VERTICAL COORDINATION POTENTIALS IN COOPERATIVE GRAIN MARKETING SYSTEMS IN THE SOUTHERN PLAINS

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PREFACE

This study is concerned with the vertical coordination of marketing practices and services between local and regional grain marketing cooperatives in Oklahoma and Texas. The area of concentration is the availability and importance to local cooperatives of regional cooperative based services and marketing factors which have an effect on local cooperative manager decision-making.

Appreciation is expressed to the Department of Agricultural Economics, Oklahoma State University, for providing me the opportunity to continue my education via a research assistantship.

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TABLE OF CONTENTS

Chapter Page

LIST OF TABLES

Table Page

LIST OF FIGURES

CHAPTER I

INTRODUCTION

The arrangements employed for the movement of grain from a local cooperative to a regional cooperative are becoming increasingly complex. Advancements in the fields of management, transportation, and communication continually change the speed and efficiency of the movement of grain up through the marketing chain. Coordination of the arrangements which control this movement of grain must adjust with the latest technology to utilize efficient procurement, storage, transportation, hedging, and merchandising methods. However, little is known about the types and degrees of coordination between regional and local cooperatives which would tend to give the greatest return and benefit to grain producers. Additional research is needed to give direction to cooperative management in the area of efficient coordination techniques.

A. Problematic Situation

A.1 Historical Development of Coordinating Procedures

Insight into coordination in cooperative grain marketing can be gained from the historical development of coordinating arrangements in the cooperative grain marketing system, i.e., changes in management, transportation, and communication.

As is typical of many beginning institutions, the story of the grain associations is one of "bitter contests, defeats and victories" (3, p. 276). The initial stages of cooperative grain marketing in the early 1900's were periods of isolated efforts, of cyclical waves of enthusiasm, of activities sponsored by farm organizations, and of growth, rapid expansion and unification.

Though many cooperative ventures were failures, many farmers were more satisfied with their cooperative dealings than they had been with private marketing methods. Margins between local private markets and terminals often seemed excessively large. Reportedly, grain dealers often heavily penalized farmers for marketing mixed grains and then would screen out one kind of grain from the lot to sell, with no additional compensation to the farmer. Collaboration among buyers often lessened competition. An investigation by the Interstate Commerce Commission revealed the existence of agreements verifying the percentage and amounts to be bought by elevators, the prices to be paid, and amounts of dockage to be taken (3). Some buyers set up their own standards of weights and measures, differing from legal standards, which allowed them to penalize farmers when their grain did not meet "standards."

Partly because of these problems in the early grain marketing system, farmers continued to form cooperatives. The peak in local cooperative elevator organization was reached in the early 1920's when there were more than 4,000 active associations in the United States (3). The number of local cooperative elevator organizations had declined to 2,614 by 1936 with total sales of $314,418,000. Terminal cooperative agencies did $85,266,000 worth of business in the same year making the

total cooperative grain business approximately one-third of the total grain business in the country (3). This volume of sales brought marketing problems for the local associations and stimulated interest in grain cooperatives at terminal markets. Cooperative terminal agencies increased in number even though many of the early terminal agencies failed. By 1935 there were 26 cooperative terminal sales agencies in the United States (3). At first they were regular commission agencies doing a consignment business only. Since local grain cooperatives sold approximately half of the grain of members on a 'to arrive' or 'on track' basis, terminal agencies, by failing to buy grain in this manner, did not fully represent the locals in the marketplace. However, because grain producers desired a stronger representation of their interest in the marketing of grain and desired for themselves the savings possible at the terminal level, many terminal grain associations were acquired by local cooperatives and producers to actually handle, store, grade, and take title to the grain (3).

These early cooperative grain terminal purchase and sales agencies, at one time, bought a significant portion of their grain from short-lived wheat pools. The first wheat pool, The Washington Wheat Grower's Association, was organized in 1920. Other pools were formed and by the 1924-25 season, ten pools controlled 28 million bushels of grain (3). These large associations often used monopolistic practices to raise the prices of grains they handled. It seemed appropriate to wheat pool management to withhold supplies of grain in order to secure a higher price in the marketplace. However, farmers associated with such organizations were reluctant to wait for payments delayed by the withholding of grain for higher prices. In addition, in an advancing market, farmers who

delivered grain late in the pooling period received a price which was lower than the market price at the time of delivery. In a declining market, farmers delivering grain early in the pooling period also received a price lower than the market price at the time of delivery. In both instances, farmers were dissatisfied with the pools and tended to accuse the cooperative of poor management. The decline in grain prices leading up to the depression proved to be the climax of problems with the wheat pools, and failure resulted.

The pools were not without value. Orderly marketing of grains did exert a stabilizing effect on prices (3). However, despite over-zealous promoters of wheat pools, misguided attempts to withhold supplies, high expenses, and other obstacles, regional grain cooperatives advanced the cause of large-scale organization in the United States. Such cooperative grain marketing effectively demonstrated the limitations, as well as many of the advantages, of cooperation on a volume basis.

These early local and regional cooperatives were relatively small by today's standards. In general, local cooperatives in a given region were rather uniform in the kinds of marketing services they needed from regionals, such as market information and advice and assistance with transportation coordination. The level of advancement in transportation and communication seemed to dictate the volume of grain controlled by a local. The early usage of teams and wagons proved to be an efficient method for small short trips. Thus, a local did not have a large trading region. After the first World War, larger and more dependable trucks, improved highways, and improved communication gave rise to new coordinating arrangements between local and regional cooperatives.

Regionals expanded their facilities to accomodate increasing numbers of trucks and rail cars transporting grain from locals to regionals. Timing of grain receipts became more critical with the increased volume of grain. Advance commitment of grain to distant markets became more profitable and in turn provided incentive for additional advance grain commitments from local elevators. Thus, coordination of grain marketing continued to develop to better accomodate this increased efficiency of transportation and the accompanying volume of grain.

A.2 Present Importance and Complexity of Cooperative Grain Marketing

Today's cooperative grain marketing systems are a vital part of the United States grain industry. In the 1972-1973 crop year, the 21 primary U. S. regional grain cooperatives handled 595 million bushels of wheat, or 25 percent of the 1972-1973 total wheat supply of 2,409 million bushels (25).[1] Cooperatives presently own 17 percent of the port grain facilities, and 7 percent of all United States exported grain pass through these facilities (2).

Thurston (25, p. 4) has estimated that "...the regional cooperatives' share of members out-of-area sales varies among regionals from about 25 to 80 percent."[2] This "leakage" of grain to firms outside the cooperative system weakens the bargaining position of regional cooperatives and increases their problems with respect to forward contracting

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[1] The 2,409 million bushels wheat supply for the 1972-73 season consisted of 1,545 million bushels of new crop wheat and 864 million bushels of hold-over stocks.

[2] In-area-sales included sale to producers and to local feed mills.

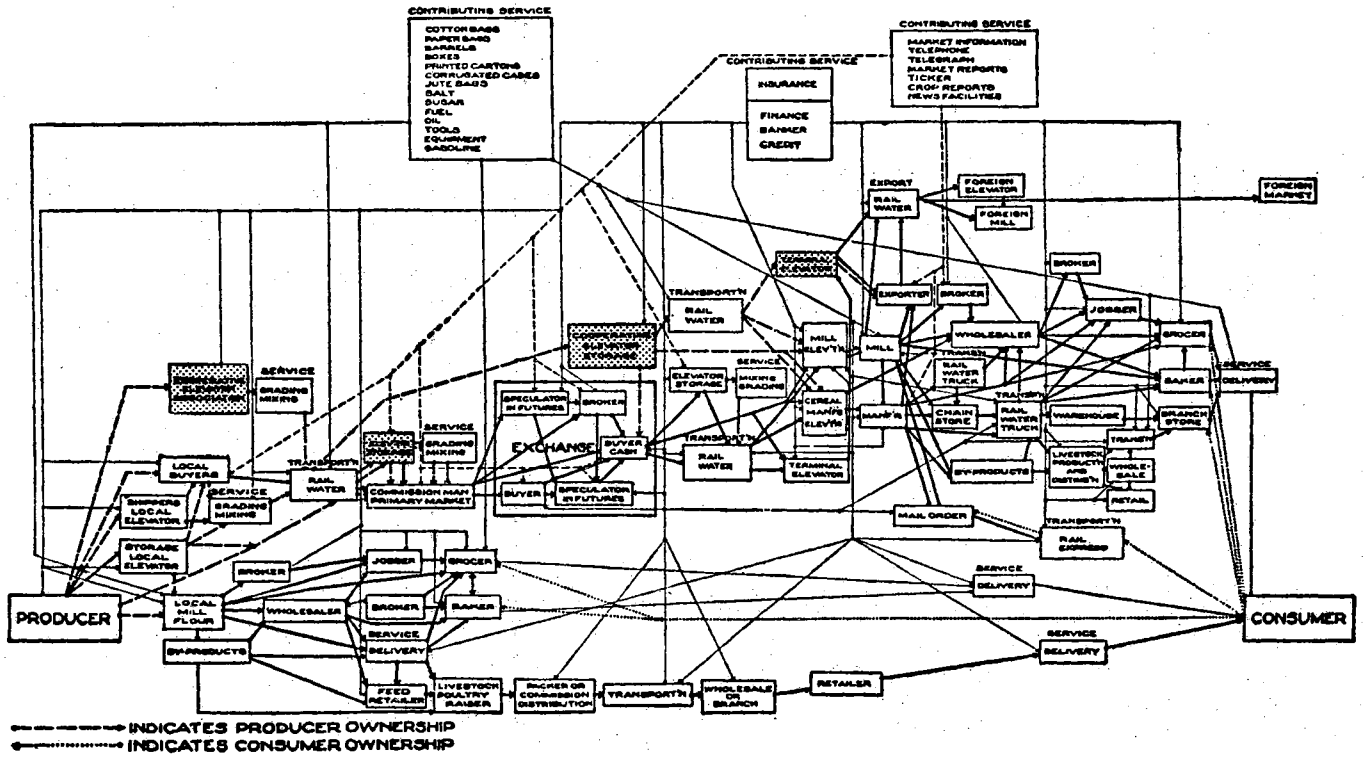
large quantities of grain to foreign and domestic markets. These problems provide at least part of the incentive for grain cooperatives to investigate more and more the advantages of various types of title transfers and coordinating arrangements between marketing stages. Title transfer methods include selling out of storage, delayed pricing, pooling, and advanced contracting. These title transfer methods can occur within various degrees of coordination: simple open market transactions, cooperation of two or more individuals, formal and informal contracts, or vertical integration.

Efficient marketing demands that coordination arrangements conform to the complexity of the marketing system. Figure 1 illustrates the complexity of the wheat marketing system. The shaded blocks trace the marketing steps through the cooperative wheat marketing system. Coordination of risk aversion, delivery timing, title transfer, and quality and grade desired, among other activities, becomes very important to insure efficient movement of grain through the marketing system.

B. Problem

Little is known of the nature, implications and potentials of closer vertical coordination among grain marketing cooperatives and their members in the grain marketing system. Past research has tended to deal with operations at a given marketing level rather than with the entire system. Much of the research is impressive. However, it is commonly known that increasing the efficiency with which a function is performed (when considered in isolation) does not guarantee efficiency of the system as a whole.

The grain marketing system has the task of coordinating what is



Source: Hugh E. Agnew, Robert B. Jenkins, and James C. Drury, Outlines of Marketing (New York 1942) p. 44.

Figure 1. Marketing Systems for Wheat and Wheat Products

desired by consumers. While the system performs in this manner, analyses of the relative effectiveness of system performance seldom go beyond consideration of an activity at one particular level. The research presented herein is designed to partially fill the void in the body of knowledge with respect to closer vertical coordination among regional and local grain marketing cooperatives.

C. Review of Literature

Over the past two decades, agricultural economists have called for a systems-oriented approach to marketing research. However, according to Godwin and Jones (6), progress in the direction of systems-oriented marketing research must proceed at a faster pace if we are to develop the expertise needed to deal with the relevant food and fiber problems of the future. Eldon Smith (21) called for sets of rules and relationships that would make a market function more efficiently and which would take into account the totality of relevant relationships and interrelationships, market news, bargaining power relationships, and production activities. He also proclaimed that literature is lacking in this area but "...the literature on intrafirm economics is impressive indeed" (21, p. 1536).

