BRANCH AUTOMATION

Client needs must be foremost in any consideration of bank branch automation. Clearly, automation applied to the banking industry must be understood to be as much an application

of art as it is engineering. This is owing to the very real demands placed on bankers to deal directly with their customers in a personal setting that conveys security, professionalism, trust, and confidentiality. All of these issues must be solved in any technological initiative that aims at replacing or enhancing the personal contact between bank staff and customers.

The choice of appropriate technological responses to any perceived business opportunity involves an artful balancing of the benefits and real expectations of results based on precise target customer behaviors and revenue potential, along with the costs of developing and implementing the appropriate technology. Simply because an institution's competitors are contemplating or actively offering a technological innovation or solution to a banking service problem or situation, this must not be taken as an immediate justification for emulating the competitor's technological offerings without a clear understanding of the applicability to the particular bank.

TRENDS IN RETAIL BANKING

Banks in the United States follow a pattern of observing the actions of the largest national banks and of regional market leaders, emulating efforts undertaken by these leaders after an interval of from two to five years. Although the results of the trend leaders are not usually widely known, the outward appearances of these initiatives become evident and are undertaken in some form by most smaller or community banks—often without a clear understanding of the real efficacy of the technology being employed.

The prevailing belief among bank executives is that the replacement by automation of tasks otherwise performed by staff in a personal service setting will lead to enhanced profitability of the institution. While opinions differ as to the truth of this belief, for which corroborating data is conflicting and difficult to obtain, most institutions have adopted one or more technologies in support of reducing the amount of time spent performing various customer service tasks.

Recent trends in the period beginning around 1985 include the introduction of the following consumer self-directed automation strategies:

Enhanced functions available via automated teller machines (ATMs)

Automated voice response telephone data delivery systems (AVR)

Online personal computer-based data delivery systems

Tone-dial telephone-based data delivery systems

Automation and technology as information support paths for bank staff responsible for direct dealings with customers have offered many institutions the threshold of data necessary to effectively cross-sell new or alternative services and products. While the MIS (management information systems) needs of banks vary somewhat from those of other businesses, the underlying technologies are no different from those used by other enterprises and shall not be investigated in this article.

Innovations and emerging technologies include serious attempts at delivering banking services via the World Wide Web/Internet, through integrated and interactive television/

data/Internet paths, and through enhanced data available at the ATM screen. Some growth is seen in the application of automated delivery systems installed at miniature branches located in grocery stores; this in-store phenomenon is seen as ideal for introducing new technologies since the branch setting of such in-store locations deviates sufficiently from traditional, stand-alone branches to permit the use of new delivery systems to a segment of the customer base believed to be more open to new and innovative delivery systems.

An institution's decision to add automated systems must be balanced by a thorough understanding of the profitability of the customer segment for whom these technological initiatives are designed and by whom they will be most effectively used. While it is only of collateral interest to the designer of automated banking systems, the ultimate profitability of a technological initiative must not be overlooked in the early stages of planning. Any strategy based on migrating personal services to an automated delivery system will eventually fail if the efforts are directed at an inherently unprofitable segment of the customer base. So far, most current efforts at branch automation have been less profitable than expected because the customers most likely to use alternative delivery systems are also those customers who represent the least degree of profitability in their banking relationships.

Recent developments in ATM services include a move to provide capabilities beyond basic cash withdrawal. Many newer models of ATMs include the hardware and software to implement imaging of deposited items, delivery of the bank's product profiles, detailed information about specific products and services, and in one new development, the ability to receive loan requests from the customer, process the data, and grant loans on the spot. Major manufacturers of ATM equipment include AT&T (NCR), Interbold (a joint venture of IBM and Diebold, Inc.), and Fujitsu; the enhanced function loan/ATM device is a development that was introduced to the market in 1997 by Mosler, Inc., a firm long established in the manufacturing of banking equipment.

