DATA WAREHOUSING SUPPORTS CORPORATE STRATEGY AT FIRST AMERICAN CORPORATION

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Data Warehousing Supports Corporate Strategy at First American Corporation

Introduction

In 1990, First American Corporation (FAC) lost $60 million and was operating under letters of agreement with regulators. Today, FAC is a profitable, innovative leader in the financial services industry. This change in fortune is the result of an ambitious strategic vision, and a major investment in data warehousing that made the vision possible.

FAC's strategic vision is called Tailored Client Solutions (TCS), a customer relationship-oriented strategy that positions FAC clients at the center of all aspects of the company's operations. Though many organizations espouse customer relationship management, FAC has redesigned every aspect of its operations to meet its clients' needs as well as its own profitability goals. Underlying these efforts is the recognition that, to succeed with this strategy, it must know its customers exceptionally well, and leverage that knowledge in product design, in distribution channel decisions, and in every interaction with its clients.

The execution of this strategy would be impossible without a data warehouse called VISION that maintains client behaviors (e.g., products used, transactions), client buying preferences (e.g., attitudes, expressed needs), and client value positions (profitability). Using information from VISION, FAC has:

- identified the top 20 percent of its customers who provide virtually all of the consumer profits, and the 40 percent to 50 percent of those who are not profitable;
- developed strategies to retain the top high-value customers;

- developed strategies to move unprofitable customers to lower cost distribution channels, different products, or pricing structures that boost profitability, while still focusing on customer needs and preferences;
- developed strategies to expand relationships with all customers;
- redesigned products and distribution channels to increase profitability and better meet customers' needs and preferences; and
- redesigned information flows, work processes, and jobs in the bank's branches in order to meet customers' needs and increase their use of profitable products.

To implement TCS, FAC had to change the way its employees think about banking and about their jobs, shifting from "banking by intuition" to "banking by information and analysis." All of these actions combined have moved FAC from losses of $60 million in 1990 to profits of over $211 million in 1998.

This paper describes FAC's transformation and emphasizes the information technology that was essential to its success. The first two sections discuss First American Corporation and the Tailored Client Solutions strategy. Then it presents the VISION data warehouse and the way in which it was implemented. The final sections describe the uses and applications of VISION, the impacts that result from it, and lessons that were learned from the initiative.

About First American Corporation

Founded in 1883, FAC is a comprehensive financial services holding company headquartered in Nashville, Tennessee. Its holdings include:

- First American National Bank;
- First American Federal Savings Bank;

- Deposit Guaranty (acquired in 1998 and now operating as First American National Bank);
- First American Enterprises, Inc.;
- IFC Holdings (formerly INVEST Financial Corporation, the nation's largest third-party marketer of investment products (98.75 percent ownership), headquartered in Tampa, Florida); and
- The SSI Group (the largest processor of hospital healthcare claims in the U.S. (49 percent ownership) headquartered in Mobile, Alabama).

With operations in Tennessee, Kentucky, Virginia, Mississippi, Arkansas, and Louisiana, FAC had $20.7 billion in assets, 7,195 employees, 391 banking offices, and 650 ATMs in 1998. It had the largest deposit market share in Tennessee, the second largest deposit market share in Mississippi, and the largest small business and middle market share in Tennessee.[1]

Conditions were not as good, however, in 1991 when Dennis Bottorff became Chairman and Chief Executive Officer. Because of FAC's problems, there was concern that the bank would be closed, and that the larger banks would "come in and pick the pieces they wanted." Bottorff and his management team started by "fixing the broken things in the company;" however, they realized that FAC needed a long-term strategy if it were to survive in the increasingly competitive banking industry. It needed a new way of thinking and a new business model. FAC could not be the low cost provider because it lacked the economies of scale of larger financial institutions. Product differentiation was not a feasible strategy because other banks could quickly duplicate products that showed promise in the marketplace. It could not compete for large accounts (e.g., FORTUNE 500 companies), because these are the province of large national and international banks.

Tailored Client Solutions

Bottorff decided FAC should focus its attention on three market segments -- consumer, small, and mid-size businesses -- in which the bank could compete effectively. It also needed to shift from the traditional banking orientation on products to being much more customer-centric. This new customer focus required a data warehouse to support it. Top management felt that the effort should be driven from the marketing department, and after a year-long search, Brian Cooper was hired as the Executive Director of Marketing.

The marketing department, senior management, and key members of the finance department worked together to develop the Tailored Client Solutions strategy. Figure 1 shows the four interlocking components of the strategy: excellent client information, a flexible product line focused on mass customization, a consistent sales and service approach centered on meeting client needs, and a distribution management approach focused on channels of choice. All this was coordinated under a broad new brand -- "About life. About you." -- that put the customer at the center of everything the bank did.

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[1] At the end of May 1999, it was announced that FAC would be acquired by AmSouth.

"About life. About you."

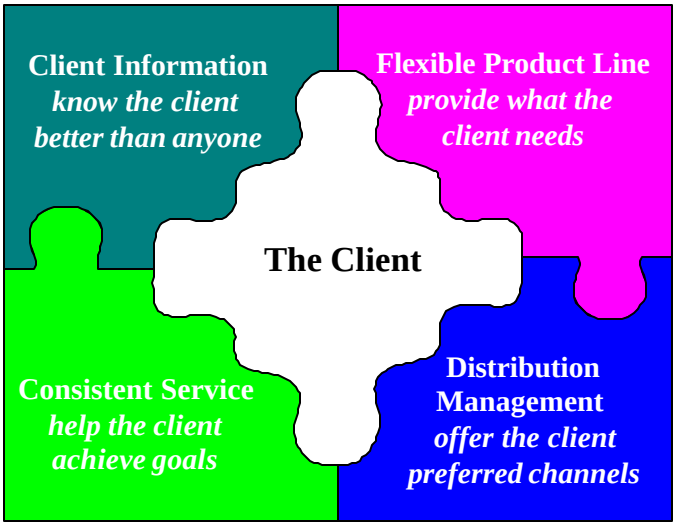

Figure 1: Tailored Client Solutions

Client information is the first component of TCS. All banks possess a great deal of information about their customers, but often the information is not easily accessed, and most of it is not leveraged in the many interactions that the bank has with its clients. FAC wants to know more about its customers, and to utilize that knowledge in every aspect of its business. In addition to demographic information and information about transactions with the bank (e.g., ATM card usage), FAC includes information about how its customers prefer to do business and how profitable each customer relationship is to FAC.

The second part of TCS is a flexible product line. Although all banks can offer similar products, it is more important to offer products that meet client needs and are profitable. By understanding its clients and having accurate profitability information, FAC phases out or modifies unprofitable products, and designs lucrative alternatives that meet clients' needs.

