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TELCOT: A CASE STUDY OF ELECTRONIC MARKETING

Substantial interest has developed in applying computerized telecommunications technology to the trading of agricultural commodities.¹ This type of application, generally called electronic agricultural marketing, can have an impact similar to a central open market in creating highly competitive trading conditions and providing instant dissemination of price information. It also has the advantage of greatly expanding the number of participants and volume of trading through remote access to the market from widely dispersed locations.

The receptiveness of farmers and buyers to an electronic marketing system is critical because of the high fixed costs of a system and the need for active trading to realize its potential for pricing efficiency. Unlike the use of computerized telecommunications as a research and management tool, its application to the process of trading agricultural commodities requires acceptance and cooperation from a mass of people with competing interests. Electronic marketing must also confront the challenge of replacing to some extent traditional methods of trading. To gain acceptance, it must provide certain services more efficiently than the alternative methods, and these benefits must accrue to some degree to sellers and buyers alike.

TELCOT, a system for trading cotton from the Texas Plains and Southwestern Oklahoma region, was the first computerized telecommunications type of electronic marketing to be developed in agriculture, and its use has grown rapidly since its introduction in 1975. TELCOT was conceived and implemented by the Plains Cotton Cooperative Association (PCCA) of Lubbock, Texas, primarily by its former Chief Executive Officer of twenty-two years, Dan Davis. TELCOT is the most sophisticated system in use and provides a model for implementing electronic marketing for other commodities and regions.

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¹ *Proceedings: National Symposium on Electronic Marketing of Agricultural Commodities*, Dallas, 17-18 March 1980 (College Station: Texas A & M University and U.S. Department of Agriculture, March 1980), MP-1463.

The extent to which electronic marketing is a transferable technology cannot be answered definitively in advance of a particular application. A historical case study can point out some factors that influence the receptiveness of a commodity market to an electronic system and identify conditions that may foster its development. This case study examines relationships between marketing practices of the past and TELCOT's development. TELCOT is viewed in the context of its performance of certain functions that have historically been demanded of the Southwest's marketing system.² These functions are more difficult to provide than in other cotton-belt regions.

TELCOT effectively provides three fundamental functions or services, one or more of which the traditional cotton-marketing system performed either inefficiently or inadequately. These three services are as follows: (1) farmers have local access to an expanded number of buyers, (2) merchant-shippers have a means of rapid interior assembly, and (3) pricing efficiency at the producer level is potentially improved, which in the case of cotton requires not only accurate reflection of general price levels but also of quality-price differentials.³ Improved performance of these services, particularly local market determination of quality-price differentials, were long-term targets of market reform and improvement efforts by cooperatives and the government. These three functions can be regarded as TELCOT's distinctive capability because, unlike alternative marketing techniques, it performs these services without compromising or sacrificing the efficiency of any one of them.

The cotton marketing system that emerged in the Southwest consists of a network of producers' local markets. Their formation occurred concurrently with the expansion of cotton production to the Southwest without a preceding period of factorage or consignment selling.⁴ During the early years of market formation, farmers often sold seed cotton, but this practice rapidly diminished with the expansion of ginning facilities and improved infrastructure.⁵ Farmers realize higher returns by

² The "Southwest" in this context refers to the Texas High and Rolling Plains and southwestern Oklahoma. It does not refer to southern New Mexico and the El Paso area of Texas where the South Western Irrigated Growers operate.

³ Don E. Ethridge, "A Computerized Remote-Access Commodity Market: TELCOT," *Southern Journal of Agricultural Economics* 10 (December 1978): 177, and Thomas L. Sporleder, "Cotton Price Discovery and Pricing Efficiency," Texas Agricultural Experiment Station, Technical Article 15408 (College Station, 1979), 14-17. Reprinted in *Market Information and Price Reporting in the Food and Agricultural Sector* (Madison, Wisc.: North Central Project 117, Monograph 9, August 1980), 171-72.

⁴ Harold D. Woodman, *King Cotton and His Retainers: Financing and Marketing the Cotton Crop of the South, 1800-1925* (Lexington: University of Kentucky Press, 1968), chap. 23.