ATM-delivered transactions do not have a clear cost advantage over tellers. Owing to the ability of tellers to speed up their transaction time and to push off portions of their transactions to back-office processing units (who are also generally responsible for collecting ATM deposits) as "free work," the amount of time a teller spends on each transaction during a high-transaction day will be far less than the generally fixed time per transaction as delivered by ATMs. Hence, the cost per transaction delivered by teller declines as a function of work load to match that of ATMs. See Figs. 1 and 2.
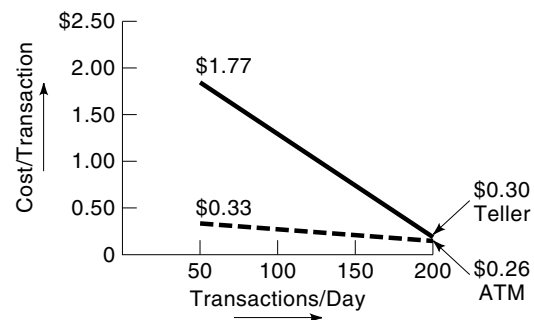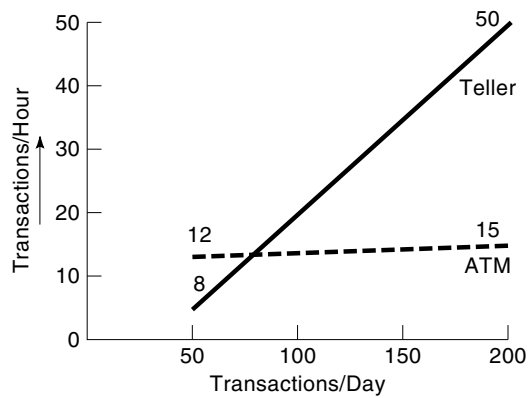

Figure 1. Cost per transaction as a function of transaction volume per day.

Figure 2. Transactions possible per hour as a function of total volume per day.

The delivery of services by tellers has a further benefit not yet overcome by purely technological replacements: personal touch. Unless or until a comprehensive database for each customer of any given bank is developed, including detailed personal information that customers are generally unwilling to provide (spouse's and childrens' names, educational background, community and religious affiliations, etc.), the technological delivery must remain distinctly impersonal. A certain degree of artificial intelligence will be needed in any software developed to use such a database in order to permit the technological interface to behave in a fashion found acceptable within a community's generally accepted standards of decorum. These standards will, in and of themselves, present a difficult task to codify, especially in multiethnic urban markets, and may have to be made available on an individualized basis, coded to each customer. All of these tasks, however, are easily accomplished by real people. Added to this is the underlying requirement that services conform to the expectations that each banking institution is professional, secure, and trustworthy.

AVR systems have gained popularity as the software that drives these systems has become available on an off-the-shelf basis, available from a variety of vendors. Most systems involve the entry of customer identification data via tone-dial telephones. Prerecorded voice scripts and a computer-generated voice deliver account balances, transaction dates and amounts, and available borrowing balances. More recent software packages attempt to recognize customer voice commands, but these technologies are still in infancy and subject to a high degree of error. A customer's inability to negotiate the technology owing to such an error could lead to the customer's decision to forgo use of that delivery system in the future, negating any productivity gains the technology aims to achieve.

Online personal computer-based banking systems have become widespread in all sizes of banking institutions. While major software players such as Microsoft and IBM have offerings, many other vendors provide off-the-shelf packages to banks. Most institutions opt for software that provides a customized interface that presents a unique look to the software, suggesting a custom-programmed package, whether or not the actual core software is based on an off-the-shelf product.

Although many banking publications have covered the discussions of providing banking services through the Internet and as an enhancement to World Wide Web sites, and despite the fact that a few dozen banks have opened Internet-accessible computer banking services, the relative newness of the Internet and inability of the banking community to agree to a standard of data security have hampered further development. Data encryption methods currently in use by the few institutions offering services over the Internet are subject to continuing government scrutiny as well as to the continued efforts to hackers to break these encryption keys. As of this writing, no commercially available encryption schemes have been shown to be immune to decryption. For the immediate future, the prevalent method of using direct modem connections over telephone lines remains the most secure for the conduct of online banking services.

In-branch automation assistance takes various forms: data collection and retrieval, physical automation in the form of automatic cash dispensing devices at the teller counter or elsewhere, and physical automation in the form of cash receiving devices.