The third component of TCS -- consistent service -- focuses on determining and meeting customer needs. Banks traditionally have sold either what the customer asks for, or is the hottest

product on the market at the time, but neither approach explicitly considers what is in the client's best interest. TCS calls for a major shift in sales culture because a FAC representative begins any customer relationship by discussing that person's current financial situation and future goals. Then, together, the customer and representative explore products that would help the client accomplish personal objectives. Because FAC representatives have comprehensive information about each customer's banking history, they are able to provide customers with tailor-made solutions.

Distribution management is the final component of the strategy. Banking services are delivered through various channels (e.g., branch offices, ATMs, PC banking), and banks must make long-term decisions about the best way to make services available to customers. These decisions require knowledge about how customers currently use the bank, how they would prefer to use the bank under different circumstances (e.g., if there were a fee for using a teller), and the costs of the alternative distribution channels. With this information, FAC is able to optimize the design of its distribution channels to meet customer needs at the lowest cost.

All four of these strategic components fit under the umbrella of the new brand identity for the bank: “About Life, About You.” Each component is conspicuously focused on meeting client needs, and together they create a powerful synergy.

Interestingly, although TCS was sold to the board of directors as an integrated strategy, it was introduced in stages to the rest of the organization. According to the marketing director, the reason was that “it would have been overwhelming, given where the company was at the time.” The champions of TCS communicated only parts of the vision to those groups involved in developing the separate components. Five separate projects, each one representing a major piece of the TCS strategy (e.g., client information, brand identity), were pursued by five separate

groups concurrently. Each project was designed to have significant positive financial "lift" (i.e., impact) and to embody some of the basic changes in the way the bank would operate.

On September 20, 1997 after each component was successful, the complete Tailored Client Solutions strategy was formally announced at the 1997 FAC Leadership Conference. The Leadership Conference was also the kickoff for the Destination 2000 challenge to all FAC employees, with the goal that by the year 2000, FAC would join the "Sweet 16," a group of 16 banks that led the industry in terms of financial performance and valuation measures. A video tape that presented Destination 2000 was distributed to all bank employees, who were encouraged to join the effort and to adapt creatively to the upcoming changes. The theme was reiterated at company-wide meetings, in internal correspondence, and through visible changes in work practices.

The VISION Data Warehouse

Because every piece of the Tailored Client Solutions strategy demanded better and more accessible information about the client than FAC, or most banks, ever had, senior management realized that it needed information technology to support the strategy. The critical piece of IT-- a data warehouse called VISION -- would contain integrated customer information, product profitability information, and distribution revenues and costs (see Figure 2). Unfortunately, at that time FAC had no substantive in-house experience in data warehousing. Because of the strategic importance, FAC couldn't wait for its own people to come up to speed. Management decided to rely on outside help from vendors and consultants, who would transfer knowledge to internal IT personnel as the project progressed.

"About life. About you."

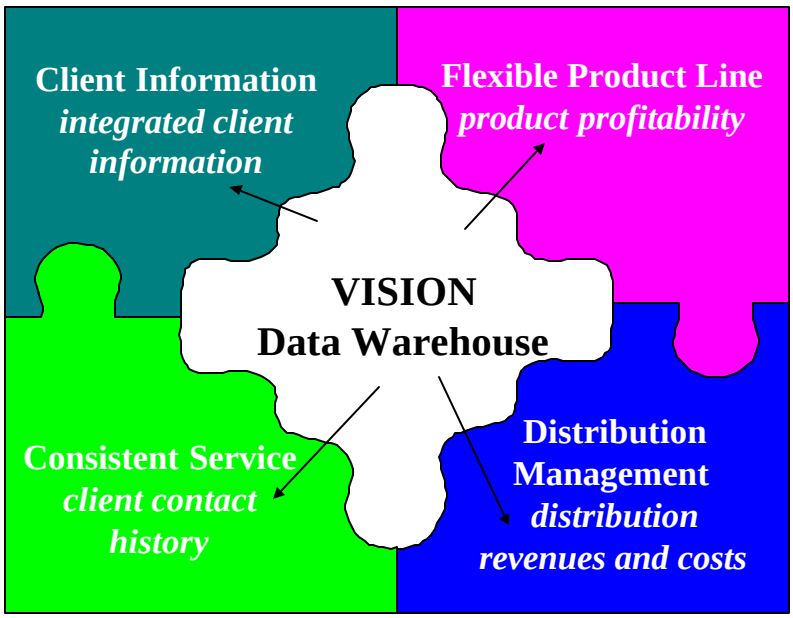

Figure 2: VISION Data Supports TCS Initiatives

Phased Development Approach

Preparing VISION to be the foundation for TCS's core components took a phased approach, clear goals, the right people, and a careful coordination between IS, marketing, finance, and external consultants. Connie White, the project manager, had to establish expectations, define responsibilities, and coordinate the many interdependencies among the project teams. The development of VISION included a multi-phased effort, with each phase calculated to produce tangible business benefits while moving the overall project forward with technical deliverables. The timeline and goals for the VISION phases are presented in Table 1. The project manager explains that the phased approach enabled FAC to "get the end result and bring in the revenues as we worked on the project, as opposed to many companies who go out and want to do everything at one time -- and aren't successful."

	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
	1-2Q 1996	**2-3Q 1996**	**3Q 1996 – 1Q 1997**	**2Q 1997 – 1Q 1998**	**2-4Q 1998**
Business Goals	Identify the top revenue producers	Identify the least profitable customers	Include actual transaction and product data in profitability formulas	Understand all aspects of client and product profitability	Incorporate profitability understandings in business processes
Technical Goals	Enhance the existing customer information system with retail revenue	Enhance the existing customer information system with direct contribution view for consumers	Enhance existing customer information system with net income after capital charges (NIACC) for consumers	Deploy the warehouse – proof of concept (consumer) Commercial profitability integration	Complete production testing of the warehouse

Table 1: VISION Phases

Phase 1 was implemented to help managers understand the overall revenue picture. The First Manhattan Consulting Group, a recognized leader in the financial services industry at understanding profitability, provided benchmark data to FAC. Together with First Manhattan, Jay Phillips, Senior Vice President for Decision Support, and his team developed revenue, cost, and profit formulas to use with VISION data. These formulas and actual transaction data were added to an existing customer information system within three months, and the project team began to understand exactly which data belonged in the warehouse. In the next two phases, additional products and transaction data were added to VISION, and the profit formulas were enhanced. The data warehouse team also developed extraction and transformation processes, while modeling the data to be stored in VISION.