⁵ Wells A. Sherman, Fred Taylor, and Charles J. Brand, *Studies of Primary Cotton*

selling after their cotton is ginned and compressed because quantity and quality can be determined better from bales and a separate price can be bargained for the seed. The cotton gin lends itself to being the predominant site for producers' markets because of its central location and conditioning services. Before the late 1930s, farmers would typically sell bales at the gin yard as soon after ginning as possible.⁶ The marketing processes of physical distribution of cotton and title transfer were not often separated at the producer level during this early period.

Trading beyond the producer level has traditionally been a separate activity from physical handling. This separation is accomplished by the services of the warehousing industry and by the use of samples or some form of quality description. Interior assembly refers to the process of trading or transferring title, while physical handling represents the consummation of trading activity.

Several types of buyers participate in the traditional system of interior assembly: ginners, local buyers, and FOB merchants. When ginners do not function as first buyers, they usually provide free brokerage or some type of market-creating service to attract patrons for their ginning operations. The local buyer is either an independent or salaried agent of a merchant firm. Because producer market buying is a seasonal activity, most buyers have other forms of employment.⁷ Before the 1950s, bankers were a common type of first buyer. Many buyers during this early period were itinerant, but often the local buyer was a distinguished resident of the community.⁸ The trustworthy resident as local buyer has been in recent decades less characteristic of buyers because of the general improvement in market news for farmers. The FOB or interior merchants operate with a network of first buyers as their agents. The FOB merchant may have originally been a first buyer. His distinctive function is to assemble large lots of cotton for selling primarily to merchant-shippers.

Formation of local markets was initially facilitated by the use of telegraph wires which enabled local buyers and FOB merchants to adjust bids according to price movements in cotton futures markets. This facility of the local markets is described in a 1927 report:

In about 45% of these markets, the buyers contribute to a common fund for hiring the c.n.d. [commercial news department] price news service. . . . Bankers

Market Conditions in Oklahoma, U.S. Department of Agriculture, Bulletin 36 (November 1913), 29.

⁶ Alonzo B. Cox, *Local Cotton Marketing in Texas* (Washington: U.S. Department of Agriculture, 1927), 10.

⁷ J. W. Wright, *Marketing Practices in Producers' Local Cotton Markets* (Washington: U.S. Department of Agriculture, 1938), 30.

⁸ Interview with Calvin Brints, 21 April 1981, Brints Cotton Marketing, Inc., Lubbock.

and merchants often contribute toward paying for the service, but farmers rarely do. With a few exceptions, the farmers have made no effort to improve the quality of the local cotton market. In the main, they look upon the market as being controlled by the buyers. In too many instances, the farmers do not understand the operations of the local market or its connection with other markets.⁹

The growers' bargaining strategy was based solely on competition among the local buyers. From the growers' standpoint, the local market provided easy access and accommodated their need to sell during the harvest period.

The link between the interior assembly of cotton and its sale to textile mills is made by merchant-shippers or by cooperatives acting in this capacity. The merchant-shippers purchase cotton from the interior and concentrate it into large even-running or uniform quality lots as a requisite step for making export or domestic textile mill sales. Merchant-shippers also established by competitive trading the quality-price differentials that prevail between textile mill demand and local market supply. No two bales of cotton are exactly alike and this dissimilarity is particularly prevalent in the Southwest's production. Cotton is a commodity with heterogeneous demand; that is, quality differences cannot be ranked ordinally by end-users. The value differences of bale qualities are quantified by prices. Although higher qualities generally receive higher prices than lower qualities, price relationships between qualities continuously fluctuate. Grade and staple are the two traditional measures of cotton quality or class used in the trade. There are 518 quality combinations of grade and staple that are priced separately by trading.

While the use of cotton samples has traditionally facilitated the process of trading from the interior to the textile mill level, local trading has made incremental progress only since the late 1940s in applying quality terms.¹⁰ Local and ginner buyers have a general knowledge of cotton classification, which merchant-shippers tried to utilize during the pre-1950s period by sending them basis and quality difference sheets containing limits for all combinations of grade and staple. Each combination was given a limit in points (.001¢) on or off the base contract in the futures market. Telegraph reports of futures trading informed the local buyers of general price-level adjustments, and telegrams or the telephone were used for making limit adjustments for particular quality combinations.¹¹

⁹ Cox, *Local Cotton Marketing*, 3.

¹⁰ R. C. Soxman, *Marketing of Cotton in Producer's Local Markets* (Washington: U.S. Department of Agriculture, 1949), 51.