Many articles have included discussions on the need for a systems approach to marketing problems. R. L. Kohls (10, 11, 12) has written of the need for more progress in research concerning efficiencies of the entire marketing system. He notes that many of the available studies are inconsistent and are difficult to generalize. The Southern Marketing Research Committee (24) echoed these same arguments in 1963 by calling for increased emphasis on adjustment problems faced

by marketing firms and industry groups. The committee stated that marketing research should specify alternative courses of actions and evaluate the effects of these actions on each marketing level concerned. In a 1968 article, Leonard W. Schruben (19) illustrated the advantages of a "systems orientation" in attacking problems of inefficiency by constructing a model to treat questions of shipping and merchandising jointly versus separately. An important advantage of using a model as Schruben did becomes apparent when a change in the price asked by one or more sellers, or offered by one or more buyers, occurs. Also, a change in the freight rate between two locations or a change in the quality of a given lot may change the optimum flow prescribed by the model. Moreover, profits occasionally decline when volume is pushed to capacity operation, an observed tendency in agribusiness firms. When any of these conditions prevail, there exists the possibility of inefficiencies in the market system that are discoverable through systems analysis.

In a later paper, Alden C. Manchester (13) outlined several dimensions of performance of interest to researchers considering problems in vertical coordination. Included are operational and pricing efficiency, price risks, and market power. Goldberg (7) and Juillerat and Farris (9) indicated, in separate papers, that closer coordination is evolving among grain marketing firms, including cooperatives, which are either extending their operations and control closer to the consumers, or are interested in closer ties with grain procurement sources.

In an article that appeared in "News for Farmer Cooperatives" in 1974, grain producers were being advised to increase commitments,

coordination, and efficiency, and to look for new ways to become innovative (8). Areas of concern include transportation, producer/local cooperative contracts, local/regional cooperative contracts, regional/local cooperative services, joint product research, facility improvements, and domestic and foreign trade joint sales efforts. However, very little applied research has been directed specifically to vertical coordination in any agricultural industry, let alone the grain industry. Some work has been done with respect to coordination in the cattle industry by Purcell and associates Dunn and Rathwell (16, 17, 18), along with a few other isolated studies. Similar types of research in the cooperative grain marketing system are likewise lacking. However, Thurston and Meyer (26) did study recent activities and organizational developments of regional cooperatives. They found that management of regional associations face many problems brought about by: (1) new or additional services required by member associations, (management must work more closely with local members and help them get geared up to handle and condition an even larger and faster harvest of grain), and (2) the need to help smaller locals consolidate or merge their operations to better utilize facilities, improve operating efficiency, and broaden their resource base.

An even more detailed and recent study was that of Donald Schwartz (20) who studied the coordination of operations between local and regional cooperatives in a five state area including Ohio, Illinois, Iowa, Kansas and Indiana. He found that a large percentage of grain is lost to independents outside the cooperative system. He also found that while it is not necessary for regionals to be large to be efficient, there are potentials for grain handling economies of size, and

increased market power. Schwartz revealed that 80 percent of the local managers in the sample indicated that their service needs would increase in the future and that they would seek additional help in areas of merchandising, market information, and transportation. If regionals can anticipate these needs and supply the desired services, Schwartz contends they may create a stronger relationship with their local.

Finally, research members of the North Central Grain Marketing Project, entitled Systems Analysis of the Economics of Grain Marketing, are surveying marketing practices of grain producers and country elevators in their respective states. This study should complement other research in cooperative grain marketing coordination.

D. Objectives

The overall objective of this research was to describe those existing marketing patterns and coordinating arrangements in the marketing of grain from country elevators to selected regional grain cooperatives, and investigate those possibilities and potentials which may exist or can be developed that would enable grain cooperatives to increase producer returns through closer vertical coordination within grain marketing systems.

Specific objectives were:

(1) to determine the grain marketing patterns and coordinating arrangements that exist between local and regional cooperatives in Oklahoma and Texas,

(2) to determine those attitudes of local cooperative elevator managers toward marketing procedures and coordinating arrangements

which are provided by the respective regional cooperative through which grain is marketed, and

(3) to descriptively analyze and evaluate alternative marketing arrangements and coordination procedures which may benefit local as well as regional cooperatives.

The research procedures employed are outlined in detail in Chapter II.

CHAPTER II

ANALYTICAL PROCEDURE

A. The Sample

To meet the objectives of the study, the managers of selected grain elevator cooperatives throughout Texas and Oklahoma were interviewed. The following discussion describes the sampling procedure used to select the grain cooperative associations included in the study.

It was hypothesized that marketing patterns, coordinating arrangements, and service needs of the local cooperative vary according to the relative size of the cooperative. Thus, the population of cooperative elevator associations governed by one management unit (manager and board of directors) was categorized according to storage capacity (a measure of size) preparatory to the selection of a sample stratified by storage size.

The first step in drawing a sample was to collect the storage capacities of the local cooperative elevators in the population. The cooperative grain elevator population in Oklahoma and the cooperatives' storage capacities were obtained from the directory of the Farmers Cooperative Grain Dealers Association of Oklahoma. The cooperative grain elevator population in Texas was taken from the member list of the Producers Grain Corporation of Amarillo, which comprises

virtually all the cooperative grain associations in Texas. Storage capacities were obtained by direct contact with each local association in Texas.

The population was stratified into five storage size groups, as shown in Table 1. Thirty percent of the grain cooperative associations in each size group and in each state were selected as the sample.

TABLE I

THE POPULATION AND SAMPLE OF OKLAHOMA AND TEXAS LOCAL GRAIN COOPERATIVES

Group	Capacity (bu.s)	Oklahoma Population	Oklahoma Sample	Texas Population	Texas Sample
1	Less than 100,000	6	2	12	3[b]
2	100,000 to 399,999	25	7	13	5[b]
3	400,000 to 599,999	23	7	15	5
4	600,000 to 999,999	22	8[a]	9	3
5	Greater than 1,000,000	11	7[a]	23	20[a]

[a] The variance of responses on the questionnaire is expected to be wider in some of the groups than others because of the variability of capacity sizes among groups. Also, because the storage capacity of group five is open-ended, (no limit on capacity), it was deemed advisable to secure a larger than 30 percent portion of the population of group five. The extremely large elevators were automatically included in the sample because of the larger trading region they control as compared to other cooperative associations.

[b] A discrepancy in the storage capacity of one of the members of group one was discovered at the time of analysis. To interview another cooperative in group 1 (located in south Texas) would have been costly. Therefore, group 1 has one less cooperative and group 2 has one more cooperative than was originally proposed for the sample.

Numerically, the sample can be defined as follows:

$$\sum_{i=1}^{5} (.3)O_i + \sum_{i=1}^{5} (.3)T_i = (.3)(P+R), \text{ where the}$$

variables are defined as:

O = the stratified groups of cooperative elevators in Oklahoma,
T = the stratified groups of cooperative elevators in Texas,
i = the size group,
P = the cooperative elevator population in Oklahoma, and
R = the cooperative elevator population in Texas.

This sample size provided an adequate representation of the population for statistical testing at a reasonable cost.

A table of random numbers was used to select the representatives from each group within each state. An additional 10 percent of the population in each group was selected by the same method to be used in case of interview refusal or questionnaire invalidation. The manager of each sample cooperative was personally interviewed in the summer of 1974.

B. The Questionnaire

The questionnaire constructed for the collection of data can be found in Appendix A. The structure of much of the questionnaire was influenced by the following hypotheses: (1) title transfer and other coordinating arrangements vary according to the grains handled, and (2) the need for services and coordinating arrangements changes over time. Thus, many questions contain grain and time dimensions.

The questionnaire contains five major areas designed to meet the objectives of the study. They are (1) general information, (2) coordinating arrangements and marketing practices, (3) financial arrangements and structure, (4) the local associations managers' views of the

regional cooperatives' performance, and (5) the influence on decision making of marketing factors and services. A brief discussion of each area follows.

B.1 General Information

Information was obtained on (1) the quantity of grain marketed through regional cooperatives, (2) the quantity of different grains purchased from producers, (3) the gross operating margins received, and (4) the utilization of local cooperative storage space, to determine general characteristics about the local's business operations. Other types of general information included local services provided noncooperative businesses in handling grain, and the importance of different types of buyers with whom the local traded. In the questionnaire, questions 7, 8, 10, 20, 28, 30, 32, 34, 35, and 38 pertain to the general information area.

B.2 Coordinating Arrangements and Marketing Practices

Questions in this section are devoted to vertical coordinating practices and procedures. Specific subject areas included availability and local cooperative usage of regional cooperative services, methods of purchasing and selling grain and premiums provided by regionals as incentives to local cooperatives to follow certain grain handling procedures. Other questions dealt with local storage of regional cooperative-owned grain sources and frequently of price bids, and other miscellaneous coordinating arrangements. Questions 9, 11, 14, 19, 21, 23-25, 29, 31, 36, and 37 pertain to this area of information.

B.3 Financial Arrangements and Structure

A portion of the questionnaire was devoted to the coordination of financial arrangements between the local and regional cooperatives in the cooperative grain marketing system. Information was obtained on local elevator associations' acquisition of regional cooperative stock, availability of credit from the regional to the local, and the operating capital requirements of the local association. Information pertaining to the financial structure of the local associations was also sought as a possible basis for determining needs as financial structures vary. Questions 6, 9, 13, and 39 covered financial arrangements and structure within the cooperative grain marketing system.

B.4 The Local Associations Managers' Views of Other Regional Cooperatives' Performance

Questions 16d, 16e, and 18 were included in the questionnaire to measure the service and grain marketing performance of regional cooperatives in the opinion of local grain cooperative managers. Specific items rated included regional cooperative personnel expertise, operational efficiencies, and informational services.

B.5 The Influence on Decision Making of Marketing Factors and Services

To this point the importance of the services or the influence that marketing factors have on the decisions made by local managers have not been discussed. Questions covering this area were included to complement the questions on performance of the regional cooperative. Exceptional performance of the regional in providing an unimportant service

or marketing factor may not be acceptable to the local. The value of services and factors from the standpoint of the local associations' managers is measured by questions 15, 16, 16b, 16c, and 17. Questions 22 and 26 record the importance of different methods of purchases used by the local and the importance of various sources of information used in arriving at the quoted board prices for each grain marketed, respectively. Question 33 records the importance of different methods of grain sales used by the local.

C. The Response Scale

A response scale of 1 to 99 was used through the questionnaire to give a quantified measure of attitudes (example shown in Figure 2).

Not at all Important				Importance Now and in the Future					Extremely Important	
1	10	20	30	40	50	60	70	80	90	99

Figure 2. A Response Scale for Measuring Attitudes

Such a scale simulates more nearly a continuous function than do many other scales, and it enables the interviewee a greater choice of responses. Also, each response scale number can be easily converted to a standard normal deviate, if desired for various types of statistical analysis. Theoretical justification of the response continuum has been discussed by Oehrtman (15).

D. Data Preparation and Analysis

Data collection was completed in the summer of 1974. Questionnaires were carefully edited for erroneous, incomplete, or contradictory information. They were then coded and the information placed on computer cards for computer assisted analysis.

Custom written computer programs were used for much of the data compilation. Statistical tools of analysis included regression and correlation analysis, and chi-square and Spearman rank correlation tests.

The results from the analysis of the sampled data are presented in the following chapters.

CHAPTER III

MARKETING PRACTICES AND PATTERNS OF OKLAHOMA AND TEXAS GRAIN COOPERATIVES IN THE HANDLING AND MOVEMENT OF GRAIN

A. Introduction

The marketing patterns of the local cooperative with the seller and buyer of its grain is discussed in this chapter. The first section deals with forward marketing from the producers to the local cooperative. The discussion includes methods of cooperative purchasing of grain from producers, contractual arrangements between the producer and local, operating capital requirements of the local, and the utilization of storage space by the local.

The second section emphasizes marketing practices between the local cooperative and its grain buyers. Specific areas of interest are the commitment of grain by local cooperatives to regional cooperatives, gross margins received by locals from grain sales, sources of price bids for the sale of grain, price protection methods used by the local, and methods of grain sales between local cooperatives and grain buyers. A more specific discussion of existing practices between local and regional cooperatives, where particularly relevant to vertical coordination, will be presented in Chapter IV.