Implementing a complete data warehouse was the major target of the final phases. FAC relied on external vendors such as NCR to provide hardware, software, and methodological support through much of the initial data warehouse development because FAC could not afford to wait for its own employees to master the learning curve. While the company welcomed outside help, it was careful to appoint an FAC employee to manage the process. Emery Hill, Executive Vice President of Operations and Technology, explains that "we just jumped into the pool because they [our external support] said that they would jump in with us and keep us afloat." By 1997, the data warehouse proof of concept was delivered, and the data warehouse team spent 1998 validating the data, rolling out the warehouse, and helping develop applications for finance and marketing.

Warehouse Architecture

FAC's production data warehouse platform is the NCR 5150M configured with five SMP nodes running the Teradata Relational Data Base System. This configuration provides 1.5 TB of storage to FAC, and at the end of 1998 it supported 200 GB of raw data, which continues to grow at a rate of 10 GB per month. The database holds 2 million accounts and information about 1.2 million households, and FAC plans to store up to 37 rolling months of history for analysis. Figure 3 shows the warehouse's architecture.

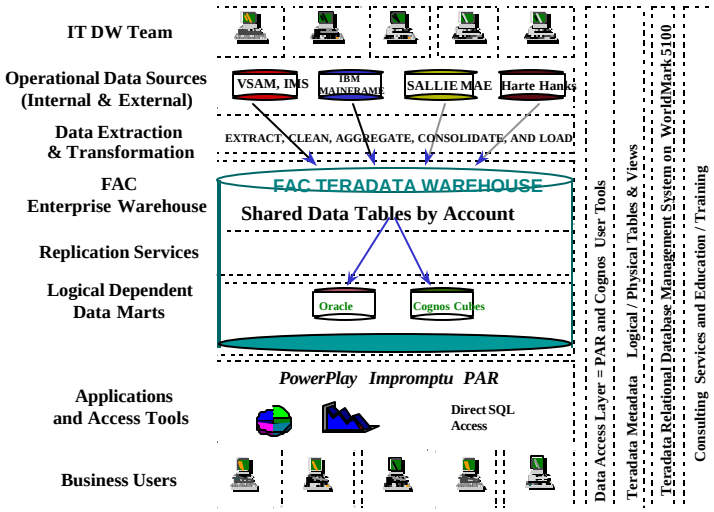

Figure 3: The VISION Data Warehouse Architecture

Data Sources

Currently, the warehouse utilizes over 100 source files that are extracted from 26 legacy applications. From the mainframe environment, VSAM and IMS files are FTP'd to a file server, where Informatica's Powermart applies business rules to transfo rm the data (e.g., making account numbers consistent across banks). The resulting files are loaded into a warehouse staging area where business users validate the data (e.g., financial data is validated within five percent of the General Ledger). After the users examine the files and approve the data quality, the data moves into Teradata base tables that are organized by account and by activity. Concurrently, files from external data sources, such as student loans from Sallie Mae, geographic and financial data from Dun & Bradstreet, and psychographic and demographic appends to data from Harte-Hanks, are incorporated into the warehouse. The process of populating the data warehouse takes approximately ten business days, although the team plans to reduce that time by half in 1999. Table 2 describes the various kinds of data that exist in VISION after the warehouse is populated.

Data	Description	Source
Client Behaviors	Products Delivery Channels Transactions	• IBM mainframe • Sallie Mae
Client Buying Patterns	Segments Attitudes Expressed Needs	• IBM mainframe • Dun and Bradstreet geographic and demographic data • Harte-Hanks household data
Client Value Propositions	Profitability	• IBM mainframe • Profitability algorithms
Data can be analyzed at any level of aggregation, from bank-wide or line of business down to individual account or client relationship.		

Table 2: VISION Data

Customer Centric

All of the data are organized around the client to provide a comprehensive understanding of the client's demographic characteristics, the products used, transaction activities, interactions with the bank, measures of the client's relationship to the bank, and psychographic insights about client preferences and propensities; see Figure 4. The data can be analyzed in multiple ways, including "slicing and dicing" using time, products, geographical regions, and market segments as dimensions; planning marketing campaigns for specific products and markets; and detecting which clients are at risk of leaving the bank.