¹¹ Sherman, *Studies of Primary Cotton Markets*, 1, 27, and A. B. Cox, *Cotton: Demand-Supply-Merchandising* (Austin, Tex.: Hemphill's, 1953), 229.

The limits approach to local buying encountered several obstacles in being applied effectively. Studies of the local markets showed that "hog-round" or "point buying"—applying the same price to all qualities—often prevailed.¹² There were also incidences where certain qualities having higher limits than others received lower prices in the same day. First buyers were able to secure an adequate return when settling accounts with FOB firms or merchant-shippers because cases of over- and underpricing would tend to be averaged.

One cause for the ineffective application of limits was that other economic interests affected buying decisions more than the need to discriminate for quality.¹³ Cotton was in some cases bought as a means of collecting production credit. Among ginning and oil mill interests, bids were intended to attract patrons or to increase cottonseed procurement. At the producer level cotton was a highly liquid asset. As pointed out in one study, ". . . where cotton is made practically an article of barter or exchange in this way we can hope to have no close discrimination between grades."¹⁴

Establishing quality-price differentials in first-buyer transactions was increasingly regarded as a problem in public economy. There was recognition of a deterioration in the quality of the U.S. crop, which affected the nation's exports.¹⁵ Interest in creating market-oriented production incentives culminated in the passage of the Smith-Doxey Act in 1937. This act initiated the green card classing service for producers participating in cotton improvement programs.

The Smith-Doxey Act provided for an expansion of cotton market news. Prior to 1938, this service was either published or broadcast only for futures contract prices or spot prices for one basic quality. The expansion of market news includes daily spot quotations and government loan prices on a comprehensive range of grade and staple combinations. These are posted on gin bulletin boards, and up-to-date summaries of the predominant quality-price differentials are published in local newspapers or broadcast over radio networks.¹⁶

Government nonrecourse loan programs and the Smith-Doxey Act encouraged more separation between physical handling and the trading of cotton at the grower level. Although growers have always had

¹² G. L. Crawford, *Point Buying of Cotton Versus Buying on Quality Basis* (Washington: U.S. Department of Agriculture, 1930), 3-4, and L. T. Murray, "Texas Cotton Markets," *Proceedings #2 of the Texas Cotton Committee* (Austin: University of Texas, 1929), 40, and Sherman, *Studies of Primary Cotton Markets*, 13.

¹³ Cox, *Cotton: Demand-Supply*, 227, and Wright, *Marketing Practice*, 30.

¹⁴ Sherman et al., *Studies of Primary Cotton Markets*, 24.

¹⁵ Robert Mayer, "Changes in Merchants' Methods of Buying Cotton in Local Markets," *Proceedings #7 of the Texas Cotton Committee, 1933* (Austin, 1933), 21.

¹⁶ Soxman, *Marketing of Cotton*, 11.

the potential of storing their cotton and offering it by providing samples, green card descriptions allowed the trading process to be coordinated over a telephone by a gin clerk. From the late 1940s to TELCOT, the predominant practice of Southwest local marketing was to offer a recap (a frequency distribution of bale qualities in a lot and an average price for the lot) to different buyers for obtaining the best bid. During the late 1940s the merchants began terminating their practice of sending limits to their interior agents. The green cards and improved market news enabled local or "green card buyers" to determine bids for producers' cotton that would secure a trading margin.¹⁷ The merchants benefited by avoiding the risk of having their local basis or bids get into the hands of competitors.

Cooperatives have had a major role in the history of cotton-marketing improvement efforts. The first sustained and large-scale cooperative cotton marketing program emerged under the combined influences of ruinous agricultural prices after World War I and the introduction of the centralized commodity marketing idea from California. The centralized concept advocated a large-scale marketing approach that did not depend on federating local organizations. It sought to obtain a dominant share of the market by means of long-term contracts with growers and shifting the pricing point for producers' commodities closer to the consumer level. Cooperative marketing during the 1920s and 1930s can be called the "centralized" or Sapiro period because of the impact of California lawyer, Aaron Sapiro, who was the concept's most articulate and aggressive promoter. At a convention in Montgomery, Alabama, in 1920, Sapiro convinced the assembly to adopt his plan by organizing state associations and a nationwide cotton cooperative organization.¹⁸

The Southwest was represented by the Oklahoma Cotton Growers Association and the Texas Farm Bureau Cotton Association (TFBCA). The seasonal pool contracts of these associations provided growers an initial advance at delivery of 65 percent of estimated market value. Each participating grower's cotton was classed and discounts and premiums around a base quality were paid in the final settlement of the pool. While the Sapiro Plan did not provide growers with a measure for local market bargaining, its marketing pool did make payments according to quality.