B. Forward Marketing of Grain from Farm to Local Cooperative

Before marketing patterns can be thoroughly and effectively analyzed, some general characteristics about the sample population need to be discussed.

The distribution of the 31 sampled local cooperative associations in Oklahoma was uniform across the western half of the state from Southwest Oklahoma north to the Kansas state line, and included the Oklahoma Panhandle. This conforms closely with the Oklahoma wheat belt. However, the distribution of sampled local associations in Texas was found to be separated into two distinct regions. Twenty-nine of the 36 local associations in the Texas sample were located in the Texas High Plains and primarily in the Texas Panhandle. The remaining seven cooperatives sampled were located in the southern portion of the state, several hundred miles south of the Texas Plains. From the interviews with the local cooperative managers, differences in marketing practices and modes of operation were hypothesized to exist between the cooperatives according to the Texas region in which they operate. Therefore, much of the following discussion will consider operations of locals according to their location in each of the two Texas regions as well as in Oklahoma. The size distribution of local cooperatives in the two Texas regions is presented in Table II.

The differences between the three regions pertaining to types and volume of grains marketed through the local association are given in Table III. The six grains shown in this table were the most important by volume handled by local associations in the sample. Wheat and grain sorghum were the most important grains for Oklahoma and Texas in

TABLE II

SIZE DISTRIBUTION OF LOCAL COOPERATIVES
IN THE TWO TEXAS REGIONS

Group	Capacity (Bu.s)	Texas Plains	South Texas
1	Less than 100,000	3	0
2	100,000 to 399,999	3	2
3	400,000 to 599,999	4	1
4	600,000 to 999,999	2	1
5	Greater than 1,000,000	17	3

TABLE III

AVERAGE VOLUME OF SELECTED GRAINS HANDLED
BY COOPERATIVES IN 1973, BY REGION[a]

Region	N[b]	Wheat	Sorghum	Corn	Barley	Soybeans	Oats
				Thou. Bus.			
Oklahoma	31	959	59	5	35	7	16
Texas Plains	29	520	978	117	7	34	4
South Texas	7	0	1211	0	0	0	0

[a] Rye, mungbeans, and other miscellaneous grains were grown in some areas of the population of local associations, however their relative economic importance was small compared with the six grains listed.

[b] N refers to the number of sampled cooperatives.

terms of the volume marketed. Of the grains marketed through local Oklahoma cooperatives in 1973, 89 percent (959,000 bushels) was wheat and 5 percent was grain sorghum. In Texas the percentages were 27 for

wheat and 65 for grain sorghum. The sampled associations in the southern Texas region handled only grain sorghum.

B.1 Methods of Purchase

Local grain cooperative managers have several options to consider when buying grain. The options include: (1) pay cash at the time the wheat is brought across the scales, (2) forward contract, (3) buy grain being stored in their own facilities, (4) buy grain from farm storage either for cash or on contract, (5) buy at a delayed price, or (6) buy pooled grain. Tables IV, V and VI show the distribution of grain purchases by methods of purchase for Oklahoma, the Texas Plains, and South Texas, respectively. Deferred payment arrangements are not an infrequent occurrence in Oklahoma, but were not singled out in these tables. A large portion of all grains received in 1973 was either stored for the farmer and purchased later or purchased for cash when harvested. Very little forward contracting was done in either Oklahoma or the Texas Plains. However, Table VI shows a major portion of the grain sorghum marketed through local association facilities in South Texas was contracted on a standard (or given) volume basis prior to harvest for delivery and payment at harvest. A possible explanation of this occurrence is that the regional cooperative in Texas exporting grain sorghum on contract might be willing to offer a more competitive contracted price to local associations in South Texas thereby making local-producer contracts more appealing since their grain sorghum is closer to export facilities, and hence, cheapter to transport.

Table VII shows the ranking by association managers of the methods

TABLE IV

PERCENTAGES OF GRAIN PURCHASED BY VARIOUS METHODS USED BY OKLAHOMA COOPERATIVES IN 1973, BY GRAIN

Methods of Purchase	Wheat	Sorghum	Corn	Barley	Soybeans	Oats
	----------Percent----------					
1. Traditional Cash Purchase at Harvest (Cash Delivery)	31	52	62	33	65	30
2. Contracted Prior to Harvest for Delivery and Payment at Harvest	1					
3. Stored for Farmer and Purchased Later	57	39	18	66	33	68
4. Purchased (After Harvest) from Farm Storage						
(i) For Cash	4			1	2	
(ii) On Forward Contract	2					
5. Purchased but with a Delayed Price	1					
6. Grain Pool				1		2
7. Other[a]	3	9	20			
Total[b]	99	100	100	101	100	100

[a/] Other methods referred to here are: 1) bought from other firms, 2) purchased from independent truckers and 3) still carried as open storage.

[b/] Columns of data may not add to 100 because of rounding error.

TABLE V

PERCENTAGES OF GRAIN PURCHASED BY VARIOUS METHODS USED BY TEXAS PLAINS COOPERATIVES IN 1973, BY GRAIN

Methods of Purchase	Wheat	Sorghum	Corn	Barley	Soybeans	Oats
	----------Percent----------					
1. Traditional Cash Purchase at Harvest (Cash Delivery)	55	42	38	64	65	72
2. Contracted Prior to Harvest for Delivery and Payment at Harvest	4	17	6	2	4	
3. Stored for Farmer and Purchased Later	38	37	56	24	31	27
4. Purchased (After Harvest) from Farm Storage						
(i) For Cash (ii) On Forward Contract	1			9		
5. Purchased but with a Delayed Price	2	1				
6. Grain Pool						
7. Other[a]		3				
Total[b]	100	100	100	99	100	99

[a/] Other methods referred to here are (1) bought from other firms, (2) purchased from independent truckers, and (3) still carried as open storage.

[b/] Columns of data may not add to 100 because of rounding error.

TABLE VI

PERCENTAGES OF GRAIN PURCHASED BY VARIOUS METHODS USED BY SOUTH TEXAS COOPERATIVES IN 1973, BY GRAIN

Methods of Purchase	Wheat	Sorghum	Corn	Barley	Soybeans	Oats
			Percent			
1. Traditional Cash Purchase at Harvest (Cash Delivery)		40				
2. Contracted Prior to Harvest for Delivery and Payment at Harvest		44				
3. Stored for Farmer and Purchased Later		14				
4. Purchased (After Harvest) from Farm Storage						
(i) For Cash (ii) On Forward Contract		1				
5. Purchased but with a Delayed Price						
6. Grain Pool						
7. Other						
Total[a]		99				

a/ Data do not add to 100 because of rounding error.

TABLE VII

METHODS OF PURCHASING GRAIN USED BY LOCAL COOPERATIVES RANKED ACCORDING TO VOLUME OF GRAIN INVOLVED, BY REGION[a]

Methods of Purchase	Oklahoma	Texas Plains	South Texas
1. Traditional cash purchase at harvest (cash delivery)	2	1	2
2. Contracted prior to harvest for delivery and payment at harvest	6	3	1
3. Stored for farmer and purchased later	1	2	3
4. Purchased (after harvest) from farm storage - for cash	3	5	-
5. Purchased (after harvest) from farm storage - forward contract	5	-	-
6. Purchased but with a delayed price	6	4	-
7. Grain pool	-	-	-
8. Purchased from other firms	4	5	-

[a/] The most used method is given a ranking of 1.

of purchasing grain according to total volume of all grains purchased.

Differences in the methods of grain purchases used do exist according to the size of the association. Local associations usually contracted more grain as their sizes increased, as shown in Tables XXXIX, XL, and XLI in Appendix B, for Oklahoma, Texas Plains, and South Texas interviewed managers, respectively.

B.2 Operations of the Local Cooperative

The local associations must have strong financial backing and storage facilities must be managed properly to insure efficient utilization and maximum returns to patrons. Such operational facets of a

cooperative association are discussed in this section.

B.2.1 Operating Capital. The local cooperative must be financed either from its own pool of capital or from outside sources. During harvest seasons large amounts of capital are required by the local cooperatives over short time periods. The cooperative associations in the Oklahoma sample required an average of $1,222,558 during peak operations.[1] The Texas Plains and South Texas region sampled associations required an average of $1,398,242 and $857,143, respectively. These differences can be attributed to the various sizes of associations within each region. Table XLII in Appendix B shows these size differences and the subsequent peak cash requirements by region.

Locals can acquire capital from several sources including commercial banks, the Bank for Cooperatives, interest or non-interest bearing cash advances, deferred payments from farmers seeking tax advantages, and farmer patron loans. In Oklahoma the Bank for Cooperatives was the secondary supplier of operating capital during peak periods of operation, providing 25 percent of the total operating capital (Table VIII). The most important capital source in Oklahoma was deferred payment arrangements. The principal source of peak operating capital in both Texas regions was the Bank for Cooperatives with deferred payment arrangements a much less important secondary source of funds. Commercial banks and internal capital provided much of the remaining capital needed.

The amount of operating capital required by the local cooperative, at any point in time, is determined by several conditions that exist

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[1] Peak operations refers to any point in time (1973) when grain purchases are highest.

TABLE VIII

SOURCES OF OPERATING CAPITAL REQUIRED BY LOCAL COOPERATIVES DURING PERIODS OF LARGEST GRAIN PURCHASES IN 1973, BY REGION

Region	Commercial Banks	Bank For Cooperatives	Interest Bearing Advances	Non-Interest Bearing Advances	Farmer Delivery of Grain Under Delayed Payment Arrangements	Internal Capital	Farmer Patron Loans	Total[a]
	Percent							
Oklahoma	6	25	1	1	57	9	0	99
Texas Plains	2	70	2	4	13	9	1	101
South Texas	3	73	0	0	19	5	0	100

[a] Data may not add to 100 because of rounding error.

during harvest. A multiple regression model was used to measure the relationships between volume of peak operating capital required and several selected variables. The regression equation is given below.

$$Y = -3441.23 + 0.103X_1 + .0412X_2 + 43.94X_3 + 10.03X_4 - 14.17X_5 + 2378.64X_6 - 1133.02X_7$$
$$(4974.11) \quad (.0013) \quad (1.02) \quad (60.84) \quad (61.03) \quad (27.08) \quad (1745.53) \quad (1646.28)$$

where:

Y = Peak cash requirement in hundreds of dollars,

X_1 = Annual volume of grain handled by the association,

X_2 = Total elevator storage capacity in thousands of bushels,

X_3 = Percentage of annual volume of grain stored by the local,

X_4 = Percentage of annual volume of grain purchased by the local at harvest,

X_5 = Percentage of annual volume of grain sold by the local for immediate shipment,

X_6 = Dummy variable for Texas Plains region,

and

X_7 = Dummy variable for Oklahoma.

Dummy variables were used in the equation to account for any area differences in peak cash requirement due to size or differences in operation of local associations between regions. The intercept term of -3441.23 represents the adjustment for South Texas in the peak cash requirement. The regression coefficients for variables X_6 and X_7 represent the additive effects when considering the Texas Plains region or Oklahoma, respectively. The standard error of the

regression coefficients are given in parentheses.

Seventy-four percent of the variation of the dependent variable was explained by the regression analysis and this effect was significantly different from zero at the .05 probability level, with an F value of 24.05. Except for X_1, none of the regression coefficients are significantly different from zero at the .05 probability level. However the regression equation shows that the need for operating capital increases as annual volume of grain (X_1), total elevator storage capacity (X_2), percentage of annual volume of grain stored (X_3), and percentage of annual volume of grain purchased at harvest (X_4) increase. Also, the operating capital requirements generally decrease by approximately $1400.00 as the percentage of annual volume of grain sold by the local for immediate shipment (X_5) increases one percentage point. Thus, the regression coefficient signs appear to agree with normal expectations.