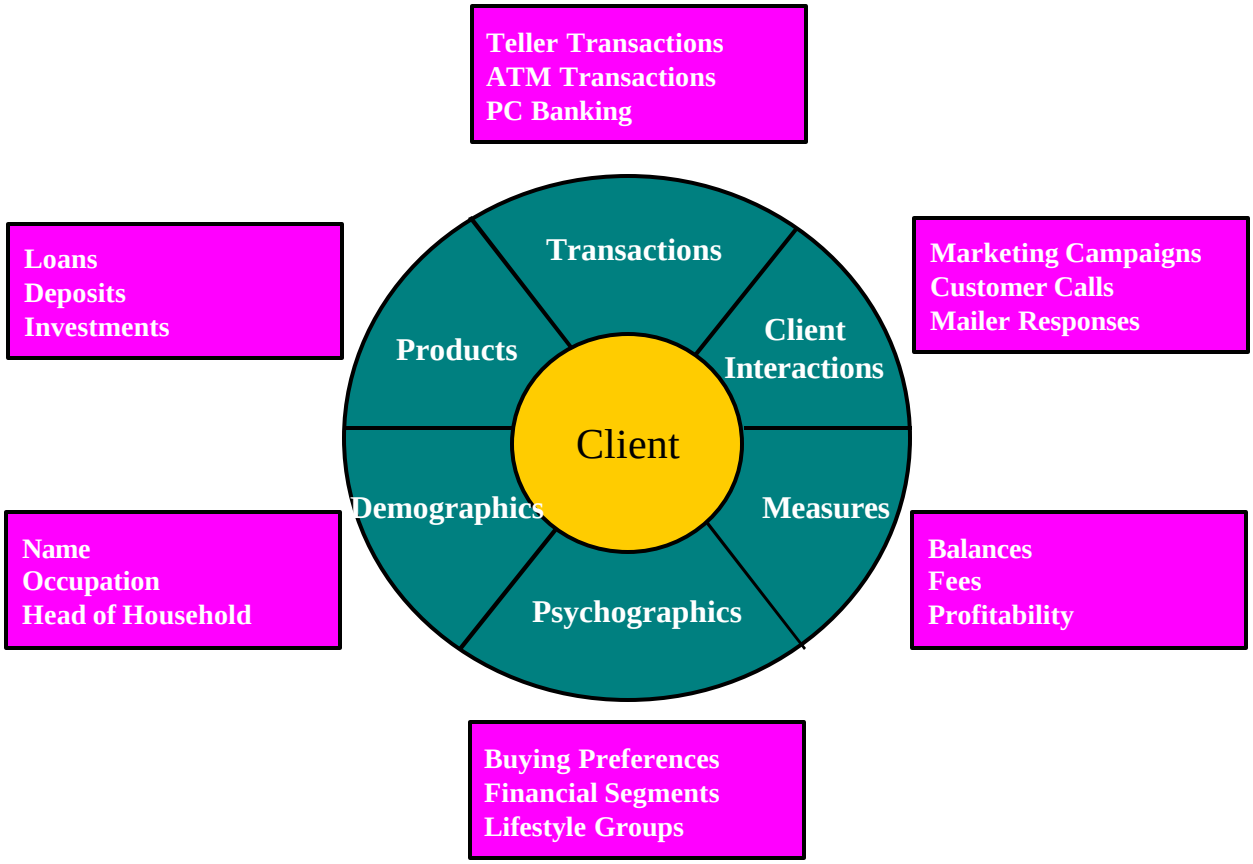

Figure 4: The Customer Centric Data Model

Data Access

Marketing and finance analysts have direct access to warehouse data. For the marketing area, the data warehouse team uses Cognos Corporation's tools to create multi-dimensional cubes of data that are stored on a local file server. Users can access these data cubes on the server or download the information to their desktops. They then use the Cognos tool suite, including PowerPlay, Impromptu, and Scenario, to manipulate and analyze the data.

The finance users access warehouse data from both a dependent data mart created in an Oracle relational database management system and Cognos cubes. The mart supports a profitability analysis and reporting tool called PAR (Profitability Analysis Reporting), which provides users with predefined reports and lets them run ad hoc SQL queries against the mart.

Data Warehouse Team

Eighteen full-time FAC employees comprise the team that supports all of the data warehousing initiatives, and Figure 5 shows how they are organized. Warehouse Services manages the extraction, transformation, and load processes; and the Warehouse Development team -- the "gatekeepers" of the warehouse -- is responsible for project management of new and enhanced data feeds. Business Access Tool Support implements and supports the data access tools; the Analytics group performs analytical studies and ad hoc analysis of warehouse data; and the Data Mart team extracts, transforms, and loads data into the PAR system, a VISION data mart.

Early in the project (1996-1997), most positions were filled by internal IT employees because there were few data warehousing professionals available on the market. Data warehousing expertise was provided by consultants and vendors. However, with the arrival of Lance Mattingly (Applications Development Manager) in 1998, most positions were filled with external data warehousing professionals, such as Theresa Leahy, the data warehouse production and development manager. In fact, the strategy that has worked best for FAC is to bring in people with a "contract to hire." This approach brings contractors into FAC and provides the bank the opportunity to "take a test drive" before offering them a permanent position.

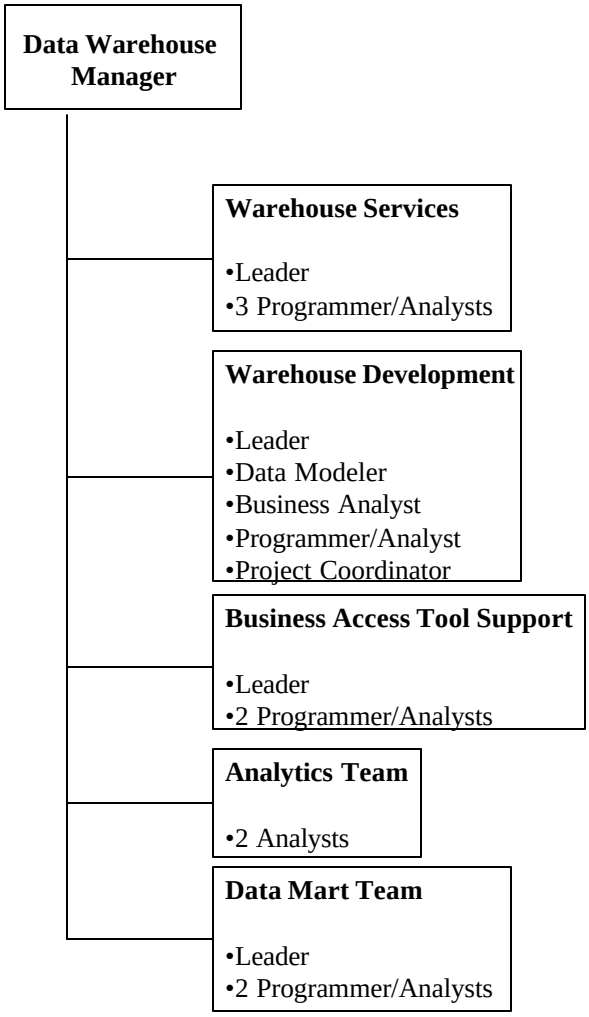

Figure 5: Data Warehouse Organization Chart

VISION Users and Applications

The Users

The VISION data warehouse has both direct and indirect users. The direct users are the 20 marketing and 30 finance analysts who use warehouse data directly. Based on their analyses, recommendations are made to management. There are also hundreds of indirect users who

receive and use reports that are generated from VISION data. Table 3 shows some of these users and a sample of the information that they receive.

User	Information Provided by VISION
Senior Management	Profitability by line of business
Corporate Banking Managers	Profitability by industry segment
Small Business Banking Managers	Sales performance by area
Retail Sales Managers and Sales Force	Retention of high-value households
Product Managers	Profitability of products within product groups
Distribution Managers	Channel migration opportunities
Marketing Managers	Segment profitability
Asset and Liability Managers	Product profiles
Credit Managers	Analysis of deciles and risk taking

Table 3: Indirect Users and the Information Provided by VISION

Applications

Many applications that support the attraction, enhancement, and retention of customers rely on the VISION data warehouse. The following applications, organized by the TCS strategy, illustrate some of them.

Client Information

Customer Preferences and Profiles

Customer preferences are important to many banking decisions, and FAC has created preference information in VISION using a technique called “conjoint analysis.” The company selected a sample of over 3,000 customers and asked each one what he or she would do under different circumstances. For example, would you use an ATM to make a deposit if the transaction were free and the same transaction performed by a teller cost $.50? $1.00? Based on the answers, a number of different "types" of customer were identified, and by matching

transaction and demographic patterns for each type of customer with those of the remaining customers, FAC was able to extend its preference information to the entire customer population.