¹⁷ Merchants and cooperative managers believe that limits were no longer sent out by the late fifties. Evidence of this change is also indicated by the use of the term "green card buyers" during the transitional period. See C. E. Bowles, "The Plains Cotton Cooperative Association," MS, 1963, PCCA, Lubbock.

¹⁸ Robert H. Montgomery, *The Cooperative Pattern in Cotton* (New York: Macmillan, 1929), chap. 2.

The TFBCA and other state associations encountered several constraints to implementing the seasonal pools. Production financing terms precluded some growers from joining the pools or from consummating their contracts.¹⁹ Pooling also restricted access to alternative buyers, which seems to have been a feature desired by many Texas farmers. The lack of local access to alternative buyers may not have been an overwhelming obstacle for pooling in Texas were it not for the TFBCA's relatively high operating costs which diminished growers' returns. The TFBCA did not have the capability to provide both payments according to quality and efficient interior assembly. Its system required substantial overhead costs from employment of a large field service for grower contracting, assembling both samples and bales, and administering final payments. For the 1926-1927 crop, the field service claimed almost 30 percent of total marketing costs and this fact was widely publicized by competitors.²⁰ In 1929 the TFBCA was split into separate organizations, but pooling never became a significant marketing alternative in the Plains area until recent years.

During the Sapiro period of cotton marketing organization and throughout the 1930s, significant numbers of cooperative gins were established in the Southwest. These two forms of cooperative organization did not coordinate their activities to form a marketing strategy. The cooperative gin movement was related to marketing in that growers wanted faster ginning services, improved lint conditioning, and coordinated selling of cottonseed.²¹ Furthermore, the gin is the site of the local market. The development of organizational relationships between PCCA and the cooperative gins has been particularly critical in the evolution to TELCOT.

An organizational trend developed toward federated cotton marketing with the establishment in Lubbock of Plains Cooperative Gins, Inc., in 1936. Although the cooperative gins were not established to be local cotton marketing associations, there was an increasing pressure to buy their members' cotton in order to retain patronage. Plains Cooperative Gins received samples of the cotton purchased by its member gins. The cotton was sold in Lubbock by a daily auction to highest bidders.²² After its first season of cotton auctioning, Plains Cooperative Gins had

¹⁹ Ibid., 75-76, 184, and C. O. Moser, "Cooperative Cotton Marketing," *Proceedings of the National Association of Marketing Officials*, #1 (n.p., 1924), 10.

²⁰ C. E. Bowles, "The Development of Texas Farmers Movement and Cooperatives Observed by C. E. Bowles," ed. H. B. Sorensen, MS, 1968, PCCA, Lubbock, 13.

²¹ A. M. Dickson, "The Place of Cooperative Gins in a Cooperative Cotton Marketing Set-Up," *American Institute of Cooperation Yearbook* (Washington: A.I.C., 1933), 455-56.

²² Omar W. Herrman, *Development of Cooperative Cotton Ginning* (Washington: Farm Credit Administration, 1939), 66.

the opportunity to acquire a cottonseed oil mill. This form of integration was more promising because the local members' objective of securing adequate ginning volumes was not directly a problem of cotton but of cottonseed marketing. By processing cottonseed, the cooperative gins were able to counteract the effect of cross subsidization of cotton by the line gins of oil milling firms.²³ Although cotton marketing services were continued, the organization was renamed the Plains Cooperative Oil Mill.²⁴ Cooperative cottonseed processing not only helped the gins, but also removed some of the competitive disadvantages experienced by cotton marketing cooperatives.

The experiences of the Sapiro Plan of cotton marketing and of the cooperative gin movement led to a new approach to interior assembly. A system of substituting some of the functions of the field service by working with cooperative gins was conceptualized in a paper presented in 1933 at the American Institute of Cooperation:

Cooperative gins operating as an adjunct to the cooperative cotton marketing association can, through their contact with farmers, largely supplant the field service organization and perform the local assembly function, and, being on an independent self-sustaining basis, can render this service at a minimum cost to the associations. It is of mutual interest to both in that the patrons of the gins have the best possible marketing machinery for their cotton and that the associations assemble the cotton at the least possible cost to themselves.²⁵

This plan was fundamental to the organizational structure of PCCA and its operations. In 1953 a producers' committee adopted the centralized or direct membership type of organization, similar to the pattern of most cotton cooperatives, but a unique system for developing relationships with the cooperative gins was devised. The locations of the coop gins are used as director districts. The directors from each gin cooperative throughout the trade area select one member to serve on PCCA's board.