B.2.2 Storage Space Utilization. Substantial differences existed in the storage capacities and types of storage used by the sampled cooperatives in the different regions (Table IX). Note that Oklahoma cooperatives have predominantly upright storage, whereas the Texas Plains cooperatives have more flat storage facilities. A possible explanation for the large percentage of flat storage facilities in the Texas Plains is that over the last few years, more expansion may have occurred in the plains region because of the development of irrigation resources in the region. Flat storage is less expensive than upright storage and offers storage space for additional supplies, e.g., fertilizer, oil, tires and equipment, during the off-season. For this reason and the fact that more structurally sound flat storage facilities

TABLE IX

AVERAGE GRAIN STORAGE CAPACITY PER LOCAL COOPERATIVE AND THE PERCENTAGE OF CAPACITY ACCORDING TO UPRIGHT AND FLAT STORAGE, BY REGION, IN 1973

Region	Storage Capacity		
	Average Per Association	Upright	Flat
	(Thou. Bu.s)	------Percent--------	
Oklahoma	771	90	10
Texas	1,850	52	48
Texas Plains	2,062	47	53
South Texas	970	71	29

are presently available as opposed to several years ago, recent expansion of grain storage facilities, especially in the Texas Plains, consists more of the flat than the slip-form upright facilities. In addition, Table X shows the differences in operating space used for grain storage by sampled local associations in 1973, by region. On a volume basis, the Texas Plains on the average used 12 times more operating space for grain storage than Oklahoma or South Texas. Again, this can be attributed to the larger percentage of flat storage in the Plains than in the other regions.

The bulk of the grain stored in operating storage space in the Texas Plains was associated with the larger cooperative associations, as illustrated in Table XLIII, Appendix B.

Table XI illustrates some major differences by region in the percentage of storage space occupied by grain owned by the cooperative, and that occupied by grain that is not owned by the cooperative. An

TABLE X

AVERAGE OPERATING SPACE USED FOR GRAIN STORAGE PER LOCAL ASSOCIATION IN 1973, BY REGION AND STATE

Utilization	Oklahoma	Texas as a Whole	Texas Plains	South Texas
		----------Bu.s----------		
Operating Space	3,068	30,803	37,314	3,827

average of 11 percent of the grain storage space available to Oklahoma cooperatives, when grain on hand was greatest in 1973, was filled with grain owned by the association. The sampled cooperatives in the Texas Plains owned 30 percent of the stored grain when grain on hand was greatest. However, the cooperatives in South Texas owned an average of 78 percent of the grain stored in their facilities, when the grain on hand was greatest in 1973. This increase in the percentage of storage space per cooperative devoted to grain owned by the cooperative association in South Texas supports earlier findings that South Texas producers contracted a large percentage of their grain sorghum to local associations, much more than with the Texas Plains or Oklahoma associations. However, all cooperatives on the average, regardless of region, had more than 90 percent of their owned grain under contract in 1973. In contrast, more than 80 percent of the grain stored but not owned by the locals was held on an open basis.

The percentages of owned versus unowned grain stored by the local cooperative did vary somewhat according to the size of the

TABLE XI

PERCENTAGE DISTRIBUTION OF THE SAMPLED ASSOCIATION'S GRAIN STORAGE CAPACITIES ACCORDING TO LOCAL COOPERATIVE GRAIN OWNERSHIP AND TITLE ARRANGEMENTS, BY REGION

Utilization	Oklahoma	Texas Plains	South Texas
	----------Percent----------		
1. Grain owned by the local association:	11	30	78
a. Hedged	0	1	0
b. Unhedged and Uncontracted	6	4	7
c. Contracted	94	95	93
Total of Grain Owned	100	100	100
2. Grain not owned by the local association:	89	70	22
a. Warehouse receipted	14	9	17
b. Open	81	83	83
c. Grain Bank	2	1	
d. C.C.C.	a	4	
e. Terminal or Processor	3	3	
Total of Grain Not Owned	100	100	100
Total of all Grain	100	100	100

a/ C.C.C. accounts for less than 1 percent of the storage space utilized by grain not owned by the cooperative.

cooperative. The larger cooperatives tended to contract more of their own grain (Appendix B, Table XLIV).

C. Sale of Local Cooperative Grain

This section is devoted to the sale of local cooperative purchased grain - the methods involved, gross margins received, the

frequency of price bids received for grain, protection against risk of price changes, and contractual arrangements.

Texas and Oklahoma local cooperatives sell grain to many different independent associations as well as to regional grain cooperatives. The two regional grain cooperatives of primary importance in the area are Producers Grain Corporation of Amarillo, Texas, and Union Equity of Enid, Oklahoma.

C.1 Grain Commitment

One of the most important areas of interest in cooperative grain marketing is the commitment of grain to the regional cooperative. Figure 3 illustrates the local associations' commitment of grain in 1973 to the regional cooperatives in Oklahoma and Texas along with the number of local associations marketing each grain. All of the local associations have been doing business with the regional for over 25 years except with soybeans in the Texas Plains. Local associations in the Plains have been marketing soybeans, a relatively new cash crop to the area, for an average of 15 years. South Texas was not shown separately in Figure 3 since those local associations only marketed grain sorghum, 72 percent of which was committed to the regional.

Figure 3 shows that 95 percent and 74 percent of the wheat handled by Oklahoma and Texas Plains[2] sampled local associations, respectively, were committed to the regional cooperative. However, Texas Plains local cooperatives far exceeded Oklahoma cooperatives

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[2]For grains other than grain sorghum in Figure 3, Texas Plains is appropriate since South Texas sampled cooperatives only market grain sorghum.

in their percentage commitment of the other five grains to the regional cooperative.

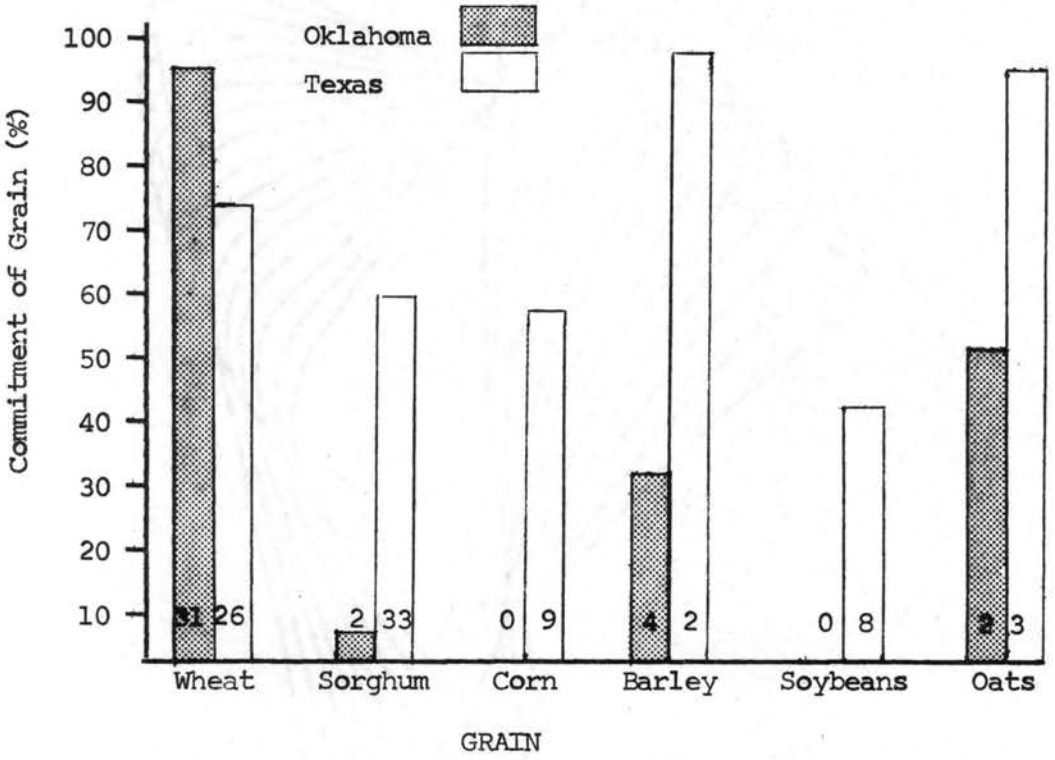

Figure 3. The Average Percentage of Grain Volume Handled by Local Associations Committed to Regional Cooperatives in 1973, by Grain and State[a]

[a/] The numbers within the bar graph refer to the number of local cooperatives involved.

The percentage of grain comitted to the regional cooperative generally decreased on the average, particularly for Oklahoma cooperatives, as the size of the local associations increased (Table XLV, Appendix B).

C.2 Gross Margins

Marketing practices, distance to market, and many other factors affect the gross margins received in the sale of grain. Table XII illustrates gross margins received by the local for the various grains, along with the number of local associations dealing with each grain in each region. The gross margins were very similar between regions except for wheat and soybeans. On the average, Oklahoma local associations received 18.8 cents per bushel as gross margin for wheat whereas Texas Plains sampled local associations received 27.1 cents per bushel. And Oklahoma and the Texas Plains associations, on the average, received 32.7 cents and 25.8 cents per bushel, respectively, for soybeans. Wide variations in gross margins are prevalent by size of the local cooperatives. When a trend was apparent in the gross margins by size of cooperative, the lower gross margins were usually associated with the smaller size cooperatives, e.g., the Texas Plains wheat gross margins increased with cooperative size (Table XLVI, Appendix B).

C.3 Grain Bids

Local cooperatives' managers used several sources of information in arriving at their quoted board price for grain. Tables XIII and XIV illustrate these sources and how the managers of the associations in Oklahoma and Texas, respectively, ranked them according to their influence on the quoted grain prices. As would be expected the grain merchandiser bid was the most important source, followed by either a competitor's bid or "local demand," depending on the grain and region. The futures market report received a high ranking for wheat and soybeans.

TABLE XII

AVERAGE GROSS OPERATING MARGINS AND THE NUMBER OF LOCAL ASSOCIATIONS MARKETING EACH GRAIN IN 1973, BY REGION

Location	Wheat	Sorghum	Corn	Barley	Soybeans	Oats
	----------Cents----------					
Oklahoma (31)[a]	18.8 (31)	16.0 (20)	16.1 (8)	22.5 (27)	32.7 (4)	18.4 (22)
Texas Plains (29)	27.1 (28)	20.0 (26)	20.3 (12)	20.4 (10)	25.8 (13)	14.3 (6)
South Texas (7)	(0)	15.3 (7)	(0)	(0)	(0)	(0)

[a/] Numbers in parentheses indicate the number of local associations marketing respective grains.

TABLE XIII

SOURCES OF GRAIN PRICE INFORMATION RANKED ACCORDING TO INFLUENCE ON OKLAHOMA LOCAL COOPERATIVE QUOTED PRICES IN 1973, BY GRAIN

Source of Information[a]	Wheat	Sorghum	Corn	Barley	Soybeans	Oats
Grain merchandiser bid	1	1	2	2	1	2
Processor bid	-	6	-	5	-	-
Cash grain broker bid	4	4	1	4	-	4
Futures market report	2	5	5	5	3	5
Instruction from parent firm	4	-	-	-	-	-
Advisory service	7	-	-	-	-	-
Competitors' bid	3	3	2	3	2	3
Local demand	4	2	2	1	3	1
Other[b]	8	7	-	7	-	-

[a] The most important source is given a rank of 1.

[b] The other sources of board price quotes referred to here are: (1) truck bid, (2) feedlot bid, and (3) supply and demand situation.

TABLE XIV

SOURCES OF GRAIN PRICE INFORMATION RANKED ACCORDING TO INFLUENCE ON TEXAS LOCAL COOPERATIVE QUOTED PRICES IN 1973, BY GRAIN

Source of Information[a]	Wheat	Sorghum	Corn	Barley	Soybeans	Oats
Grain Merchandiser bid	1	1	1	2	1	1
Processor bid	5	5	6	5	4	-
Cash grain broker bid	3	3	4	4	2	4
Futures market report	4	5	5	-	5	5
Instruction from parent firm	-	-	-	-	-	-
Advisory service	7	-	-	-	-	-
Competitor's bid	2	4	3	3	3	3
Local demand	6	2	2	1	-	2
Other[b]	7	7	-	-	6	-

a/ The most important source is given a rank of 1.

b/ The other sources of board price quotes referred to here are: (1) truck bid, (2) feedlot bid, and (3) supply and demand situation.