FAC also generates and utilizes market segmentation information. Data are purchased from Claritas, which are then appended to FAC household records by Harte-Hanks. Using financial segmentation software from Claritas, demographic and financial transaction data are used to place clients in one of ten financial categories (e.g., wealth market, wealth preservers). A similar process is used to place customers in one of 62 lifestyle groups (i.e., young influentials, pools and patios). The placements are based on the assumption that "you are like your neighbors."

Preference and profile information is used in many ways, including targeting marketing efforts and in designing the best mix of distribution channels.

Customer Retention

VISION calculates the profitability of every customer so that appropriate actions can be taken. High value customers are identified and targeted for retention programs, primarily because this group is responsible for nearly all of the bank's consumer profits. The mid-value customers receive targeted messages about bank products that should be attractive to them (and move them into profitable relationships). Low-value customers are migrated to more profitable products and lower cost distribution channels (e.g., PC banking rather than using tellers). Regardless of their current profitability, FAC's goal is to retain all of its clients.

The "Top 20 List" is one example of a retention program based on VISION data. Using the results from customer profitability analysis, each branch receives a weekly list of its top 20 clients. Service representatives then discuss ways to retain these customers and to expand their use of the bank. A required approach is to telephone the top customers to thank them for their

business, and then to discuss their financial goals and how the bank can help the client realize them.

Retaining clients and expanding their use of the bank's products are important components of how employees are evaluated and compensated. On Mondays, branch managers commit to performance objectives for the week, and on Fridays their performance is evaluated. For example, the bank may have a campaign to increase the number of savings accounts and each branch makes a commitment for their contribution to the campaign. Information from VISION is used to profile customers who are most likely to open a savings account. Employee compensation is tied to how well the commitments are met.

Select Rewards

Like airlines' frequent flyer programs, Select Rewards is designed to increase customer loyalty and increase customers' use of the company's products. VISION data is used to analyze the profitability of the bank's products, determine the points that are awarded, and establish the point levels for different awards. With Select Rewards, a customer earns points for longevity with the bank and the breadth (number of products) and depth (average account balances) of the banking relationship. Each month a customer receives a statement that reports the points earned and a redemption certificate (see Figure 6). The points can be redeemed in a variety of ways -- discounted banking services, items from Service Merchandise, gift certificates for meals at Red Lobster and other restaurants, and free airline tickets.

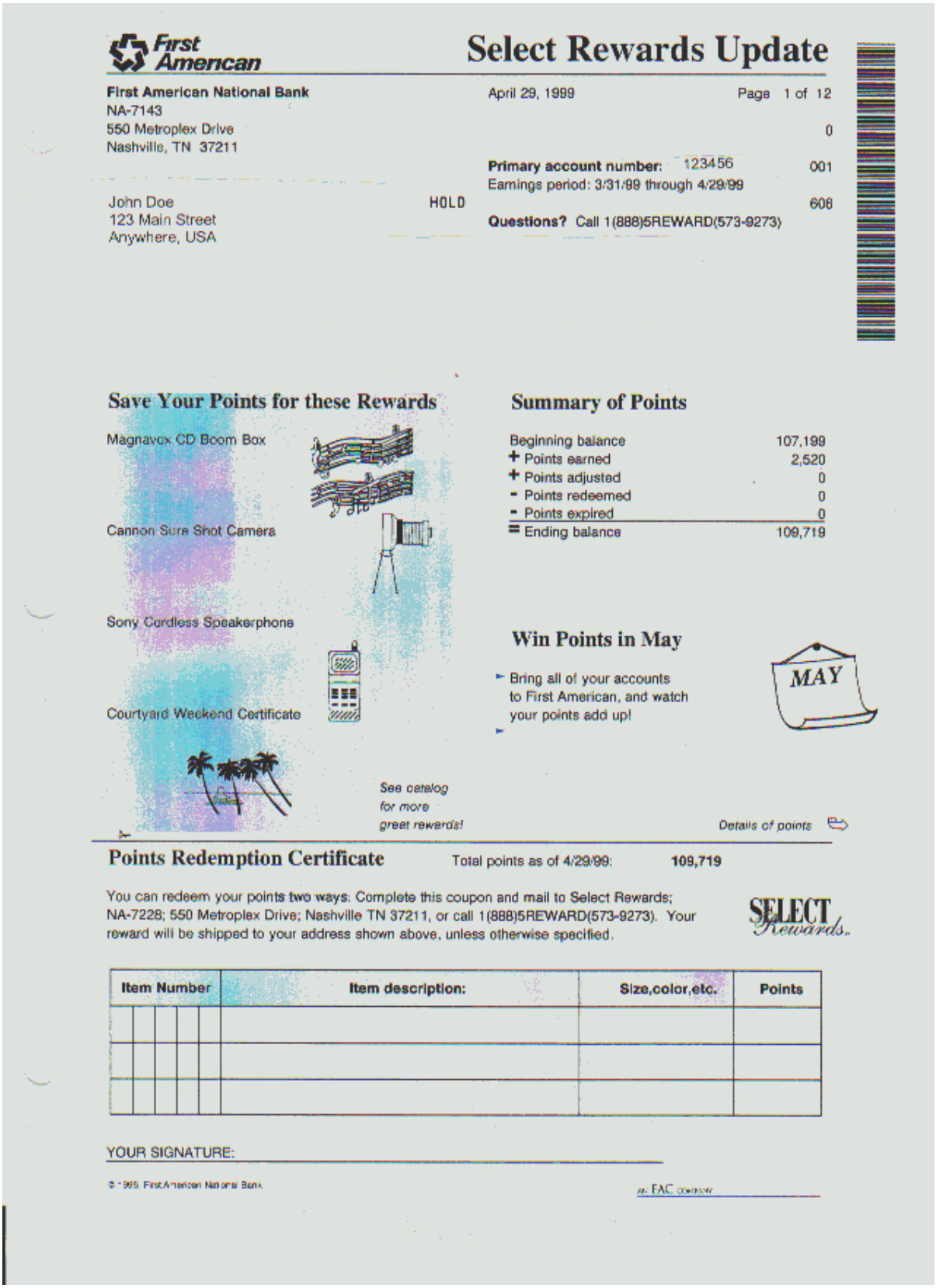

Figure 6: A Select Rewards Statement and Points Redemption Certificate

Flexible Product Line

Product Profitability

It is critical for FAC to know the profitability of its various products. This is a complex calculation that requires cost accounting equations and data from over 20 joins in VISION data warehouse tables. Provided with product profitability information, financial analysts look at products in a variety of ways. To illustrate, an analyst might begin by examining the profitability of deposits, loans, and fee-based services (e.g., managing trust accounts). Drilling down into loans, the analyst sees that commercial loans are the least profitable when returns are adjusted for risk and capital charges, a finding contrary to conventional banking wisdom, wherein commercial loans are thought to be very profitable. The analyst sees that floor plan loans are the most profitable of the commercial loans. The analyst then rank orders all of the commercial loans to see which ones are the most and least profitable. For the least profitable loans, the analyst examines all of the loans, by the relationship managers who are responsible for them. The analyst learns that a particular relationship manager is consistently making loans at rates that do not cover their full costs. This information is marked for management's attention.

