TELCOT: An Application of Information Technology for Competitive Advantage in the Cotton Industry

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Abstract
This paper describes the strategic use of information technology by the Plains Cotton Cooperative Association (PCCA). TELCOT, a computer-based system developed by PCCA, provides cotton traders with functions much like those available to NYSE or AMEX traders.

TELCOT transformed PCCA from a small cotton merchant to a major cotton broker. Handling 115,000 to 240,000 computer transactions per day, TELCOT provides over 20,000 cotton producers, 40 buyers, and 200 gin operators with an electronic marketing service that has helped PCCA grow from a $50 million to a $500 million enterprise in just 15 years.

Keywords: Computer-based trading systems, electronic commodity exchange, strategic advantage, small business, management of information systems, application of information technology

ACM Categories: H.4.0, J.1, K.6.0

Introduction
Cotton is still king in the Southwest. Roughly half of the U.S. cotton crop is grown in Texas and Oklahoma. This cotton amounts to about 10 percent of the world's annual crop. Cotton and cotton seed oil are multi-billion dollar industries and, along with oil and oil services, are the driving forces of the West Texas economy.

Plains Cotton Cooperative Association (PCCA), founded in 1953 by 5,000 cotton farmers, was established as a vehicle to help market the cotton produced by its members. In the beginning, PCCA served primarily as a merchant, buying cotton from its members and reselling it to textile mills. By the late 1960s, PCCA was buying more than 90 percent of the cotton produced by its members.

In an attempt to acquire the best price for its members, PCCA became increasingly aware that the antiquated system of securing bids by telephoning a few buyers was both inefficient and costly for the producer. In 1975, Dan Davis, then President of PCCA, saw an opportunity to create a more efficient cotton market. He invested approximately $2 million to create an electronic marketing system for PCCA's cotton. Within a year a production version of TELCOT was installed.

Today, the trading features of TELCOT resemble those of the major stock exchanges. Members of the cooperative choose from several trading alternatives to offer a given number of bales of cotton (known as a lot) to cotton buyers.

MIS Quarterly/December 1990 347
The quality of a producer’s cotton is determined by the United States Department of Agriculture’s Agricultural Marketing Service (USDA-AMS), and these data are entered into the TELCOT system. Buyers scan the system for lots meeting their requirements. They then make competitive blind bids, buying at either the firm asking price or entering a counter offer bid.

Every TELCOT transaction generates a commission for PCCA. On a typical day, TELCOT processes around 115,000 online transactions. The system has handled a peak day of nearly 240,000 online transactions. Over the 15 years that TELCOT has been available, PCCA has grown from a $50 million to a $500 million per year business and has traded over 15 million bales valued at $3.3 billion.

TELCOt has transformed the Texas and Oklahoma cotton business. Prior to TELCOT, PCCA functioned exclusively as a merchant, actively purchasing and selling cotton itself. TELCOT has put PCCA in the brokerage business. Where PCCA once bought almost all of its members’ cotton, today it buys less than 30 percent. TELCOT provides an efficient and effective means of executing transactions between all the major cotton buyers and sellers. Using IBM PS/2 model 70s and 50s provided by PCCA, over 200 cotton gins and 40 buyers have direct access to TELCOT. Running on an IBM 3090 supported by a team of 20 programmer/analysts, the system transfers data using 11,000 miles of leased telephone lines, which are currently being replaced by FM radio and, in some locations, satellite communications. In 1989, the TELCOT operating budget was approximately $5.5 million.

PCCA is a relatively small, remotely located business that has successfully used information technology to produce a sustainable competitive advantage. This paper describes TELCOT and its strategic impact. Most importantly, this paper demonstrates that it is the strategic application of technology and not the technology itself that is critical to success.

Background

Cooperatives directly contribute over $100 billion a year to the U.S. gross national product. Well-known cooperatives include such household names as Agway, Ocean Spray, and Land O’Lakes. Founded in 1953, PCCA was formed to help market cotton for Texas and Oklahoma cotton growers. This was not the first time that this independent group of farmers had decided to band together. In 1935 they formed a co-op oil mill to process cotton seed and five years later organized another co-op to assist them in the storage of cotton. PCCA was founded with $12,000 worth of uncashed dividend checks from the co-op oil mill. Beginning in 1970, in combination with three other U.S. cotton cooperatives from different regions of the country, PCCA formed AMCOT to more efficiently market cotton on a worldwide basis. Today, PCCA has over 20,000 members, employs approximately 750 people, owns a denim mill that produces enough denim to make 25 million pairs of Levi’s jeans per year, and participates in the trading of more than 40 percent of the U.S. cotton crop.