Table XV shows the average number of grain price bids received for each grain by sampled local cooperatives from a grain merchandiser per hour, day and week during the peak of the harvesting season. Also included is the number of associations receiving grain price bids. A majority of local associations from both state samples, received price bids on a daily basis. Very few cooperatives in either state received price bids on only a weekly basis. There was a tendency for the larger associations to receive grain bids more frequently than smaller associations, as shown in Table XLVII, Appendix B. Managers of the larger cooperatives were more agressive in keeping abreast of grain price changes because they received or inquired about grain price bids more frequently than did managers of the smaller cooperatives.

TABLE XV

AVERAGE NUMBER OF GRAIN PRICE BIDS PER HOUR, DAY, AND WEEK RECEIVED BY LOCAL ASSOCIATIONS FROM GRAIN MERCHANDISERS IN 1973 AND THE NUMBER OF LOCAL ASSOCIATIONS RECEIVING THOSE GRAIN BIDS, BY GRAIN AND STATE

	Oklahoma						Texas					
	Hour		Day		Week		Hour		Day		Week	
Grain	N	B	N	B	N	B	N	B	N	B	N	B
Wheat	5	5	26	11	0	-	4	2	23	5	1	1
Sorghum	1	3	16	1	4	1	4	1	28	5	1	1
Corn	0	-	4	1	0	-	3	2	9	4	1	1
Barley	1	3	23	1	3	2	2	2	5	1	3	2
Soybeans	1	3	3	2	1	1	2	2	11	4	1	1
Oats	1	3	16	1	4	1	2	2	3	3	2	1

[a] N refers to the number of cooperatives reporting the respective price bid. B refers to the average price bids received per specified time period.

C.4 Protection Against Risk of Price Change

The method of price protection most commonly used by grain association management was the sale of a cash contract with the regional cooperative or other grain firms (Table XVI). The use of futures market hedging was reported by only two cooperatives in Oklahoma. The lack of hedging in the futures market may be due to a lack of information about the operations of the futures market, the margin requirements associated with futures market trading, and/or restriction in the firms' bylaws. Cooperative association managers indicated that forward contracting with another grain firm offered more security than hedging in the futures market.

TABLE XVI

NUMBER OF SAMPLED LOCAL COOPERATIVES USING PRICE PROTECTION METHODS IN 1973, BY REGION

	Oklahoma	Texas Plains	South Texas
1. No method	1	1	0
2. Hedge in the futures market	2	0	0
3. Sell a cash contract with another grain firm	12	18	6
4. Other[a]	0	1	0
Total Reporting	15	20	6

[a] The other method referred to here is selling a cash contract with a feedlot.

C.5 Methods of Sale

Various methods of selling grain can be used by local cooperative grain elevators. They can: 1) retail grain back to farmers for feed or as whole grain, 2) sell to a grain merchandiser at an agreed price with delivery stipulations at specified time periods, 3) pool their grain, or 4) consign their grain.[3] No grain pooling or consignment methods, however, were employed by any sampled associations. Tables XVII, XVIII, and XIX illustrate for the three regions that in 1973 most grain was sold on a target delivery contract, i.e., an agreed price with specified delivery periods. Oklahoma and the Texas Plains sampled associations sold wheat in a similar manner, however, a greater percentage of the grain sorghum sold in Oklahoma was sold to farmers (89 percent) than was the case in the Texas Plains (20 percent), or South Texas (1 percent). This difference in producer grain sorghum buying can be attributed to the differences in production of grain sorghum in the three regions, i.e., on the average, Oklahoma, the Texas Plains, and South Texas local associations marketed 59,321, 978,022 and 1,210,969 bushels of grain sorghum, respectively, in 1973.

C.6 Contractual Arrangements

Table XX illustrates the percentage use of specific alternative contractual arrangements by the local associations when selling grain to other grain firms. Locals can sell their grain in various ways, depending on managerial preference. Grain elevators can contract for

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[3] Consignment grain sales refer to grain sales on a commission basis.

TABLE XVII

PERCENTAGES OF GRAIN SOLD BY VARIOUS METHODS USED BY OKLAHOMA LOCAL COOPERATIVES IN 1973, BY GRAIN

Method of Sales	Wheat	Sorghum	Corn	Barley	Soybeans	Oats
	----------Percent----------					
1. Retailed back to farmers as whole grain or in feed	a	89	100	84	0	86
2. Sold at agreed price for shipment:						
(1) Immediately (on track or to arrive), up to 15 days	56	7	0	5	75	3
(2) 15 to 30 days	12	0	0	8	8	3
(3) After 30 days	28	3	0	2	17	7
3. Other[b]	3	0	0	0	0	1
Total[c]	99	99	100	99	100	100

[a] Less than 1 percent

[b] The other methods of sales referred to here are: (1) stored with the regional cooperative, (2) sold at agreed price for shipment with no time stipulation, and (3) grain bank.

[c] Columns of data may not add to 100 because of rounding error.

TABLE XVIII

PERCENTAGES OF GRAIN SOLD BY VARIOUS METHODS USED BY TEXAS PLAINS LOCAL COOPERATIVES IN 1973, BY GRAIN

Method of Sales	Wheat	Sorghum	Corn	Barley	Soybeans	Oats
	----------Percent----------					
1. Retailed back to farmers as whole grain or in feed	4	20	4	39	6	62
2. Sold at agreed price for shipment:						
(1) Immediately (on track or to arrive), up to 15 days	59	16	32	27	43	28
(2) 15 to 30 days	25	19	25	0	14	0
(3) After 30 days	12	46	38	34	36	10
3. Other	0	0	0	0	0	0
Total[a]	100	101	99	100	99	100

[a] Columns of data may not add to 100 because of rounding error.

TABLE XIX

PERCENTAGES OF GRAIN SOLD BY VARIOUS METHODS USED BY SOUTH TEXAS LOCAL COOPERATIVES IN 1973, BY GRAIN

Method of Sales	Wheat	Sorghum	Corn	Barley	Soybeans	Oats
	----------Percent----------					
1. Retailed back to farmers as whole grain or in feed		1				
2. Sold at agreed price for shipment:						
(1) Immediately (on track or to arrive), up to 15 days		21				
(2) 15 to 30 days		42				
(3) After 30 days		36				
3. Other		0				
Total		100				

TABLE XX

PERCENTAGE USE OF ALTERNATIVE CONTRACTUAL ARRANGEMENTS BY LOCAL ASSOCIATIONS IN THE MERCHANDISING OF GRAIN, BY REGION IN 1973

	Specific Grade		Target Delivery		Multiple Shipments		Other[b]	
Location	N[a]	Percentage Use	N	Percentage Use	N	Percentage Use	N	Percentage Use
Oklahoma	4	32	30	92	4	31	2	40
Texas Plains	5	52	19	94	3	67	7	93
South Texas	2	8	3	97	2	55	4	71

[a] N refers to the number of cooperatives involved in the contract method.

[b] The other methods of contractual arrangements referred to here are: (1) open sales, (2) advanced payments (borrowed money on cars), and (3) target delivery without premiums if delivery is early.

a specific grade and/or utilize a contract which specifies a price and delivery date and allows for premiums or discounts for early or late delivery. Elevators can also utilize multiple shipment contracts over a specified time period, which might encompass the other two methods. Again, one sees that target delivery contracting was the most commonly used contractual arrangement (Table XX). The most frequently used contractual arrangement in the 'other' category was target delivery without the granting of premiums for early delivery. Minor differences in contractual arrangements existed between group sizes as illustrated in Table XLVIII of Appendix B. However, target delivery is the most frequently used contractual arrangement regardless of size of cooperative and region.

D. Summary

Two major areas of grain marketing are emphasized in this chapter. The first deals with marketing practices and patterns in the purchase and transfer of grain from the producer to the local cooperative grain elevator. Wheat and grain sorghum were shown to be the principal crops grown in Oklahoma and the Texas Plains, and grain sorghum was the only grain handled by the South Texas sampled local associations. Those methods of purchasing grain used most often in 1973 in Oklahoma and the Texas Plains were: 1) traditional cash purchase at harvest, and 2) stored for the farmer and purchased later. In South Texas the most frequently used methods were traditional cash purchase at harvest and contracted prior to harvest for delivery and payment at harvest.

A relatively small use of delayed pricing contracting arrangements occurred in the sample. Of the contracting that did take place,

standard volume arrangements with delivery at harvest were predominant.

Operating capital for periods of peak operation for the local associations was obtained from several sources. The Bank for Cooperatives supplied South Texas and the Texas Plains associations with most of their peak cash requirement while Oklahoma cooperatives relied more heavily on farmers delivering grain under delayed payment arrangements.

Regression analysis was used to measure possible relationships between the amount of operating capital required by local associations during peak operational periods and seven independent variables. The variables were: 1) annual volume of grain handled by the association, 2) elevator storage capacity, 3) percentage of annual volume of grain stored, 4) percentage of annual volume of grain purchased at harvest, and 5) percentage of annual volume of grain sold for immediate shipment. Two dummy vairables were used to account for differences due to region location. The regression equation explained 74 percent of the variation in peak operating capital among local cooperatives. All non-dummy variables exhibited a positive relationship with peak capital requirements except for the percentage of annual volume of grain sold immediately.

The occurrence of flat as opposed to upright grain storage facilities in the sample varied greatly according to location. Texas Plains local cooperatives utilized flat storage facilities more than cooperatives in the other regions, possibly because the facilities were of a more recent vintage.

Of the storage space utilized by local associations when grain on hand was greatest in 1973, a larger portion of the stored grain was owned by the association in South Texas as opposed to the Texas Plains.

Oklahoma associations owned the least percentage of stored grain of the three regions' cooperatives. This phenomenon reflects the greater usage of contracts in South Texas than in the other two regions.

The second area emphasized in this chapter dealt with the sale of local cooperative grain. Analysis revealed that cooperatives in Oklahoma and Texas committed 95 percent and 74 percent respectively, of their handled wheat to the regional cooperative. South Texas associations committed 72 percent of their grain sorghum to the regional while Oklahoma and the Texas Plains associations committed 6 percent and 58 percent, respectively, to the regional.

The major difference in gross margins between regions was the difference received by Oklahoma and the Texas Plains associations for their wheat, i.e., 18.8 cents and 27.1 cents, respectively.

The three most influential methods in arriving at the quoted board grain prices for local cooperatives were: 1) grain merchandiser bid, 2) competitor's bid, and 3) local demand. The major method used by the sampled associations to protect profits from the risk of price fluctuation was forward cash contracting.

With respect to the method of grain sales, target delivery was the most highly used contractual arrangement in 1973 for the sale of local cooperative grain. The main distinction between contract methods is that the contracts often do not allow for premiums for early delivery.

CHAPTER IV

VERTICAL COORDINATION BETWEEN LOCAL AND REGIONAL COOPERATIVES IN THE HANDLING AND MERCHANDISING OF GRAIN

A. Existing Coordinating Arrangements

Chapter III contains a discussion and analysis of marketing practices and patterns as they exist in the cooperative grain marketing industries in Oklahoma and Texas. The actual coordination and implementation of these practices, however, are not readily seen by people other than those who are actively involved with the grain marketing process. Discussion within this chapter is directed toward the efforts of locals and regionals in coordinating a vertically oriented grain marketing system. Emphasis is placed on contractual arrangements between the local and regional, the potential for earning premiums for following various marketing practices with the regional, and provisions for short term credit. Also analyzed are the availability and importance of marketing services, the influence selected marketing decision factors have on the manager's decision of with whom he markets grain, and the performance of the regional cooperative in providing services. The chapter concludes with an analysis of the grain commitment to the regional and the general attitudes of the local cooperative manager toward the regional cooperative with whom he markets grain.

A.1 Contractual Arrangements

No breakdown between regional cooperatives and independent buyers was made in this study pertaining to contractual arrangements from local associations. However, the contractual arrangements between local cooperatives and buyers of their grain discussed in Chapter III are assumed to be associated at least in part with the regional cooperative considering the commitment of grain local associations made in 1973 to the regional cooperative. For instance, 95 percent of the wheat handled by associations in Oklahoma was committed to the regional, thus the contractual arrangements discussed in Chapter III substantially pertain to the regional cooperative with wheat in Oklahoma. Most local cooperative managers contract grain to grain buyers on a target delivery basis, i.e., price and delivery date are specified with the premiums or discounts for early or late delivery.