PCCA's initial operations were limited primarily to selling members' cotton delivered to receive the loan value from the Commodity Credit Corporation (CCC) program. The existence of price supports and the Form G loan enabled PCCA to acquire all the cotton members wanted to sell and when they wanted to sell by advancing "even the loan" from the CCC. PCCA administered this program by having cooperative gins prepare a payment document and enclose it with warehouse receipts and green cards in a draft envelope. Farmers were paid for their cotton

²³ *Ibid.*, 66, note 44.

²⁴ William N. Stokes, *Oil Mill on the Texas Plains: A Study in Agricultural Cooperation* (College Station and London: Texas A & M University Press, 1979).

²⁵ Dickson, "The Place of Cooperative Gins," 464.

by presenting the draft envelopes to a local bank. PCCA paid for the drafts and was reimbursed the loan value from the government.

PCCA encountered some difficulties in processing documents during the early years. Errors in calculating payments at the gin were not easily worked out and interest expenses accrued between the time PCCA paid for the drafts and received reimbursement from the government. In 1958 the function of calculating payments and issuing checks was transferred from the gins to Lubbock, and significant savings were accomplished. PCCA automated this operation in 1961 and was the first nongovernmental organization to use computer data processing in the cotton industry.²⁶ Documents and payments for cotton from about 8,000 producers were prepared more accurately and PCCA's interest expense was reduced. PCCA's data processing system was critical to its growth in membership, which reached a record 27,000 farmers in 1965; adding areas of southern Texas, Oklahoma, and eastern New Mexico.²⁷

While putting in place its system of cotton invoicing and grower loan payments, PCCA had to develop its merchandising capability. PCCA's first idea was to offer its entire receipts in mixed-quality bale lots, but the large merchant-shipper firms expressed no interest in bidding on this cotton. PCCA then undertook the service of concentrating and sampling to make its cotton receipts more marketable.²⁸ This approach succeeded in moving its inventory, but certain steps were needed to develop an effective merchandising program.

During the 1950s there was growing application of micronaire (fiber fineness) values in the trading of cotton at the textile mill level. Merchants conducted random prebuying micronaire tests in different areas as a guide for pricing and procurement. During the 1956-1957 marketing season, however, a study showed that 90 percent of the cotton in local markets was bought without reflecting micronaire differences, with 9 percent at discounts and 1 percent at premiums.²⁹ In 1960 PCCA began large-scale fiber testing for micronaire and other measures not provided by green card classing. PCCA's large volume of receipts helped reduce the per bale cost of fiber testing. A major constraint was to have test results available quickly for marketing purposes. PCCA was an innovator in applying assembly line techniques and automated data processing for large-scale fiber-testing operations. Its efforts were

²⁶ "PCCA Pioneering with Electronic Equipment," *Cooperative Commentator* 6:6 (November-December 1961): 1.

²⁷ PCCA Folder, History and Statistics Unit, Agricultural Cooperative Service, USDA.

²⁸ Interview with Dan Davis, 4 February 1980, Lubbock.

²⁹ Bill B. Crumley and Maurice R. Cooper, *Cotton Merchandising: Costs, Practices and Problems* (Austin and Lubbock: University of Texas and Texas Technological College, 1961), 18.

influential in having the USDA include micronaire tests in the green card classing service in 1966.

PCCA's growth depended on its opportunity to merchandise substantial volumes of more marketable qualities of cotton than what growers typically delivered on the Form G loan. Calcot, Ltd. and other cooperatives provided PCCA with models of full commitment seasonal pooling programs. Pooling enables cotton cooperatives to reduce price risks and secure merchandising strength from controlling significant volumes of widely different qualities. PCCA was aware of the general unpopularity of a 100 percent delivery pool among growers in its trade area, so it introduced a partial and a total delivery option for the 1957 season. PCCA converted to a 100 percent delivery pool for the 1958 crop and had both favorable results and receipts of about 16 percent of the Southern High Plains production. Producer acceptance of pooling was gaining momentum; however, the provisions of the Agricultural Act of 1958 undermined implementation of pooling for the 1959 crop. The lack of sustained interest may have also reflected the growers' historical preference for local market selling.