In the early years, PCCA functioned as a secondary outlet for its members’ cotton. PCCA purchased cotton when the price was depressed or when no market existed. PCCA took title to the cotton and paid the producer an agreed-upon price, thus assuming the market risk. When prices rebounded they sold the cotton. If prices improved quickly, PCCA made money for its members; if prices remained depressed, the added cost of storage meant a loss for the cooperative. By the 1960s, PCCA was buying almost all of its members’ cotton.

In other parts of the country, producers collectively market their cotton in pools. In a pool, the grower signs a contract and the title to his or her cotton passes to the pool. When the cotton is later sold, the grower receives the average price for that type of cotton; thus the grower assumes the market risk. This system allows everyone to compete equally, preventing brokers and gin operators from extorting low prices from desperate farmers who need the cash to plant the next year’s crop. PCCA operates a pool, but it has never been as successful with Texas and Oklahoma producers as it has been with farmers in other parts of the country.

An alternative to collectively marketing cotton is to deal with an independent broker. This is the
way most U.S. cotton is and has always been traded. These brokers either buy the cotton while it is still in the field or purchase it after it is ginned and classified by grade, staple, micronaire, etc. by the USDA-AMS. Grade is a twofold measure of color and trash content in the cotton, staple is the length of the fiber, and micronaire represents the maturity of the fiber. By law, a six-ounce sample of each 500-pound bale of cotton is taken and tested by the USDA.3

By the early 1970s, PCCA was handling less than 20 percent of its members' cotton, down nearly 70 percent from the previous decade. Many PCCA members felt they could get better prices by selling directly to independent brokers rather than to PCCA. PCCA was in trouble! It was no longer viewed as a valuable marketing tool by much of its membership. If PCCA was to survive, it had to provide growers with a service that helped them sell their cotton. To accomplish this, Dan Davis envisioned a computerized market-making system for cotton much like that available for trading stocks on the NYSE or AMEX.

TELCOT was a high-risk venture for PCCA. In the mid-1970s, telecommunications technology was the exception rather than the rule in even the most computer-sophisticated businesses. PCCA planned, however, to go practically overnight from virtually no computing to a state-of-the-art, online real-time system. Moreover, the overwhelming majority of its end users were novices. Nevertheless, the initial TELCOT system, developed by contract programmers, was up and running eight months after initiation of the project. Darryl Lindsey, then an account executive with IBM, was deeply involved in the early development of TELCOT. Because of the extent of that involvement, he was later hired by PCCA to assemble a permanent staff of systems professionals.

TELCOT provides several enhancements for marketing cotton. Historically, producers had relied on the gin to help them determine the price for a specific lot of cotton. If the farmer wanted a price for his or her crop, the gin clerk would call two or three cotton buyers, describe the quality characteristics of the farmer's lot of cotton, and ask for bids. Calls were often repeated several times before the producer decided to sell. Even then, buyers and sellers often failed to reach an agreement; negotiations would have to be repeated many times before a lot was sold. This time-consuming, cumbersome process was weighted against the farmer. Because of the time involved in securing bids, only a few buyers could be contacted; thus, bids were subject to the "luck of the draw," reflecting buyer rather than market forces. Also, because the gin received a commission for arranging the sale, there was always the possibility that gins and buyers might collude to set an unfair price. On the other hand, farmers, interested in knowing what their cotton was worth, would often ask the gin clerks to engage in the lengthy process of securing bids with no real intention to sell. Finally, once the producer and buyer had agreed upon a price, the gin often served as the middleman, paying the producer and delivering title to the buyer. At times, checks from buyers were returned for insufficient funds, the cotton was held in bankruptcy proceedings, and the gin or farmer were left covering the loss.