Seniors Account

Product profitability information is also used to redesign products. Like many banks, FAC offers a free checking account to customers who are 55 and older. Working with VISION, financial analysts discovered that the bank was making money from a few senior accounts, but was experiencing a loss with many others. Further analysis revealed that the average size of the checking account balance was the key difference between profitable and unprofitable accounts.

Based on profitability information and input from clients, a redesigned product was introduced that created value for both FAC and its customers. Next, FAC marketed the account to retain profitable customers while improving the profitability of other accounts. The 20 percent of the customers whose account balances were normally high enough to make them profitable received a letter and a personal call saying that the new minimum balance requirement was unlikely to affect them. The others received a letter notifying them of the change and encouraging them either to increase their average balance or to switch to an another type of account. The results of this change were impressive: there was a significant increase in average account balances, net income after capital charges, and service fees. Less than two percent of the clients closed their accounts and many of them ultimately returned as profitable customers.

Next Most Likely Purchase

FAC is applying data mining techniques to VISION data in order to better understand and predict customer behaviors. Applications that are either in place or under development include accurate identification of buying trends, precise definition of market segments, optimization of promotional programs, customer retention and acquisition, customer cross selling and upgrading, and fraud detection. To illustrate, one data mining application calculates the likelihood that a customer will adopt a specific product. Table 4 shows the steps that are used to transition VISION data into this useful preference information for marketing campaigns.

1. Analysts determine that the target is to determine the likelihood that a household would use Product A.
2. Examples of households with and without Product A are extracted from VISION. 5,000 of each are selected.
3. Data are pulled on the 10,000 households and a file is created using a SQL query tool.
4. The file is transformed into a format readable by the data mining application and loaded into the product.
5. The data is analyzed using several statistical techniques. Each data variable is examined for importance, relevance, coverage, etc.
6. A first pass is made to select variables for the initial modeling effort. Between 40 and 60 variables are usually selected.
7. The data is divided into training, test, and validation sets.
8. A neural net makes its first attempt at predicting the target variable (use of Product A). Several hundred iterations may be made before a reasonable model is created.
9. The initial model is reviewed and tested. Adjustments are made. A new model is created. The process continues until no other improvements are seen.
10. The neural net is released in the form of a scoring algorithm, which is usually a multivariate non-linear regression calculation.
11. Using a reporting tool, every household meeting the correct profile is downloaded from VISION.
12. The data file is formatted and then run through the data mining application. Each household is scored for its propensity to use Product A.
13. A household score file is created.
14. The household scores are appended to VISION where they are used to create target marketing lists.

Table 4: Steps to Determining the Next Most Likely Purchase

Consistent Service

Contact Management System

The contact management system helps FAC develop a one-to-one relationship with its customers by giving service representatives a clear picture of the entire banking relationship. Drawing from VISION and other data sources, it provides personal information about the customer, how profitable the customer is to the bank, how long the customer has been with the bank, buying preferences (e.g., serious saver, price shopper), the products used, transaction history, and the customer's financial goals. All of this information resides on the service

representative's desktop computer and supports better informed, more personal interactions with the customer. Because it is a bank-wide system, it also creates more consistent, seamless service. A customer can go into any FAC branch and the service representative has access to the same information about the client.

The service representatives and the contact management system work together to (1) build a more personal relationship between customers and FAC, (2) provide opportunities to learn more about customers' needs and goals, and (3) market additional products to customers. When service representatives meet with clients, they follow a structured interview process that includes "meet and greet" questions (e.g., How are you? Did your daughter enjoy her trip to Europe?), questions about financial needs (e.g., Are you still planning to buy a cottage at the lake and might you want to finance it with a home equity loan?), and questions about investment goals (e.g., Have you thought about opening an IRA to help with retirement plans?). The answers to these questions are entered into the contact management system by the service representative either during the conversation or later on. When the client is interested, the service representative prepares a detailed financial plan that ties the client's goals to appropriate bank products. The information about clients is also used in identifying which customers to include in direct marketing campaigns.

Redesigning Bank Operations

FAC has redesigned its network of branch banks, how processes are performed in each branch, and the jobs that people perform in each branch with the goal to increase the time spent with clients in order to better understand their needs and to enhance the opportunities for marketing products. For example, the jobs of the customer service representatives (i.e., tellers) were expanded to handle routine tasks such as changes of address in order to allow personal

bankers to have more time for sales-related activities. The personal banker job itself was divided and is handled by four different types of people. The personal banker still exists to handle walk-in traffic and sell additional products as time permits. Then there are the consumer relationship managers who perform an expanded personal banker role. Because of their abilities, they are entrusted with the most valuable relationships that have been identified by VISION and who have more time for marketing efforts. Small business relationship managers do the same thing for the most valuable "mom and pop" businesses. The final role is handled by investment specialists who sell an expanded set of investment products. With these changes, it is estimated that 60 percent of the time of the business relationship managers and investment specialists is spent better understanding customers' needs and marketing new and additional products.

Distribution Management

Channel Distribution Costs

In order to make good decisions about distribution channels, it is important to know the costs associated with the various channels, and VISION data makes this possible. The cost calculations require information about how frequently the channels are used, the nature of the transactions, and the costs of operating the channels. An interesting example of how this information can be used comes from ATM usage. In general, ATM transactions cost less than a teller. However, a recent study found that the cost of accepting a deposit through a teller was $.77 as opposed to $1.79 with an ATM. This surprising result was because there are fixed costs associated with processing ATM deposits (the deposits must be collected from an ATM, posted at the branch, mailed to a central location, and inspected at the central location), and these costs were being distributed across a relatively small number of deposit transactions. In fact, only four percent of FAC's ATM transactions were for deposits, which was below the industry average.

FAC's response was a program to educate customers on using ATMs for deposits and to extend the hours whereby clients would receive "same day" credit for making their deposits through an ATM. For a specified period of time, customers who were Select Rewards members also received bonus points for making ATM deposits.