A.2 Premiums for Marketing Services

One means of acquiring closer coordination and commitment from local cooperatives is for the regional cooperative to issue premiums for marketing practices that affect business volume and operations. Table XXI illustrates the responses of local managers as to whether premiums were available from the regional cooperative if certain marketing practices were followed. With one exception,[4] most managers did not feel premiums could be obtained for the practices listed. For

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[4]Managers in the Texas Plains were about evenly divided in their response as to whether or not a premium for the delivery of high protein wheat was available in 1973.

TABLE XXI

LOCAL COOPERATIVE MANAGER RESPONSES, BY REGION ON THE OPPORTUNITY FOR PREMIUMS FROM THE REGIONAL COOPERATIVE WHEN VARIOUS MARKETING PRACTICES ARE FOLLOWED

Marketing Practices	OKLAHOMA		TEXAS PLAINS		SOUTH TEXAS	
	Premium	No Premium	Premium	No Premium	Premium	No Premium
	Frequency of Response					
1. Sale in large volumes and round lots	0	31	1	28	2	5
2. Forward contracting with regional for future delivery of cash grains	8	23	7	22	0	7
3. Pooling	0	30	0	29	0	7
4. Multiple Shipment	1	30	0	29	0	7
5. Delayed Pricing	3	28	2	27	0	7
6. Rapid Delivery of Grain	4	27	2	27	0	7
7. Immediately contracting with the regional all elevator purchased grain	3	28	1	28	0	7
8. Storage of grain for the regional	1	30	2	27	0	7
9. Sale of consistently high quality grain	6	25	6	23	1	6
10. Long history of a good business relationship	1	30	2	27	1	6
11. Delayed Shipment	5	26	6	23	2	5
12. Sale of high protein grain	8	23	15	14	0	7

example, 23 managers in Oklahoma responded that a premium was not available for forward contracting future delivery of cash grain with the regional. However, eight managers felt that a premium could be obtained.

A.3 Provision for Short Term Credit

Often the local cooperative has the privilege of borrowing capital from a regional cooperative on grain the local has purchased from producers. Regionals provided credit to locals who, on the average, had lower current ratios in 1973 (current assets/current liabilities) than other cooperatives, as shown in Table XXII.

TABLE XXII

COMPARISON OF FINANCIAL CURRENT RATIOS OF SAMPLED LOCAL GRAIN COOPERATIVES FOR FISCAL 1973, BY STATE, AND BY USAGE OF REGIONAL COOPERATIVE CREDIT

State	Financial Current Ratios[a] Locals Using Regional Coop Credit	Locals Not Using Regional Coop Credit
Oklahoma	1.83 (4)	2.21 (22)
Texas	1.52 (8)	5.01 (29)

[a]/ Numbers in parentheses refer to the number of local grain associations involved.

The provisions for short term credit by regional cooperatives were similar by state (Table XXIII). Eight local cooperatives, or 26

TABLE XXIII

PROVISIONS FOR SHORT-TERM CREDIT, BY STATE, IN THE MERCHANDISING OF GRAIN THROUGH THE REGIONAL COOPERATIVE

Provisions	Oklahoma (31)[a]	Texas (36)[a]
The number of associations with whom the regional made short term credit provisions	8	4
The number of associations obligated to sell this grain to the regional	3	3
The number of associations charged an interest or discount rate	4	3
The interest rate or discount rate charged on the average (in percent)	9.0	9.2
Average length of credit arrangements (in months)	1 4/5	2 1/10

[a] The number of cooperatives in the sample.

percent of the sampled associations in Oklahoma, were extended short term credit from their regional, while four (11 percent) of the Texas sampled associations were provided short term credit from their regional. About half of the associations receiving this credit were obligated to sell the grain to the regional.

Local cooperative managers were asked to rate a list of marketing services, which included 'advances or short term credit', according to the influence the service exerted on with whom the local manager marketed his grain. Eight of the 12 managers accepting credit from the regional cooperative rated this service a 90[5] or better but the service was not ranked in the 12 most influential services by all sampled association managers.

A.4 Marketing Services

The number and quality of marketing services provided the local cooperative by the regional cooperative is directly associated with the coordination of grain marketing between the local and regional cooperatives. Managers of local cooperatives were presented a list of marketing services and were asked whether the service was available to them and if it was free (Tables XXIV and XXV). Also given, for the managers who said the services were available, is the number of managers who used the services and the percentage of the time the service was used. An area of interest here is the differences of opinion between managers in each state as to the availability of the services. For example, eight managers of local cooperatives in Texas felt that

[5]The 1-99 scale was used, with 99 signifying a service of most importance.

TABLE XXIV

THE AVAILABILITY OF VARIOUS MARKETING SERVICES FROM THE REGIONAL, WHETHER THE SERVICE IS FREE, AND IT'S FREQUENCY OF USE BY 36 TEXAS LOCAL COOPERATIVES IN 1973

	Is Service Available?			Is Service Free?			
	Yes	No	Don't Know	Yes	No	Don't Know	Average Frequency of Use[a]
	Frequency of Response			Frequency of Response			Percent of Time
1. Rail car scheduling	10	22	4	10	0	0	34 (7)
2. Truck scheduling	15	18	3	15	0	0	46 (10)
3. Barge scheduling	0	32	4	-	-	-	- (0)
4. Advice on rail freight rates and tariffs	28	7	1	28	0	0	91 (22)
5. Market information	35	1	0	35	0	0	92 (35)
6. Brokerage services	10	22	4	7	1	2	100 (3)
7. Grain hedging services	8	22	6	4	3	1	100 (2)
8. Auditing and/or billing services	9	23	4	5	3	1	100 (4)
9. Financial planning assistance	16	15	5	14	0	2	69 (9)
10. Assistance with stock and bond sales and credit procurement	10	18	8	9	1	0	33 (7)
11. Investment opportunities	17	16	3	17	0	0	29 (9)
12. Engineering assistance	12	21	3	11	1	0	67 (6)
13. Public relations assistance	25	9	2	25	0	0	83 (19)
14. Management and personnel training programs	18	14	4	11	7	0	52 (14)
15. Board of director development programs	18	17	11	18	0	0	69 (15)
16. District informational meetings directed toward your problems and needs	31	5	0	31	0	0	84 (29)
17. District informational meetings directed toward the regional's operation	33	3	0	32	1	0	85 (31)

[a] The numbers in parentheses refer to the number of managers using the service.

TABLE XXV

THE AVAILABILITY OF VARIOUS MARKETING SERVICES FROM THE REGIONAL, WHETHER THE SERVICE IS FREE, AND IT'S FREQUENCY OF USE BY 31 OKLAHOMA LOCAL COOPERATIVES, IN 1973

	Is Service Available?			Is Service Free?			
	Yes	No	Don't Know	Yes	No	Don't Know	Average Frequency of Use[a]
	Frequency of Response			Frequency of Response			Percent of Time
1. Rail car scheduling	8	20	3	8	0	0	54 (7)
2. Truck scheduling	27	4	0	27	0	0	65 (21)
3. Barge scheduling	2	26	3	2	0	0	- (0)
4. Advice on rail freight rates and tariffs	27	2	0	29	0	0	97 (28)
5. Market information	31	0	0	31	0	0	98 (31)
6. Brokerage services	26	2	3	10	10	6	34 (8)
7. Grain hedging services	25	1	5	11	7	7	3 (2)
8. Auditing and/or billing services	22	8	1	6	15	1	72 (8)
9. Financial planning assistance	16	11	4	12	3	1	72 (6)
10. Assistance with stock and bond sales and credit procurement	9	14	8	7	0	2	70 (3)
11. Investment opportunities	29	1	1	25	1	3	52 (20)
12. Engineering assistance	13	12	6	12	0	1	30 (6)
13. Public relations assistance	27	3	1	25	1	1	73 (25)
14. Management and personnel training programs	22	6	3	12	9	1	74 (19)
15. Board of director development programs	22	6	3	20	2	0	84 (18)
16. District informational meetings directed toward your problems and needs	28	2	1	27	0	1	91 (27)
17. District informational meetings directed toward the regional's operation.	30	1	0	30	0	0	86 (30)

a/ The numbers in parentheses refer to the number of managers using the service.

grain hedging services were available while 22 managers stated that such services were not available and six managers did not know (Table XXIV, Question 7). Of the eight managers responding that the regional provided grain hedging services, four felt the service was free and two managers used it 100 percent of the time.[6] Oklahoma managers exhibited similar differences in their information on regional cooperative services. Responses to question 15 in Table XXV reveal that 22 Oklahoma cooperative managers felt that board of director development programs were available from the regional cooperative. Six managers stated that this service was not available and three did not know. Of the 22 managers stating the service was available, 20 felt that the service was free and two said it was not free. Eighteen of the managers used the service an average of 84 percent of maximum.

The services used most extensively by at least 20 cooperative managers in each region were (1) advice on rail freight rates and tariffs, (2) market information, and (3) district informational meetings (Tables XXIV, XXV). Grain hedging services were used by very few local cooperative managers.

The differences in responses of managers, by state, are illustrated more clearly by expressing in percentage terms the responses on the availability of services (Table XXVI). For example, 87 percent and 42 percent of the sampled cooperative managers from Oklahoma and Texas, respectively, stated that truck scheduling was an available service from their regional cooperative in 1973. Also, 71 percent and 50 percent of the interviewed managers in Oklahoma and Texas,

[6]The frequency of use is expressed as a percentage of the maximum that the manager could have used the service.

TABLE XXVI

PERCENTAGE OF SAMPLED COOPERATIVES SIGNIFYING AN AVAILABILITY OF REGIONAL COOPERATIVE SERVICES TO LOCAL COOPERATIVES, BY STATE, IN 1973

		Oklahoma	Texas
		------Percent-----	
1.	Rail car scheduling	26	28
2.	Truck scheduling	87	42
3.	Barge scheduling	6	0
4.	Advice on rail freight rates and tariffs	94	78
5.	Market information	100	97
6.	Brokerage services	84	28
7.	Grain hedging services	81	22
8.	Auditing and/or billing services	71	25
9.	Financial planning assistance	52	44
10.	Assistance with stock and bond sales and credit procurement	29	28
11.	Investment opportunities	94	47
12.	Engineering assistance	42	33
13.	Public relations assistance	87	69
14.	Management and personnel training programs	71	50
15.	Board of director development programs	71	50
16.	District informational meetings directed toward your problems and needs	90	86
17.	District informational meetings directed toward the regional's operation	97	92

respectively, stated that truck scheduling was an available service from their regional cooperative in 1973. Also, 71 percent and 50 percent of the interviewed managers in Oklahoma and Texas, respectively, stated that management and personnel training programs were available from the regional cooperative. In general, a higher percentage of cooperative managers in Oklahoma stated that the listed services were available to them than did the managers of Texas cooperatives.

Chi-square analysis rejected at the .01 level the null hypothesis of no difference in managers' responses from different states to the availability of marketing services. The difference in response may be due to different services provided by regional cooperatives serving the two states, or by a lack of understanding on the part of local managers of the services available in each state.

Each manager rated the services listed in Table XXVI according to their importance in 1973 and expected importance in 1978, using the 1-99 scale with 99 signifying the highest possible score of importance (Table XXVII). On the average, all managers interviewed felt that the services listed will increase in importance from 1973 to 1978, with possible exceptions of barge scheduling (especially in Texas), and market information. These services were rated extremely unimportant and important, respectively, in 1973, allowing for little change toward the extremities of the scale.