The use of automated cash dispensers has held steadily as a minor technology in U.S. banks. Its use has been most widespread in Mexico, where the physical security of cash is of major concern. These devices allow the dispensing of currency only when a customer account identification is entered at the keyboard, much in the manner of an ATM interaction. The major manufacturers of these devices in the U.S. are Mosler and Diebold.

Cash receiving and holding automation most usually takes the form of dumb devices integrated into teller pedestals, allowing currency to be inserted into a hopper to which access is limited by means of a combination of key locking and rotary combination locks. The major manufacturers of these devices in the U.S. are Mosler, Diebold, and Lefebure.

Data processing in the branch environment is, for most institutions, centralized in a common network service shared by all branches. Attempts have been made to improve the ability of the local network environment, allowing certain functions to be processed and certain data to be held locally. These software packages are currently available from major players such as IBM, through its banking services integration group in Raleigh/Durham, and from smaller vendors located throughout the U.S. The benefits possible through enhanced local processing are generally limited, however, to improved data access time. As more capable data paths proliferate in the form of T1 and ISDN lines, such improvements will proportionately diminish.

The risk of local archiving of data is the possibility for error when local data is not shared with the central server, and conversely, when centrally stored data is not communicated to the local network environment. Although most bank branches experience periods during which operations are conducted without contact with the central server, owing to telecommunications failures, most institutions prefer to limit local processing functions to the use of personal computer–based systems running stand-alone software accessing core data stored and retrieved from a central server. Most branch networks, therefore, employ multiplexing at the branch level for more efficient data transmissions between the branch and central server.

In the branch environment, the capabilities remain promising for cross-selling of products and services supported by integrated customer data, combining easily obtained buying patterns and preferences from point-of-sale terminal systems with the bank's own customer profile. That most institutions have not attempted this level of customer profiling is an indication of the general lack of capital available to support such emerging data integration projects. Banking profit margins remain low and are likely to continue to be so to the extent that nonbank competitors, for whom there are currently fewer regulatory burdens and restrictions, continue to proliferate.

While most banks' teller information and transaction processing systems are integrated to a greater or lesser degree with the information support systems available to platform staff, little integration with data available beyond the bank's proprietary account information has been employed.

Such an integrated data profile would enable the bank, and its platform officer or teller, to have available during a customer interface session, the customer's spending patterns, cash-flow tendencies, preferences in shopping venues, outstanding loan obligations, and untapped borrowing potential in a properly designed data presentation. Efforts have been made in the recent past by nonbank marketers, notably Young & Rubicam, to make consumer point-of-sale data available to banks and retailers for this very purpose. To date, the most widely acknowledged bank that has attempted such a project is Huntington Banks of Columbus, Ohio. Its results have not been widely disseminated and remain of interest to the banking community in general.

In-store banking has taken the country by storm in the past few years, spreading from general application throughout the Southwest and Middle-Atlantic regions of the U.S. to becoming a standard option for bank expansion throughout the entire country. Most banks have found that these small (1,000 square feet or less) installations are tenable as an expansion of a traditional stand-alone branch network, though not as complete replacements. But in-store branches do hold promise as testing platforms for alternative service delivery systems.

Most in store branches feature a cubicle or dedicated room for interactive video conferencing with a bank representative located at a remote, centralized location. An earlier commercial product, the Personal Financial Advisor system, was taken off the market owing to consumer reluctance to use this technology for discussions of financial matters in a public place. Whether this method of delivering banking advice and service becomes a feasible alternative to personal contact remains to be seen. It seems probable that interactive television, delivered through cable or across telephone lines as a feature of the Internet, will be the most successful iteration of this concept, insofar as it offers the capability of delivering this service in the privacy of the residential environment.

BEVERLY K. WAYNE
CURTIS B. WAYNE
Wayne Architects

BREAKDOWN IN DIELECTRIC LIQUIDS.   See CON-
DUCTION AND BREAKDOWN IN DIELECTRIC LIQUIDS.

BREAKDOWN IN GASES.   See CONDUCTION AND BREAK-
DOWN IN GASES.