TELCOT essentially eliminated these problems. Any co-op member can now elect to offer his or her cotton over TELCOT by using a number of trading alternatives and sources of market information. At any time, producers can display information on quality characteristics and quoted market value for all of their lots of cotton.4 Producers and buyers can also see the lots that have recently sold, their quality characteristics, and the price per pound paid by the buyer for the lot. Not only can the farmer assess the value of his or her cotton immediately, but the value is based on actual trading of cotton as well as world supply and demand considerations rather than any specific buyer's needs. At any given time, around 40 buyers are online with the TELCOT system. These buyers are primarily located in Memphis, Tennessee; Dallas and Lubbock, Texas; and Fresno, California. However, through AMCOT, buyers in Japan, South Korea, Taiwan, and several European countries can also purchase PCCA cotton. Under these conditions, the potential for collusion is virtually eliminated; farmers

3 Because of the unpredictable weather and the history of dry land farming, the consistency of West Texas cotton varies to the extent that each bale is unique, thus contributing to the ineffectiveness of pooling as a marketing method.

4 Some farmers have their own personal computers (PCs) to access TELCOT while others prefer to go to the gin where "public" PCs are available. Gin clerks can list a lot or query the system for them.
and buyers alike therefore receive fair market value.

For the buyer, the system provides immediate access to a large portion of the world’s available cotton. Where in the past it might have taken weeks to purchase the volume of cotton needed to supply a large textile mill, the buyer can now accomplish this task in minutes through TELCOT. Because of the speed at which transactions can be completed, prices are relatively unaffected by the knowledge that a substantial amount of a certain quality of cotton is needed to fill a purchase order. On February 21, 1989, for example, buyers purchased over 385,000 bales of cotton in minutes at the farmers’ asking price. Over $110 million worth of cotton was traded over TELCOT that day. Most of this was used to fill an order for the People’s Republic of China. Prior to TELCOT, it might have taken buyers weeks to fill this order, telephoning and re-telephoning producers, whose prices would increase as they became more aware of the buyer’s need.

PCCA guarantees all transactions completed through TELCOT. It ensures that the farmer receives his money and that the buyer gets clear title to the cotton promptly, normally within 24 hours. Extensive audit trails, the threat of being denied access to the system (and thus a substantial portion of the U.S. cotton crop), and the use of drafts and wire transfers of funds prior to title transfer have eliminated most of the problems previously associated with cotton transactions. In fact, several other commodity groups, including cattle, hogs, grain, coffee, tea, and sugar have observed TELCOT and are considering similar systems.

The TELCOT System

TELcot became a commercial reality in 1975 when remote terminals were installed in 15 cotton buyer’s offices in Dallas and Lubbock, Texas; and Memphis, Tennessee. The first feature provided by TELCOT was Regular Offer, in which buyers bid on a blind basis for cotton entered into the TELCOT computer (analogous to floor trading of stocks). After 15 minutes, the computer closed the bidding and awarded the cotton to the highest bidder, provided the price was equal or above a predetermined minimum price set by the producer. There were many advantages to this early TELCOT system. A lot of cotton could be purchased quickly at the terminal, and all administrative work was handled by the TELCOT system.

An early enhancement to the TELCOT system, Firm Offer, was implemented in 1977. As shown in Figure 1, this new option allowed producers to offer their cotton to buyers at a firm asking price (analogous to a stock sell order). An offer was “good ’til cancelled”; it remained outstanding until a buyer purchased the lot or it was withdrawn by the producer. The cotton was sold to the first buyer who met the offer price. Firm Offer has become the most popular option among both producers and buyers.

One of the most popular TELCOT features during periods of low prices is the Loan Advance Program (LAP). Producers can tender their cotton to PCCA and receive a cash advance equal to the Commodity Credit Corporation (CCC) loan price, the price guaranteed by the federal government. PCCA later offers the cotton over TELCOT to obtain the best price available. In this way, the producer receives an immediate cash advance to help meet short-term financial commitments and can still profit if the market improves.

Once a producer places cotton in LAP, he or she can also establish the desired net (less the advance) equity per bale. TELCOT calculates the loan amount and all charges, such as storage and interest, in order to offer the cotton at a price to buyers that nets the producer the desired amount of equity per bale. TELCOT recalculates these charges every night and adjusts the next day’s offering price to net the desired amount for the farmer.

Another feature of TELCOT, Acreage Crop Contracting, allows producers to offer their cotton on a forward basis, contracting for the delivery of cotton at some future date and specific price. Depending upon producers’ and buyers’ interest, any number of different contracts can be offered by PCCA to its members through TELCOT. To offset its risk, PCCA usually reoffers these contracts to other buyers or textile mills.