Finally, the list of services were ranked according to their importance in 1973 as rated by local cooperative managers in Oklahoma, Texas Plains, and South Texas (Figures 4, 5, 6). Market information was the most important service to managers regardless of region. Freight rate assistance and informational meetings were ranked next in

TABLE XXVII

THE IMPORTANCE TO LOCAL COOPERATIVE MANAGERS OF VARIOUS REGIONAL COOPERATIVE MARKETING SERVICES IN 1973 AND EXPECTED IN 1978 BY REGION[a]

Areas of Service	OKLAHOMA 1973	OKLAHOMA 1978	TEXAS PLAINS 1973	TEXAS PLAINS 1978	SOUTH TEXAS 1973	SOUTH TEXAS 1978
1. Rail car scheduling	45	60	68	74	12	32
2. Truck scheduling	64	74	50	58	32	51
3. Barge scheduling	36	43	14	14	9	9
4. Advice on rail freight rates and tariffs	82	83	76	80	15	37
5. Market information	95	95	98	98	89	96
6. Brokerage services	28	37	20	21	33	35
7. Grain hedging services	23	38	6	12	22	63
8. Auditing and/or billing services	45	49	34	37	26	33
9. Financial planning assistance	50	60	48	52	32	58
10. Assistance with stock and bond sales and credit procurement	39	44	18	20	36	42
11. Investment opportunities	41	44	5	5	17	29
12. Engineering assistance	24	41	25	26	30	49
13. Public relations assistance	50	58	56	59	48	70
14. Management and personnel training programs	49	62	49	50	44	70
15. Board of director development programs	50	59	52	54	42	63
16. District informational meetings directed toward your problems and needs	67	73	72	73	63	70
17. District informational meetings concerning the regional's operations	77	78	72	73	63	70

[a] The numbers originated from a 1-99 rating scale with a 99 rating signifying the highest possible importance.

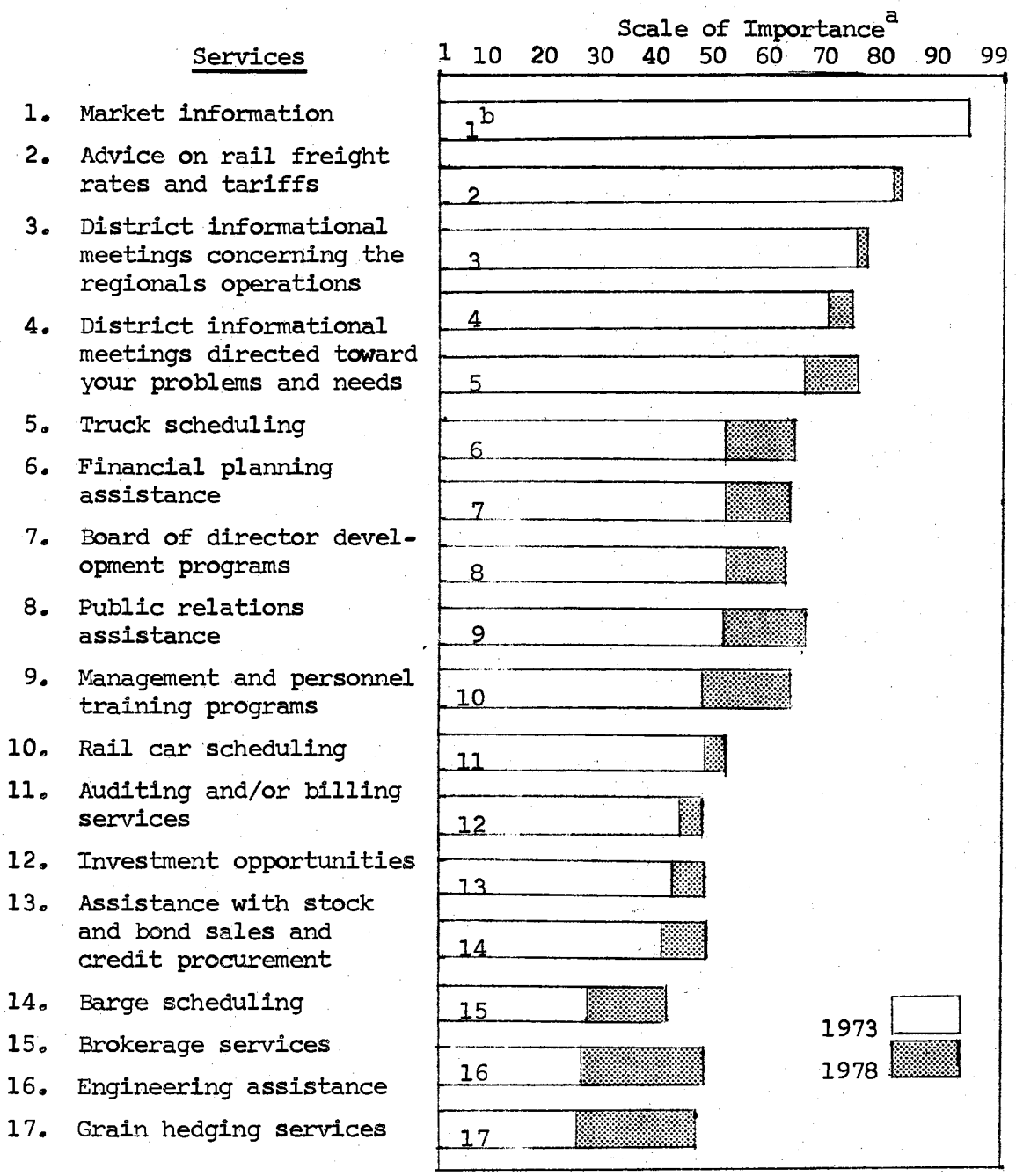

Figure 4. The Importance to Oklahoma Managers of Various Marketing Services in 1973 and Expected in 1978.

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[a]/ A scale of 1-99 was used with 99 signifying the highest possible importance.

[b]/ These numbers correspond to the list of services.

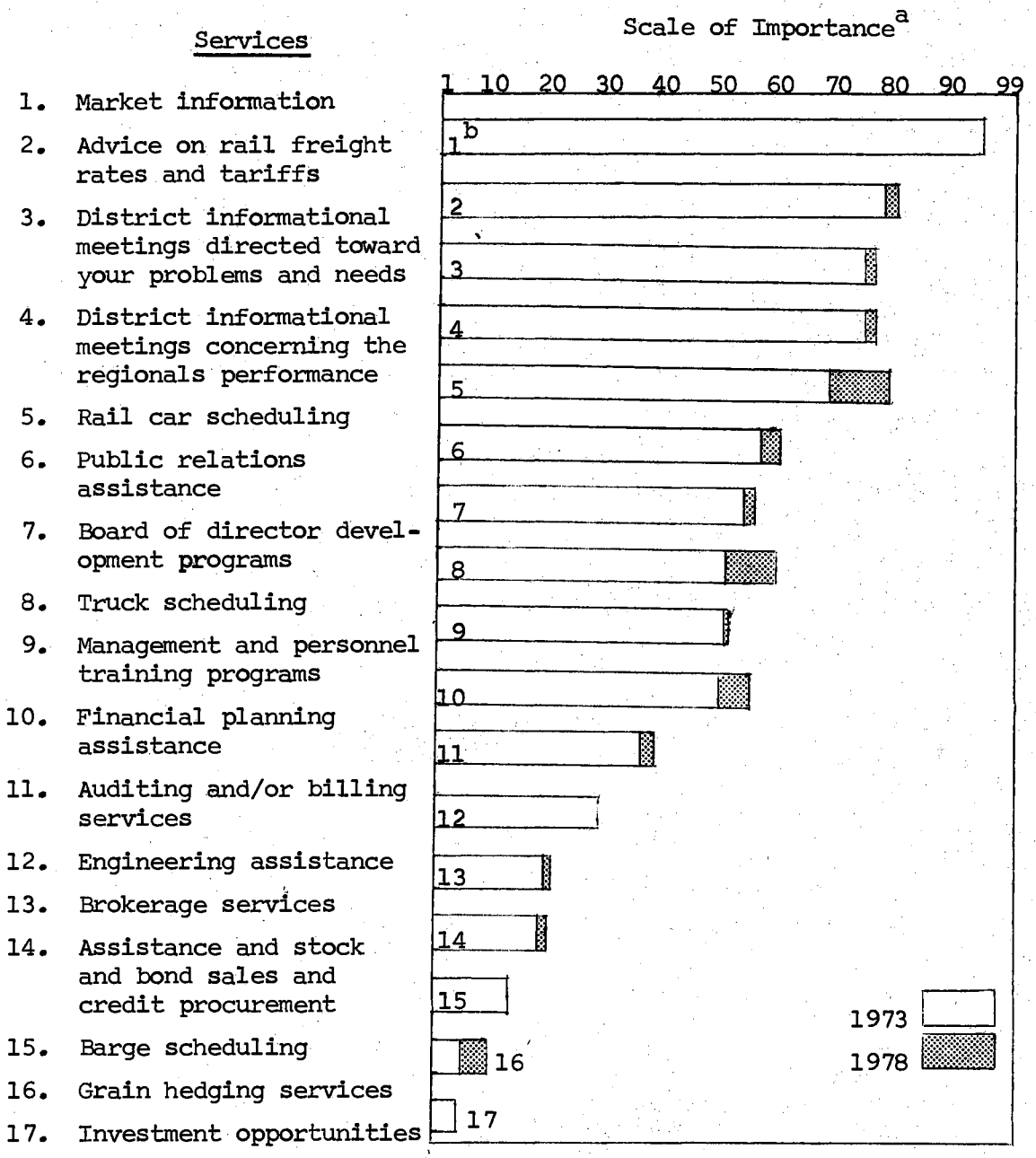

Figure 5. The importance to Texas Plains Managers of Various Marketing Services in 1973 and Expected in 1978.

[a/] A scale of 1-99 was used with 99 signifying the highest possible importance.

[b/] These numbers correspond to the list of services.

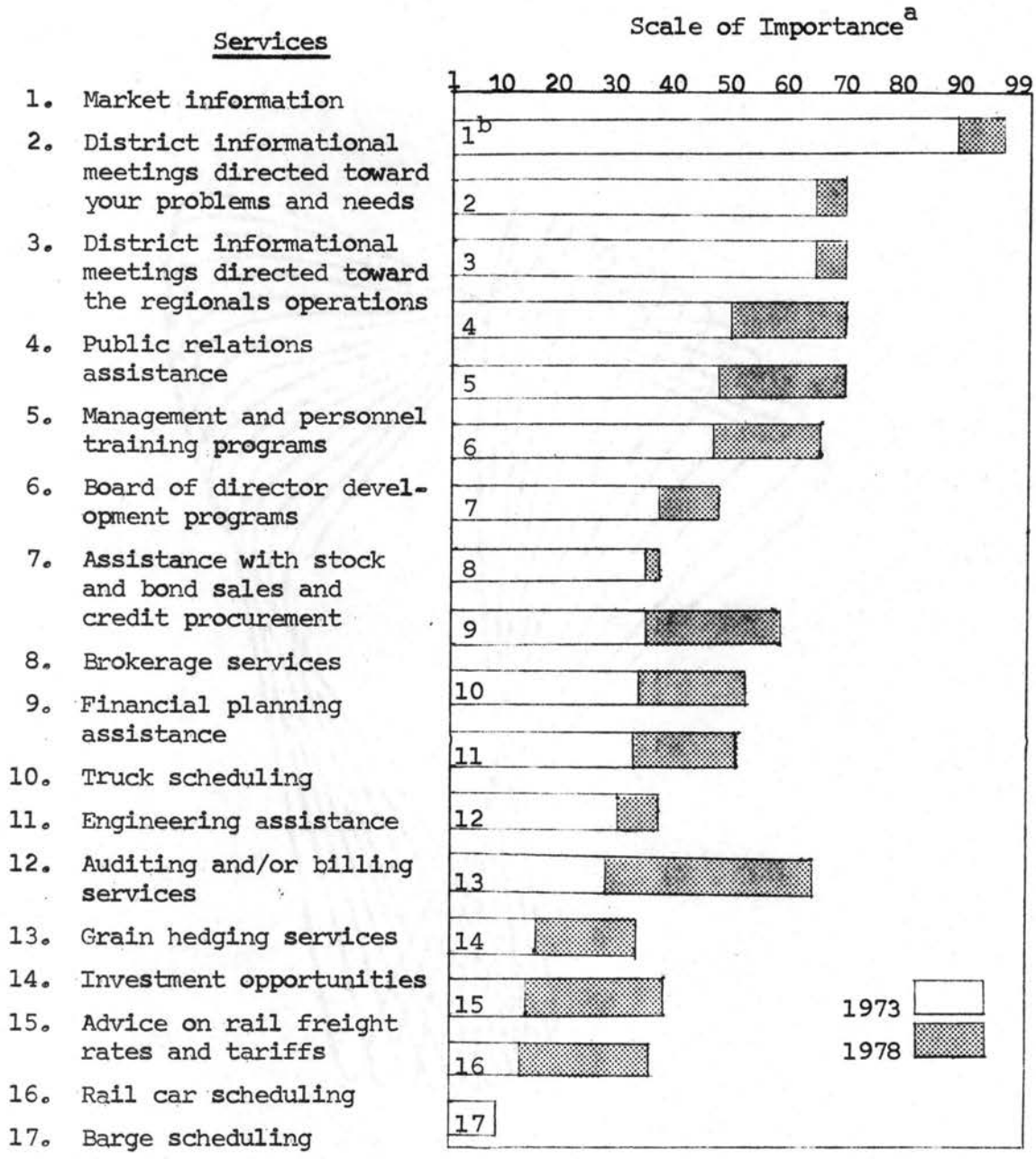

Figure 6. The Importance to South Texas Managers of Various Marketing Services in 1973 and Expected in 1978.