During the two years of programs under the 1958 Act, the cooperative system functioned as both government-approved buyer and seller. The gins were purchasing agents, paying farmers the CCC price. PCCA operated as a sales agent, assembling the CCC cotton into even-running lots and putting it up for auction. PCCA was required by the regulations to advertise government cotton through catalogs to all interested purchasers. After the catalogs were distributed, a weekly sale was held and transactions were made with the highest bidders. Dan Davis recalls, "One thing we learned from that operation was that cotton that was widely advertised through the catalog method tended to bring better prices than cotton from the smaller sales agents who did not advertise so widely." Furthermore, PCCA observed that cotton sold through the catalogs on green cards brought higher prices than cotton sold on samples. The green card catalogs facilitated broader market coverage and buyers were often more confident of trading on government class than on their own classing of samples.³⁰

After the CCC buy-sell programs lapsed in 1960, PCCA developed its own catalog sales program for producers. It was a five-day-per-week program with PCCA acquiring cotton on daily price schedules and selling through its own and outside bids from the daily distribution of catalogs. Rather than just advancing the CCC loan rate, PCCA developed its price schedules for producers by reference to the daily competitive market it had created. PCCA's computer made fast preparation of price sheets and catalogs feasible. Price schedules were delivered by courier

³⁰ Interview with Dan Davis, 4 February 1980 and 20 April 1981.

to all cooperative gins, and catalogs were delivered locally and by air express to merchants and mill buyers in Memphis, Houston, and Dallas. Daily bids were received by telephone and key punched for computer selection of the highest bids, in what was a two-day cycle for transactions. PCCA participated in the bidding to increase the system's competitiveness and to procure cotton for its merchandising operations.

The competitive bid program proved to be an immediate success. It gave producers daily price information on all relevant qualities of cotton; a service that had not existed before in local markets. Before government cotton classing provided micronaire measurements, PCCA was able to input these data on the catalogs and price schedules from its fiber-testing laboratory. In contrast to seasonal pooling, the competitive bid program provided producers with the full market value on the day and portion of their crop they wanted to sell. The program was popular among the merchant-shippers because it provided interior assembly. Cotton was offered in uniform 100-bale lots, which accomplished the process of concentrating bales to some extent. PCCA's system, in terms of interior assembly, was described in a 1963 article in its association newsletter:

One of the expensive jobs in marketing cotton has been assembling cotton from many producers into large lots at central points. Through the cooperative gins, their compresses and their Marketing Association, farmers can do this job of massing cotton for themselves cheaper and better than anyone can do it for them. . . . Having cotton concentrated, quality tested and grouped by location is also a big service to the shippers and cotton merchants.³¹

PCCA viewed its system of interior assembly as having revolutionized the Southwest's cotton market. PCCA's former executive secretary made this point in a 1966 article: "Gone are many of the vestiges of the old marketing system, among them, the army of country buyers and the small shippers."³² The physical presence of large numbers of country buyers during the harvest was a characteristic that had disappeared; however, the country buyer method of local assembly still exists. The competitive bid program represented an alternative that was in competition with the local buyers.

The daily distribution of quality-price sheets provided growers with a reference for comparing the alternative bids of local buyers. The cooperative ginner made a recap for offering each grower's cotton to alternative buyers. The recap provided the number of bales in each quali-

³¹ "Yes, Co-ops Do Have Advantages," *Cooperative Commentator* 8:1 (January-February 1963): 3.

³² C. E. Bowles, "Revolution in an Intricate Process May Not Be Over," *Cotton Farming* (Memphis, Tenn.: Texas-Oklahoma Plains Edition, May 1966), 7.

ty combination according to government class and an average price for the lot. However, local buyers were able to obtain PCCA's quality-price sheets by agreeing to pay a higher price for the lot or for certain quality bales in the lot.³³ In the sense that revealing PCCA's bids allowed competitors to know exactly how high they needed to bid, the growers were diminishing potential margins. They were also losing the opportunity to have their cotton exposed to many buyers beyond their local market. The effect on PCCA was that the more marketable bales were purchased by local competitors, while the cooperative received the remaining bales in the lots.