Distribution Management System

The Distribution Management System (DMS) is a highly analytical application that helps FAC plan distribution channels for various market segments in a way that is profitable to the bank, yet still meets the needs and preferences of customers. Using inputs from VISION, such as household profitability, how customers currently use the bank's products, customer preferences, segments and channel costs, and external data that match potential new customers to the customer segments, DMS calculates the best way to distribute products to customers. Consider an example of the use of DMS. In a particular marketing area, FAC was operating a main bank (a hub), three branch banks (spokes), and various ATMs. Using DMS, it was decided that closing one branch and increasing the number of ATMs would increase the bank's profits while better meeting client's needs.

TCS and Data Warehousing Impacts

FAC finds that TCS, supported by the data warehouse, has changed the mindsets of employees, which in turn has created tangible benefits at the application and organizational levels. Further, FAC's senior management believes that the company is realizing strategic benefits thanks to the organizational transformation and the way in which the bank is now perceived within the industry.

A Change in Mindset

The organizational transformation at First American Corporation included major shifts in the mindsets of its staff, primarily because of the information available through the data warehouse. Jay Phillips, head of finance and marketing applications, says "We reengineered all of finance, changed all of the systems, and made a huge shift in marketing. You see a real change in how the lines of business do business; you see the branches really going through a redesign process." Finance has moved from being "bean counters" to aggressively working to find better ways of creating revenue. "Good customers" are now determined by the profitability of their overall relationship with FAC. Marketing has moved from a "suckers and balloons" mentality to predicting customer actions through careful analysis, and using this information to promote profitability.

Across the bank, units that previously took a passive approach to business innovation now see themselves as responsible for creatively improving the bottom line. For example, accounts payable took an existing internally used purchasing card application and turned it into a product that could be sold to smaller corporate customers. (A purchasing card is basically a credit card used to allow particular projects or groups to conveniently purchase needed items while automatically recording the expenses against their budgets). This was quite a shift in mindset for accounts payable, which had never before been involved with revenue creation. Brian Cooper adds: "It is gratifying to see that VISION has transformed the organization. People think differently now because of it, and new employees don't even know the way we used to think."

This level of change has not been easy or comfortable. Throughout the organization, those who could adapt to frequent changes and who could take the initiative to enhance

performance prospered, while those who could not, left. Some areas experienced 100 percent turnover in one year, and many others experienced 25-30 percent turnover over three years. Those who stayed, however, are part of exciting changes.

Application-Level Benefits

In order to assess the success and impact of TCS, senior management initiated project tracking. Table 5 describes selected applications, the users of the applications, and the resulting benefits. For example, the Seniors Account has seen an improvement in the risk-adjusted return on equity from less than 25 percent to over 50 percent while maintaining deposit balances.

Application	Users	Impact
Client Information		
Customer Attrition and Retention	Segment managers Financial analysts Marketing analysts	Revenues grew by over 15% from high value client.
Customer Complaints	Service representatives	Improvement in NSF fee collection efforts increased fee income by over $1.3 million in 1997 and 1998.
Select Rewards	Marketing analysts Segment managers	Over 43,000 customers are Select Rewards members, accounting for over $1.4 billion in loans, deposits, and investments.
Flexible Product Line		
Seniors Account	Marketing analysts	Improved risk-adjusted returns on equity (RAROC) from less than 25% to over 50% while maintaining deposit balances.
Repackaging of budget checking, student checking, 55 and better, and small business checking	Financial analysts	Enhanced revenues in excess of $1.8 million in 1997 and $3.2 million in 1998.
Re-price certificates of deposit, express mortgages, NOW accounts, FAIR accounts, and savings accounts	Financial analysts	$1.7 million additional revenue in 1997 and 1998.
Next Most Likely Purchase	Service representatives	Improved sales effectiveness.
Consistent Service		
Contact Management	Sales representatives	Assisted in improving retention of high value clients by 1%; worth $4 million in revenue.
Redesigning Bank Operations	Sales representatives Service representatives	Assisted in improving retention of high value clients by 1%
Distribution Management		
Distribution Management System	Financial analysts Distribution managers	In 1998, 22 higher cost “hub” locations were replaced by 30 lower cost “spoke” sites. Over 20% return on investment.

Table 5: The Benefits from TCS Applications

Organization-Level Benefits

FAC's Tailored Client Solutions strategy, powered by the VISION data warehouse, has fundamentally changed how the bank is managed and generated quantifiable financial returns. It has allowed FAC to emerge as a profitable, innovative leader in the financial services industry, as the highlights in Table 6 show.

Financial Indicators	1996	1997	1998
Return on assets	1.33%	1.40%	1.55%
Return on earnings	15.20%	15.91%	18.07%
Earnings per share	$1.98	$2.18	$2.62
Productivity ratio	58.98%	57.93%	53.44%
Average assets (in billions)	$16.6	$17.9	$19.3
Average core deposits (in billions)	$11.6	$12.4	$12.6
Stock price (as of)	$29.56 (1/17/97)	$45.875 (1/15/98)	$41.3125 (1/21/99)

Table 6: Financial Performance Measures

Comparison with the Sweet 16

FAC's goal is to join the Sweet 16 financial services organizations that are leading the industry in financial performance and valuation measures. Table 7 shows the progress that has been made since the beginning of 1996 until the end of 1998 on measures that are being tracked. If these trends continue, FAC has a good chance of meeting its goal of achieving Sweet 16 status by the end of 2000.

Performance Measures	1996		1997		1998	
	FAC	**Sweet 16**	**FAC**	**Sweet 16**	**FAC**	**Sweet 16**
Return on Assets	1.33%	1.55%	1.40%	1.67%	1.55%	1.66%
Return on Equity	15.20%	19.10%	15.91%	20.30%	18.07%	19.20%
Earnings per Share Growth	11.9%	12.1%	10.1%	14.3%	18.07%	15.1%
Productivity (lower is better)	58.98%	53.2%	57.93%	52.2%	53.44%	55.8%

Table 7: Performance Comparisons with the Sweet 16

Industry Benefits

TCS also has affected favorably how other banks perceive FAC. The CEO of Deposit Guaranty (which FAC acquired in 1998) said that FAC was attractive because he wanted to be part of "a financial institution of the future and not a bank of the past." He had learned of FAC's data warehousing initiatives and had not encountered banks of similar or even larger size with the same capabilities.

Lessons Learned

The data warehousing experiences at FAC provide valuable lessons for organizations that either have implemented or are planning a data warehouse.

1. Have a strategic vision for where you want the business to go and understand how data warehousing can help you get there. At FAC, senior management knew that survival depended on profound changes in how the bank was run. It had to pick its markets carefully, know the profitability of its various products, understand the value of customers and their preferences, and

establish a plan to achieve this goal. A key component of this plan was to create a data warehouse to generate the necessary information.