A recent TELCOT innovation is the Automated Counter Offer program. This feature gives buyers a quick, documented means of countering Firm Offers. In this way, buyers unwilling to pay the Firm Offer price can notify gins and producers of the price they are willing to pay for a particular lot of cotton already offered for sale. This provides
producers with additional price information. Automated Counter Offer is popular with buyers because it often results in agreements that otherwise would not have occurred. An Automated Counter Offer screen is shown in Figure 2.

TELCOT also allows buyers to specify only the cotton they are interested in buying. Buyers can establish their own individual criteria, such as price, quality, warehouse and/or gin location, and crop-year parameters. TELCOT then displays only those lots that meet these criteria. The buyer can also determine whether the lot is in the CCC loan program and whether the cotton was ginned at a cooperative or independent gin. This Buyer Selection function is shown in Figure 3.

Much like a stock broker’s ticker tape, TELCOT also provides subscribers with reports on all trades through the Monitor and Monitor Summary function. This feature displays the sale prices of all trades at all locations to everyone on the system. The system also provides a summary of daily activity, access to futures prices for all ma-

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**ACCOUNT INQUIRY - FIRM OFFER**

<table>
<thead>
<tr>
<th>GIN</th>
<th>ACCT</th>
<th>FNCT</th>
<th>PRICE</th>
<th>BYR</th>
<th>FARM</th>
<th>STATUS</th>
<th>LF</th>
<th>CL</th>
<th>STP</th>
<th>MIC</th>
<th>STG</th>
<th>UNF</th>
<th>CODE</th>
<th>B/C</th>
<th>LRR</th>
<th>PREM</th>
<th>PRICE</th>
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<tr>
<td>50000</td>
<td>0123</td>
<td>4200</td>
<td></td>
<td>60</td>
<td>FIRM</td>
<td></td>
<td>43</td>
<td>28</td>
<td>295</td>
<td>415</td>
<td>226</td>
<td>779</td>
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<td>0720</td>
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<td></td>
<td></td>
<td>60</td>
<td>30</td>
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<td>318</td>
<td>278</td>
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<td>3148</td>
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<td>3868</td>
</tr>
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</table>

**Codes on the Screen**

FNCT - The Firm Offer is initiated by typing the function code "F".
Other function codes show more quality detail on bales in the lot.

PRICE - Firm Offer price for this lot ($42.00 per pound in this example).

BYR - Buyer number, if the Firm Offer is accepted.

FARM - Farm number.

STATUS - The status column will indicate if it is a Firm or Regular Offer.

Quality Characteristics for the lot include: LF - Leaf; CL - Color; STP - Staple; MIC - Micronaire; STG - Strength; and UNF - Uniformity.

WHSE CODE - Warehouse code where the cotton is physically located.

B/C - Number of bales in the lot.

LRR - Loan value on this lot (loan repayment rate).

PREM - Premium over the loan rate.

PRICE - Price for this lot.

Figure 1: Account Inquiry/Firm Offer Screen
Codes on the Screen

FNCT - Function code column is used to type a code to provide information on each counter offer.
OFFER NO. - TELCOT Firm Offer number.
GIN NAME - Shortname for the gin where the offer originated (Lyford, TX, in this example).
TOTAL B/C - Number of bales in this lot.
OFFER PRICE - The Firm Offer price of the lot.
C/OFFER PRICE - The counter offer price submitted by the buyer.
C/OFFER TIME - The time the counter offer was made.
EXPIRE TIME - The time through which the counter offer is in effect.
C/OFFER STATUS - Several status states are possible including ACTIVE (offer is open); VOID (offer has been withdrawn by the buyer); ACCEPT (offer has been accepted); WORKING (gin acknowledges receipt of the counter offer and is attempting to locate the producer for consideration).

Figure 2. Buyer Counter-Offer Maintenance Screen (buyer 00051 in this example)

For the gins, PCCA has expanded its services to include an Online Gin Accounting (OLGA) system. OLGA's significant features include Bale Accounting, General Ledger, Payroll, and Financial Statements. Many of these features are used to augment the gins' more traditional bookkeeping operations. Currently, about 160 gins subscribe to OLGA.

