, Furst, Nolle, and Robertson (1998).
4. Large businesses, using private computer networks, have had electronic access to their banks for several years. Now, however, the Internet has the potential to lower the cost of electronic access to a point where consumers and small businesses can also take advantage of this delivery channel for banking services.
5. For more information, see Senior (1999a).
6. See Buckley (1998) and the Internet Council of the National Automated Clearing House Association (1999).
7. Chart 2 illustrates just one approach to electronic bill presentation; others are being developed as well. An update on how some banks are planning to implement this service can be found in Snel (1999).
8. More information can be found at the following web sites: <[www.chase.com](http://www.chase.com)> (corporate and institutional e-commerce services) and <[www.citibank.com/singapore/gct/english](http://www.citibank.com/singapore/gct/english)>.
9. For additional information, see the projects section at <[www.FSTC.org](http://www.FSTC.org)>.
10. More detailed information can be found at <[www.FSTC.org](http://www.FSTC.org)> and <[www.cashtechologies.com](http://www.cashtechologies.com)>.

11. For a discussion of risk from the perspective of European banks, see European Central Bank (1999).
12. See Fickenscher (1999).
13. Internet-only banks have some disadvantages as well. They can accept check deposits only by mail, and their customers may have to pay a fee to obtain currency from another bank's ATM.
14. See Brooks (1999) and Senior (1999b).
15. See de Senerpont Domis (1999) for a discussion of the branching strategy of some banks.
16. See Senior (1999c).

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## About the Author

John Wenninger is an assistant vice president in the Payments Studies Function of the Research and Market Analysis Group.

*The views expressed in this article are those of the author and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.*

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