2. Both organizational and technological changes are necessary. Obviously, the introduction of data warehousing involves technological change. But organizational changes must occur too, and these can be even more difficult than technological change. Brian Cooper explains this concept by referring to a "formula" that he learned in graduate school: OO + NT = COO. It says that the old organization (in its thinking), plus new technology, equals a costly old organization. It is important to change the organization and the technology at the same time; technological change alone is not the solution.

At FAC, senior management recognized that the data warehouse was a key enabler of its corporate strategy but also knew that the strategy called for a completely new approach to banking. Information created from the warehouse helped FAC analyze their business and recognize that certain long-standing practices and products were unprofitable, but managers had to think about this before they could respond accordingly. To support this major shift, a carefully conceived change management program was established before business processes and accompanying jobs were redesigned.

3. Have the right sponsorship. It is well understood that a key to project success is good sponsorship. For data warehousing, however, a more granular understanding of sponsorship is needed. The "right" sponsorship for warehousing depends on the business drivers behind the project, the cost and scope of the project, and the amount of organizational change required. FAC illustrates a situation where the warehouse is a key enabler of corporate strategy, its cost and

scope are great, as is the amount of organizational change involved. For warehousing initiatives of this importance and size, it is important to have sponsorship at the highest organizational levels, from the business units, and from IS. This broad-based management support is critical. At the other extreme, where the warehouse (quite likely a mart) is created to serve a limited, specific need (e.g., production quality), sponsorship by a senior business unit manager may be sufficient.

4. Plan for "quick hit" success, and repeated successes. In today's business environment, companies are very financial-results oriented. In order to maintain and enhance support for any long- term endeavor, it is important to generate "bottom line" results as soon as possible. Each of the initial projects under the Tailored Client Solutions strategy was designed to generate visible financial results. The VISION data warehouse project was divided into five phases, each of which provided immediate, tangible benefits. Phase I delivered information about the highest revenue customers. Each additional phase delivered actionable information for the bank. In addition, money-making programs were implemented in sales and marketing based on information created through warehouse data analyses.

5. Acquire the necessary skills. When organizations change, it may result in a quantum leap in the information skills and technology required. If these capabilities are unavailable in-house, the organization may need to go elsewhere for the help it needs. A data warehousing project will not succeed without people who are technically skilled and have suitable experience.

FAC brought in vendors, consultants, and new hires with data warehousing experience. NCR provided hardware, software, and consultants for the project; First Manhattan Consulting Group helped to analyze the profitability of the bank's different products; and Brian Cooper and

his team coordinated the work of the external partners and provided the vision and experience in how to use the warehouse to support the customer relationship management strategy.

6. Prepare for a permanent production environment. Many companies' initial data warehousing efforts are similar to a critical R&D project on a crash schedule. There is an important business need for the project, which has to be satisfied immediately, so shortcuts may be necessary. As a result, while the project may be completed on time, everything necessary for a permanent production environment is seldom in place.

While such a crash program may be strategically necessary for many warehousing efforts, it is critically important to prepare a stable production environment as soon as possible. This includes having a scalable hardware and software solution, the requisite technical skills in place, appropriate committees to provide direction, and formalized operating disciplines. This is particularly critical if significant consultant expertise has been used in implementing the project.

7. Hire analysts who understand the business and IT. The use of a data warehouse usually requires analysts with different, more advanced skill sets. It is obvious that they must know the business, but the bigger challenge is finding analysts who are also comfortable with data models, databases, SQL, managed query environments (e.g., Cognos), and data mining. These people are business/IT hybrids. Some of a company's analysts may be retrained to work in the new warehouse environment but others may not have the aptitude or inclination for the new kind of analyst work. At FAC, many of the existing marketing and finance analysts either moved to other positions or left the company, and new analysts were brought in to fill the vacancies.

8. Anticipate potential technical staff turnover. The demand for experienced data warehousing personnel is high, and the data warehousing learning curve is steep. Expect that your people will receive "off the scale" offers from other companies, including consulting firms. The loss of a key person at a critical time can delay a data warehousing initiative for months. Even consulting firms and vendors may have a difficult time responding to an immediate request for help because they too may be short staffed. The best strategy is to have attractive retention programs already in place (e.g., bonuses for completion of the project, commitments for additional training) for key people.

9. The data warehousing skills that are needed change over time. There are three phases in the warehouse life cycle: Design It, Build It, and Exploit It. Each of these phases requires a different set of talents, perspectives, experiences, and skills. Those involved in the Design It phase need a good data architecture background, good logical data modeling skills, and a strong understanding of the business. Those involved in the Build It phase need strong project management, process management, and technical (programming) skills. Those in Exploit It phase need strong technical backgrounds, excellent analytical skills, and, most importantly, the ability to translate the analysis into an actionable marketing plan.

Conclusion

FAC has undergone a significant organization transformation in a short time, including a top-to-bottom shift in the ways of thinking about the banking business, a new customer-centric focus, the redesign of its products and distribution channels, and changed business processes -- all supported by a major investment in a data warehouse. Together, these changes have resulted

in a significant increase in performance measures, including profitability. To be sure, the VISION data warehousing effort is not the only factor in this transformation. The transformation effort originated in top management's crafting of a survival strategy, and the data warehousing effort was one of many interlinked components necessary for success.

However, we can say that the transformation could not have happened without the VISION data warehouse. At a very basic level, the FAC transformation is about making better use of information to both meet customer needs and increase profitability. The many examples and applications described in this paper demonstrate the value that can be gained from cleverly exploiting the information available in the bank. Without the discipline imposed by the warehousing effort and the technology to combine the data into a usable resource, many of the benefits described would not have been possible.

Since the 1970s, proponents of information technology have promised that management information systems would put all the right information in the right hands at the right time, and radically change the way companies are managed. Unfortunately, for the most part, reality has fallen far short of the grand promises. Today at FAC, however, the bank is realizing much of that promised goal.

While not every business will aspire to the radical change seen at FAC, the lessons learned at FAC are important for many companies. As IT capabilities increase and costs drop, and as increased competition drives more firms to rethink their strategies, the radical change picture experienced at FAC will become more common.

Even organizations that do not desire such dramatic transformations know that many IS projects will involve considerable organization change in order to accommodate the new, highly competitive marketplace. After all, the biggest benefits come not from the technology, but from

better and more effective ways of carrying out the mission of the organization, supported by the technology. For many firms, data warehousing provides a quantum leap in the availability and quality of information, and may be a critical component of important organizational changes that are designed to improve bottom-line performance. For these firms as well, the lessons learned at FAC should be very useful.