PCCA tried to rectify this situation in 1968 by sending out an average bid price for each producer's lot. This method, called the "bid book," replaced the quality-price sheets.³⁴ The "bid book" made it more difficult for local buyers to determine what PCCA was bidding for particular qualities of cotton. Although the local buyers could bid on part of a lot, the growers would not know the value of their remaining bales and would be more reluctant to break up their lots under these circumstances. PCCA's bids from this method were still revealed and used by growers as their offering prices in the recaps.

PCCA's competitive bid program became unfeasible from a risk standpoint with the lowering of the CCC loan-rate price floor in 1970 and again in 1973. It became extremely risky to advance a competitive price for acquiring all the cotton that members wanted to sell and then reoffer this volume through catalogs. During the early 1970s cotton prices often moved significantly above loan rate levels, so that interior assembly over a vast regional volume would have required enormous amounts of working capital and risk exposure. Hedging this volume of cotton proved to be impractical because the futures market was relatively thin after so many years of a highly regulated spot market. Furthermore, the short-staple cotton varieties of the Southwest cannot be hedged very well because their price movements are often imperfectly correlated with the movements of the quality contained in the futures contract.³⁵

PCCA's strategy for adapting to the government's market-oriented policies of the 1970s was to provide two programs. One way to manage risk is with a seasonal pool. In 1975 PCCA offered the seasonal pool concept to growers who wanted to participate in the ownership of a textile mill in Littlefield, Texas. This program is a separate cooperative organization called the American Cotton Growers and represents

³³ Davis interview, 20 April 1981.

³⁴ "Questions and Answers on New Bid Book Program," *Cooperative Commentator* 1:2 (November-December 1968): 4.

³⁵ Davis interview, 20 April 1981.

a fully integrated approach to risk management. For the majority of its members PCCA developed TELCOT, an electronic system that brings all buyers and local markets together into a centralized trading process.

PCCA continually kept up with new generations of automated data processing systems. By 1974 the use of "on-line" computers and CRT (cathode ray tube) terminals enabled the cooperative to call up its bids for producers' cotton quickly on request from the local gins. Communication of bids to the gins by courier service was replaced by inbound leased telephone lines.³⁶ This system gave PCCA more flexibility in making price adjustments, but the degree of risk in the market did not allow acquisition of large volumes of cotton for catalog auctioneering.

The TELCOT system enables PCCA to provide a daily competitive bid program without having to carry the risk of advancing the full market price to acquire local cotton for reoffering to merchants. In a sense, TELCOT is a step back from cooperative integration in assembling 100-bale uniform quality lots for the catalog auction. Instead, TELCOT provides centralized and simultaneous auctioning of individual farmers' mixed-quality lots. It brings the merchant-shippers to 400 producers' local markets and involves them directly with the process of interior assembly.

TELCOT began operating in 1975 with the leasing of CRT terminals and printers to buyers in Lubbock, Dallas, and Memphis. The central processing unit or TELCOT center is at PCCA's offices in Lubbock, and PCCA participates as a buyer over the system. In 1976 PCCA began leasing CRT terminals to the gins. When growers want PCCA to offer their cotton over TELCOT, they communicate requests over the terminal rather than having to use inbound WATS lines. The major benefit in having CRT's at the local level is to provide instantaneous market news. The results of all trades are broadcast over the system. The gin is a community meeting place for Southwest farmers, and the TELCOT "window" on the market attracts large gatherings during periods of active trading. A terminal is beneficial to the ginner because it eliminates manual recapping, and it is used as a management tool for services other than cotton marketing, such as bookkeeping.

During every season since 1975 TELCOT has provided a cotton auction called the "regular offer" option. PCCA develops a TELCOT quotation for 4,144 quality combinations on the government class, and this information is printed out in each buyer's office before the market opens. Trading begins when PCCA offers producers' lots for a fifteen-minute auction. A list of these offers appears on the screen with the

³⁶ *Proceedings: National Symposium on Electronic Marketing*, 45.

average TELCOT quotation per pound for the entire lot and the time remaining for submitting bids. When buyers are interested in particular lots, they can call up TELCOT recaps that enumerate the bales and the quotations for each quality combination. After time has elapsed, the sale goes to the highest bid, unless it is more than 25 points below the TELCOT quotation. In the latter event, the grower can decide to accept or reject the highest bid.