In 1985, TELMARK, Inc., was founded to provide TELCOT’s services to independent gins and their customers. This expansion enabled TELCOT to establish a larger customer base, making the electronic service more cost-effective for growers and buyers alike. TELMARK’s growth and acceptance in the independent sector has consistently exceeded expectations.

PCCA leases all its equipment, including the 3090 mainframe running TELCOT, over 65 gigabytes of DASD, a 3725 front-end processor for the network, and the thousands of miles of telephone lines. A monthly fee is paid to PCCA by both buyers and gin operators for use of their IBM PCs and the communications services. The primary software systems used to support TELCOT are MVS/ESA, CICS, COBOL and IBM’s SNA communications products.
## Codes on the Screen

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>REG INDEX</td>
<td>Selects only lots in Regular Offer.</td>
</tr>
<tr>
<td>FRM INDEX</td>
<td>Selects only lots in Firm Offer.</td>
</tr>
<tr>
<td>FORM A or G LOAN</td>
<td>Cotton in the CCC loan program may be offered for sale over the TELCOT system; Form G Loans are for PCCA members; Form A Loans are for non-members.</td>
</tr>
<tr>
<td>CROP YEAR PARAMETERS</td>
<td>Specifies the crop year the buyer wants (NEW, 1 YR OLD, 2 YR OLD).</td>
</tr>
<tr>
<td>TELCOT QUOTE</td>
<td>TELCOT price for the lot.</td>
</tr>
<tr>
<td>PRODUCER QUOTE</td>
<td>Producer’s Firm Offer price.</td>
</tr>
<tr>
<td>EQUITY DOLLARS</td>
<td>Amount (in dollars) per bale that must be paid by the buyer to gain the right to redeem a bale from the CCC loan program.</td>
</tr>
<tr>
<td>LOT SIZE</td>
<td>Range of lot sizes (in bales) the buyer wants to see.</td>
</tr>
<tr>
<td>QUALITY RANGE</td>
<td>Buyer can specify particular quality characteristics for the cotton.</td>
</tr>
<tr>
<td>AREA</td>
<td>Buyer can specify a particular gin area.</td>
</tr>
<tr>
<td>COMPANY</td>
<td>Identifies whether cotton is held by the co-op (PCCA) or by independent gins (TELMARK).</td>
</tr>
<tr>
<td>WHSE-SEL</td>
<td>Buyer can specify specific storage of warehouse locations.</td>
</tr>
<tr>
<td>GIN-SEL</td>
<td>Buyer can specify specific gins.</td>
</tr>
</tbody>
</table>

## Figure 3. Buyer Selection Screen - Firm Offer Index

### The Development of TELCOT as a Strategic Advantage

The TELCOT technology is no longer new, but the service and strategy remain state-of-the-art. McFarlan, et al. (1983) were among the first to recognize the relationship between organizational strategy and the effect of information technology (IT). In some organizations, IT is distinctly supportive in nature, whereas others are strategically dependent upon its effective use. Comparing the strategic impact of the current operations to that expected of the IT application development portfolio, McFarlan, et al. identify four different combinations. As shown in Figure 4, derived from McFarlan, et al. (1983), each of these combinations represents a different organizational environment for IT depending upon the strategic impact and relevance of the existing systems and those planned as part of the applications development portfolio.

Briefly, in the Support quadrant neither the existing nor the proposed systems are expected to directly affect corporate strategy. These organiza-
TELCOT Cotton Trading System

Strategic Impact of Existing Systems

<table>
<thead>
<tr>
<th>High</th>
<th>Strategic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977 - 1980</td>
<td>1980 - Present</td>
</tr>
<tr>
<td>Support</td>
<td>Turnaround</td>
</tr>
<tr>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Before 1975</td>
<td>1975 - 1977</td>
</tr>
<tr>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

Strategic Impact of the Applications Development Portfolio

Figure 4. The Strategic Grid and PCCA’s Movement Over Time
(Adapted from McFarlan, et al. (1983), p. 150)

Tions are not operationally very dependent on the smooth functioning of current IT, nor are they strategically dependent on the development of new applications. In the Turnaround quadrant the efficient operation of current applications continues to play a very minor role in the firm’s success; the success of the applications development portfolio, however, is critical to the organization’s strategic objectives. Conversely, the Factory quadrant includes companies, or business units, that are heavily dependent on the cost-efficient and reliable operation of existing information technology, but little effort is spent on the development of new applications. For firms in this quadrant, maintenance of existing applications is the primary concern; the applications development portfolio is not critical to the success of the organization, and few new innovative applications are ever considered or undertaken. Finally, firms in the Strategic quadrant are dependent on both the efficient and uninterrupted operation of existing systems, as well as the success of the applications development portfolio. Because of these dependencies, success in the Strategic quadrant requires that a close structural relationship exist between senior corporate executives and IT management.

Although useful, categorizing organizations at a moment in time into Strategic Grid quadrants fails to portray the dynamic nature of competitive advantage applications. A firm’s relative dependence on current systems and the success of its application development portfolio varies over time, depending upon customer switching costs, competitors’ response, barriers to entry, and other factors (McFarlan, 1984). Prior to 1975, PCCA was in the Support quadrant. IT use was limited to transaction processing primarily for basic accounting functions. Investment in IT was minimal. Neither the efficient operation of existing applications nor the development of new applications was viewed by management as critical to the overall success of the cooperative. By 1975, PCCA had moved to the Turnaround quadrant. The impact of the existing accounting applications on PCCA’s strategy had an extremely low priority, but management viewed the survival of the firm to be almost totally dependent upon the successful development of the TELCOT application development portfolio. During the first few years of operation (1975-1977), PCCA’s management not only had to develop the portfolio of applications but also market the concept and system to producers, buyers, and gin operators. In the first year of operations, $26 million in cotton (123,000 bales) were traded through TELCOT. In the second year, 280,000 bales were traded through the system with a value of $83 million. By 1977, TELCOT was a success, trading more than three-quarters of a million bales with a value of $167 million. The success of TELCOT propelled PCCA into the Factory quadrant.

For the next few years (1977-1980) very little application development was undertaken and few new enhancements were introduced. Characteristic of the Factory quadrant, PCCA became dependent on TELCOT. Management increasingly concentrated its efforts on efficient operation
of the system. Because of the high strategic importance of TELCOT, operating problems became crises. Many of these crises involved communication. To deal with 35 telephone companies and the problems associated with the older circuit-switching equipment still used in many rural areas, PCCA was forced to develop its own applications to detect transmission line problems. By constantly monitoring transmissions, PCCA was often the first to know of problems and could tell local carriers the exact nature and location of problems.

In 1979, Dan Davis, the initiator of TELCOT, left PCCA to start a service that competed with TELCOT. Later, two other competing services were started. These services provided only limited information display capabilities, listing some market relevant information, but they did not provide the buying, selling, and gin services available through TELCOT. Nevertheless, for the first time TELCOT was facing stiff competition. To meet this challenge, PCCA looked to its application development portfolio for continued competitive advantages. This response to competition moved PCCA in 1980 from the Factory to the Strategic quadrant, where it remains today. In the past decade, its application development portfolio has produced an Online Gin Accounting system, the automation of counter offers, a news and weather service, and many others innovations. To assure a consistent, high-quality fabric, PCCA also developed an application to “select” and “blend” cotton for its denim plant.

A recent innovation is the Electronic Title System. This is similar to an electronic funds transfer system because the warehouse receipt (one for each bale of cotton) is a legal, negotiable document. In the past, this physical document had to be transferred from seller to buyer, often delaying the transaction. Building the system has proven far less challenging than gaining acceptance of the electronic warehouse receipt by both producers and local bankers, who often hold the document as collateral. However, in the fall of 1990 electronic receipts were successfully implemented across the entire system.

Another new application requires the use of bar codes on each bale for logistical and accounting purposes. In 1989, electronic data interchange was implemented to facilitate the efficient transport of information from the gins and warehouses to the textile mills. Another significant application enables the gins to use the Online Gin Accounting system when PCCA’s mainframe is not available. This was made possible through the work of Stu Childre, a PCCA employee, who developed a PC version of CICS that runs under OS/2. This allows unmodified CICS-based mainframe applications to be downloaded to the gins’ PCs. This PC version of CICS works so well that IBM has purchased all rights to the system and is marketing it under its own brand name as CICS OS/2. Also under development is a TELCOT application that will allow producers to purchase cotton options (puts and calls) as a hedge against actual production.