A busy trading day indicates a general upward trend in the market, which requires an adjustment in the TELCOT quotation. This is accomplished by applying a market difference in points per pound for all qualities offered. For example, if 50 points are added, +50 M/D will appear on the screen. Likewise, points can be taken off to encourage more trading in a down market. During a trading day there are also changing price relationships between different qualities. However, TELCOT does not adjust the quotation for particular quality combinations during the trading day. These adjustments are made when the market closes and new TELCOT quotations are developed with reference to the trends and results of the day's trading activity.

For the 1977 season, the filing and storage capabilities of computers enabled PCCA to develop the "firm offer" option over TELCOT. The growers can establish their own offering price for a lot and have it held on the system until purchased. The market news benefits of TELCOT are especially useful to growers in using the "firm offer." They can see at what price levels certain qualities of cotton are trading and can adjust their offer each day to any amount of points above or below the TELCOT quotation.

The "firm offer" option allows the buyers to make select searches. For example, a buyer can call up only lots with certain qualities, size, price, or warehouse location. The selective search capabilities and extensive exposure that producers obtain for their cotton with the "firm offer" have made it a more popular option than the "regular offer" during the last two seasons. A forward contracting option has been introduced over TELCOT and many others can be developed because of the capabilities of computerized telecommunications.

The spread of TELCOT services to growers who do not belong to cooperative gins began in 1978. The implementation of this program is being carried out by Dan Davis. After leaving PCCA in 1977, he set up his own company, Commodity Exchange Services (CXS), for establishing CRT access to TELCOT trading in noncooperative gins. TELCOT and CXS are one system of trading that coexists and is in competition with the traditional system of local buyers and FOB merchants. The receptiveness of farmers and buyers to TELCOT can be measured by its share of the Texas-Oklahoma upland cotton market. In the 1979-

1980 season, 1.7 million bales were traded or 28 percent of the crop. In the drought-ridden 1980-1981 season, about 1.2 million bales were traded, or 35 percent of the crop. However, TELCOT has an impact upon the entire Southwest trade in terms of the instantaneous market news it disseminates.

A strong preference for a system with local access to alternative buyers developed among farmers in the history of Southwest cotton marketing. Until the widespread use of green card terms and dissemination of market news in the late 1940s, farmers had no measure for evaluating a bid. Their only technique was to have competition between first buyers. Before the late 1940s, it was common for growers to discover opportunities for a higher price from buyers who figured economic considerations other than cotton trading into their bids. Such cross subsidy buying practices seem to have reinforced the farmers' preference for local market selling.

The farmers' preference for local access was a constraint to cooperative integration of interior assembly services. The competitive bid program was an alternative to 100 percent seasonal pooling. It provided cotton assembly for merchant-shippers and access to more buyers for farmers. Its implementation proved difficult because PCCA had to buy daily substantial volumes at the local level in order to conduct its auction at the merchant level. TELCOT combines these two levels into one central market. Local trading and interior assembly occur as a single process.

The determination of quality-price differentials historically has been provided inadequately in the producers' local markets. For many decades merchants gave limits to their first buyer agents in an attempt to provide quality-price differentiation which would facilitate procurement. Green card classing and improved market news changed the practice of local buying but have not necessarily established accurate quality-price differentials in transactions with producers. TELCOT centralizes market news and trading for establishing quality-price differentials, which provides more potential for pricing efficiency.

TELCOT's distinctive capabilities are the key to its receptiveness by participants. TELCOT is succeeding because it complements certain aspects of traditional marketing practices and improves upon those services that have historically been desired by participants but were difficult to provide. The three critical cotton marketing services in the Southwest will probably continue to evolve and improve. For example, grower coordination in concentrating bales for uniform lot offers would improve the interior assembly service of TELCOT. Alternatively, it is technologically feasible to have a system that allows buyers to reoffer particular quality bales from mixed lot purchases.

The trading of farm commodities by computerized telecommunications will probably increase in the future. Decisions about starting up new electronic markets will inevitably be influenced by the results of first generation projects, some of which have not had the same level of success as TELCOT has had. Comparisons and models are difficult to use because conditions differ from one market to another, but case studies can suggest the important factors to analyze. The transfer of computerized telecommunications trading to other commodities may be most successful in those instances where the system can accomplish a combination of services that historically have been inadequately performed in the marketing of the regional commodity.