**TELCOT in 1990**

As TELCOT enters the 1990s, recent developments have greatly increased the effectiveness of the system. TELCOT is now communicating with gins through FM radio in the UHF band, thus overcoming the poor quality associated with data transmission over telephone lines in remote areas. This system was piloted in 1989 and is now in place in over half of PCCA’s 200 gins. Two-way satellite data (and potentially voice) transmission links have also been purchased for some gins and buyers located in remote areas where neither leased lines nor FM radio waves are cost effective. Satellite communications is through Tridom, a wholly owned subsidiary of AT&T.

**Critical Management Issues**

Although few of the current hardware and software technologies employed by PCCA are cutting edge, the strategic use of these technologies to achieve organizational objectives is probably unique for an organization of this size in the agricultural sector of the economy. Collectively, this case illustrates three important points about the strategic use of IT. First, given innovative management, IT can be successfully applied in any organization regardless of size, type of business, and geographic locale. Second, an organization’s dependence on IT changes quadrants over time as its environment, management, and goals change. Third, the strategic use of technology to achieve organizational objectives is far more important than the technology itself.
PCCA has shown that innovative management can achieve sustainable strategic advantages using established technology. In fact, the use of cutting-edge technology may actually increase the risk. When the technology alone is the product, the risk of obsolescence is always present, regardless of the application. Simply applying new technology is no guarantee of success; a strategy developed by top management that leverages the technology must also be in place. A committed, informed executive sponsor is often a prerequisite for the successful development and implementation of new information technology. This executive must know the needs of the business and have a realistic understanding of the capabilities and limitations of technology. In many cases, he or she must also be willing to champion the system, spending considerable time and energy guiding its development and creating an environment in which information technology is considered important (Benjamin, et al., 1984). Dan Davis provided this support as the executive sponsor for TELCOT.

To leverage the time of the executive sponsor, it is often desirable to have an operating sponsor who is designated to manage the details of the implementation (Rockart and DeLong, 1988). Darryl Lindsey is the operating sponsor for TELCOT. While the executive sponsor initiates and drives the system into existence, either the executive or operating sponsor stays on top of the system's development, providing direction and feedback about the proposed application and communicating a strong and continuing interest to those who have or will have a stake in the system, such as key staff and the line managers involved in the project.

TELCOT is a marketing success unequalled in the history of the agricultural industry. Over 15 million bales of cotton have been traded over the system since its inception. PCCA has continued to enhance the TELCOT system to satisfy the needs of buyers, sellers, and gin operators. Producers wanted more flexibility in marketing options, greater market information, and guaranteed payment. Buyers wanted a more comprehensive description of the cotton offered, the ability to buy large volumes faster, a running tally of their purchases, and guaranteed delivery of their cotton. TELCOT met both the buyers' and sellers' needs. This legacy of innovation and creativity continues today. PCCA continues to evaluate and implement information technology to enhance TELCOT and maintain its reputation as "The Window to the Marketplace."

Summary and Conclusions

Four factors were critical to the success of TELCOT. First, TELCOT was initiated and championed by responsive but visionary management. Second, the producers, one of the project's major stakeholders, were eager for change and powerful enough to encourage all the other necessary users (gin operators and buyers) to participate in the new system. A third critical factor was someone who could effectively manage the development of the system. Finally, the information systems team was structured to facilitate communication and problem solving so that all members were pulling together to develop the system. Collectively, these factors contributed to the development of a responsive infrastructure that continues to adapt and accept change, characteristics considered essential to the strategic effectiveness of information technology (Emery, 1990).

PCCA's experience over the last 15 years with TELCOT demonstrates that relatively small organizations can use information technology for competitive advantage. TELCOT dramatically changed the nature of PCCA's business, transforming their operations from that of a merchant to broker. In so doing, PCCA increased the information content and added value to its product (Porter and Millar, 1985), better serving its clientele and helping ensure its future as an organization.

This case dynamically illustrates the transition of a competitive advantage application from the Support to the Strategic quadrant of the McFarlan, et al. (1983) grid. Today, both the efficient operation of current TELCOT systems and the continued success of the application development portfolio are essential to PCCA's success. To maintain this position, PCCA must continue to invest the business and technical talents of its people to maintain an application development portfolio that leads its competition and continues to service its membership.

References

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**About the Authors**

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