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[a] A scale of 1-99 was used with 99 signifying the highest possible importance.

[b] These numbers correspond to the list of services.

importance by Oklahoma and Texas Plains managers. Freight rate assistance was not as important to the South Texas managers.

Figure 4 shows that for 1973, managers in Oklahoma ranked truck scheduling, management and personnel training programs, and rail scheduling, fifth, ninth, and tenth in importance, respectively. However, managers ranked the importance of these same services higher in 1978, namely fourth, fifth, and seventh, respectively. Oklahoma managers also felt that the importance of engineering assistance and grain hedging services would increase substantially by 1978. Similar responses were recorded by cooperative managers from the Texas Plains and South Texas (Figures 5, 6).

The nonparametric Spearman rank correlation test was used to test the hypothesis that no correlation existed between the ranking of services between regions in 1973. The correlation coefficients are shown in Table XXVIII. A coefficient of 1.00 represents perfect correlation between two regions. The Oklahoma-Texas Plains coefficient of .875 was statistically significant at the .01 level. Thus, the null hypothesis of no correlation in the rankings between those regions was rejected. Other region combinations were less closely correlated but the correlation coefficients were still statistically significant at the .05 level.

A.5 Marketing Decision Factors

Besides the regional cooperative services just mentioned, local cooperatives have other criteria to consider when deciding with whom and how they market their grain. Factors such as price, premiums and discount practices and time and manner of payment to the local are not

TABLE XXVIII

SPEARMAN RANK CORRELATION COEFFICIENTS FOR IMPORTANCE OF SERVICES, BY REGION

	Oklahoma	Texas Plains	South Texas
Oklahoma	1.00	.875[a]	.490[b]
Texas Plains		1.00	.488[b]
South Texas			1.00

[a]/Significant at 1 percent level.

[b]/Significant at 5 percent level.

services as such, but are means by which regionals, cooperative or non-cooperative, compete for local association grain.

The local association managers in the sample rated each of 17 marketing factors according to its influence on with whom the local grain cooperative marketed its grain in 1973. Table XXIX shows, for each region, the ordinal ranking of the 12 highest rated factors, with numeral one signifying the most influential. The table also illustrates the average rank for all regions combined. The rankings, by region, were relatively similar although some differences were apparent. For example, the highest rated factor for each region was different. In Oklahoma, local cooperatives ranked 'contractual arrangements for cash grain delivery' highest as compared to 'price' for the Texas Plains and 'size of dividends, patronage refunds and investment opportunities' for South Texas. 'Cooperative loyalty' was the second most important factor to sampled Oklahoma local cooperative managers, whereas the second most important factors for managers in the Texas Plains and South Texas were 'source of market information' and 'contractual

TABLE XXIX

RANKINGS OF MARKETING FACTORS ACCORDING TO INFLUENCE ON MANAGERIAL MARKETING DECISIONS IN 1973, BY REGION

Marketing Factors	All Regions Combined	Oklahoma	Texas Plains	South Texas
1. Price	1	7	1	6
2. Source of market information	2	3	2	7
3. Cooperative loyalty	3	2	4	8
4. Source of frequent and consistent bids	4	5	3	5
5. Contractual arrangements for cash grain delivery	5	1	8	2
6. Time and manner of payment to the local	6	6	5	3
7. Weights and measures	7	9	9	11
8. Regional personnel expertise	8	8	7	4
9. Terminal processor facilities	9	4	10	9
10. Premium and discount practices	10	15	6	12
11. Size of dividends, patronage refunds and investment opportunities	11	12	11	1
12. All transportation services	12	10	12	14

arrangements for cash grain delivery', respectively.

It was hypothesized that the relative rank of the decision factors was different for the three regions. The Spearman rank correlation procedure was used to compute a rank correlation coefficient for each combination of the three regions (Table XXX). The hypothesis of no correlation was rejected at the .01 level for all combinations of regions.

TABLE XXX

SPEARMAN RANK CORRELATION COEFFICIENTS FOR REGION RANKINGS OF FACTORS INFLUENCING MARKETING DECISIONS[a]

	Oklahoma	Texas Plains	South Texas
Oklahoma	1.00	.721	.640
Texas Plains		1.00	.650
South Texas			1.00

[a] All coefficients were significant at the .01 level.

However, the rankings of the decision factors by Oklahoma and Texas Plains managers were more correlated than the Oklahoma-South Texas or South Texas-Texas Plains combinations since the correlation coefficient for that region combination is closer to one.

A.6 Regional Performance in Providing the Marketing Decision Factors

Regional cooperatives must perform well with respect to the

previously discussed decision factors, such as price and market information, if regionals are to continue to purchase a majority of local association marketed grain. The average cardinal scores (on a 1-99 scale) for each factor's influence on local cooperative manager's decisions are given in Tables XXXI, XXXII, and XXXIII, for Texas Plains, Oklahoma, and South Texas, respectively. Also shown in these tables are the average ratings given by local managers on the performance of the regional with respect to the decision factors.[7] Texas Plains cooperative managers felt that the price of grain was the most influential factor, with a score of 86.3, in the manager's decision as to with whom he markets grain. The regionals received a score of 79.9 on their performance in providing a competitive price.

The two least influential factors (size of refunds and transportation services) for the Texas Plains region also received the lowest performance rating for the regionals.

The Oklahoma based managers generally gave the regional cooperative a higher performance rating than did other managers. Receiving particularly high performance ratings were price, market information, source of price bids, and terminal facilities (Table XXXII). Table XXXIII shows that the most influential factor for managers in South Texas, 'size of dividends, patronage refunds, and investment opportunities', was ranked sixth among the regionals' performance ratings.

It was hypothesized that, 1) the influence of the factors on marketing decisions were different in 1973 to what managers expected in

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[7] The performance scores were average cardinal scores using the 1-99 scale, 99 signifying the highest possible performance.

TABLE XXXI

INFLUENCE LEVEL OF SELECTED FACTORS ON MARKETING DECISIONS AND THE RESPECTIVE PERFORMANCE LEVEL OF THE REGIONAL, TEXAS PLAINS REGION, 1973[a]

	Decision Factors	Influence on Marketing Decisions in 1973	Performance of the Regional on These Decision Factors in 1973
1.	Price	86.3	79.9
2.	Source of Market Information	72.6	81.5
3.	Cooperative Loyalty	70.4	74.6
4.	Source of Frequent and Consistent Bids	71.4	81.7
5.	Contractual Arrangements for Cash Grain Delivery	60.6	80.2
6.	Time and Manner of Payment to the local	67.1	86.4
7.	Weights and Measures	55.7	82.4
8.	Regional Personnel Expertise	63.3	79.5
9.	Terminal Processor Facilities	48.2	80.6
10.	Premium and Discount Practices	63.7	72.8
11.	Size of Dividends, Patronage Refunds and Investment Opportunities	44.8	63.7
12.	All Transportation Services	43.4	54.5

[a]/These numbers originated from the 1-99 scale with 99 signifying most influential or best possible performance.

TABLE XXXII

INFLUENCE LEVEL OF SELECTED FACTORS ON MARKETING DECISIONS AND THE RESPECTIVE PERFORMANCE LEVEL OF THE REGIONAL, OKLAHOMA REGION, 1973[a]

	Decision Factors	Influence on Marketing Decisions in 1973	Performance of the Regional on These Decision Factors in 1973
1.	Price	71.5	90.2
2.	Source of Market Information	74.8	90.3
3.	Cooperative Loyalty	76.8	79.0
4.	Source of Frequent and Consistent Bids	72.9	90.4
5.	Contractual Arrangements for Cash Grain Delivery	78.3	79.5
6.	Time and Manner of Payment to the local	71.9	72.3
7.	Weights and Measures	66.9	78.2
8.	Regional Personnel Expertise	70.3	82.9
9.	Terminal Processor Facilities	72.9	91.1
10.	Premium and Discount Practices	47.5	59.8
11.	Size of Dividends, Patronage Refunds and Investment Opportunities	54.1	77.6
12.	All Transportation Services	62.9	70.3

[a] These numbers originated from the 1-99 scale, with 99 signifying most influential or best possible performance.

TABLE XXXIII

INFLUENCE LEVEL OF SELECTED FACTORS ON MARKETING DECISIONS AND THE RESPECTIVE PERFORMANCE LEVEL OF THE REGIONAL, SOUTH TEXAS REGION, 1973[a]

	Decision Factors	Influence on Marketing Decisions in 1973	Performance of the Regional on These Decision Factors in 1973
1.	Price	69.3	74.1
2.	Source of Market Information	68.7	81.3
3.	Cooperative Loyalty	68.6	65.7
4.	Source of Frequent and Consistent Bids	71.4	84.0
5.	Contractual Arrangements for Cash Grain Delivery	76.9	84.0
6.	Time and Manner of Payment to the local	76.9	85.1
7.	Weights and Measures	57.1	84.1
8.	Regional Personnel Expertise	73.4	74.0
9.	Terminal Processor Facilities	61.4	59.3
10.	Premium and Discount Practices	44.4	62.9
11.	Size of Dividends, Patronage Refunds and Investment Opportunities	81.1	76.9
12.	All Transportation Services	33.0	52.9

[a] These numbers originated from the 1-99 scale, with 99 signifying most influential or best possible performance.

1978 and 2) the performance ratings of the regional in providing these factors differed between 1968 and 1973 (Tables XLIX, L, and LI respectively, for the Texas Plains, South Texas, and Oklahoma sampled managers, Appendix B). Chi-square analysis was used to test the hypotheses of no differences in influence or performance between the two sets of years (Table XXXIV). The analysis revealed no statistically significant differences between years at the .25 probability level for either the influence of factors or performance ratings.

TABLE XXXIV

CHI-SQUARE VALUES FOR DIFFERENCES BETWEEN YEARS IN INFLUENCE OF FACTORS ON DECISIONS AND PERFORMANCE OF REGIONAL[a]

	Influence of Factors (1973-1978)	Performance of Regional (1968-1973)
Texas Plains	4.18	3.06
Oklahoma	2.20	4.27
South Texas	2.40	12.14

[a]/ All coefficients are not significantly different from zero at the .25 level.

Assuming the regional cooperatives have limited resources to devote to high level performance with respect to all decision factors, it might well be advantageous for the regionals to allocate relatively larger amounts of recources to the more influential decision factors. The average rated performance (on the 1-99 scale) of the regional

cooperatives over all regions was regressed on the average rated influence of the factors as shown in Figure 7. The 12 factors (X) are listed on the horizontal axis, starting with the factor most important to sampled local managers on marketing decisions. The vertical axis represents the 1-99 response scale for regional performance (Y). The regression line, as defined by Y = 88.27 - 1.60X, indicates that the regionals did tend to focus upon the factors which local association managers indicated were most important to their decision making in selling grain.[8] The regression model explained 54 percent of the variation in rated performance and was statistically significant at the .05 level (Table XXXV).

TABLE XXXV

ANALYSIS OF VARIANCE TABLE FOR REGRESSION OF PERFORMANCE OF REGIONAL ON INFLUENCE OF FACTORS

Source	Sum of Squares	Degrees of Freedom	M.S.	F	R^2
Regression	363.84	1	363.84	11.79	.54
Residual	308.54	10	30.85		
Total (Corrected)	672.37	11			

A.7 Grain Commitment - Attitude Relationships

It was hypothesized that the performance of the regional

[8] The regression coefficient of -1.60 was significantly different from zero at the .01 level.

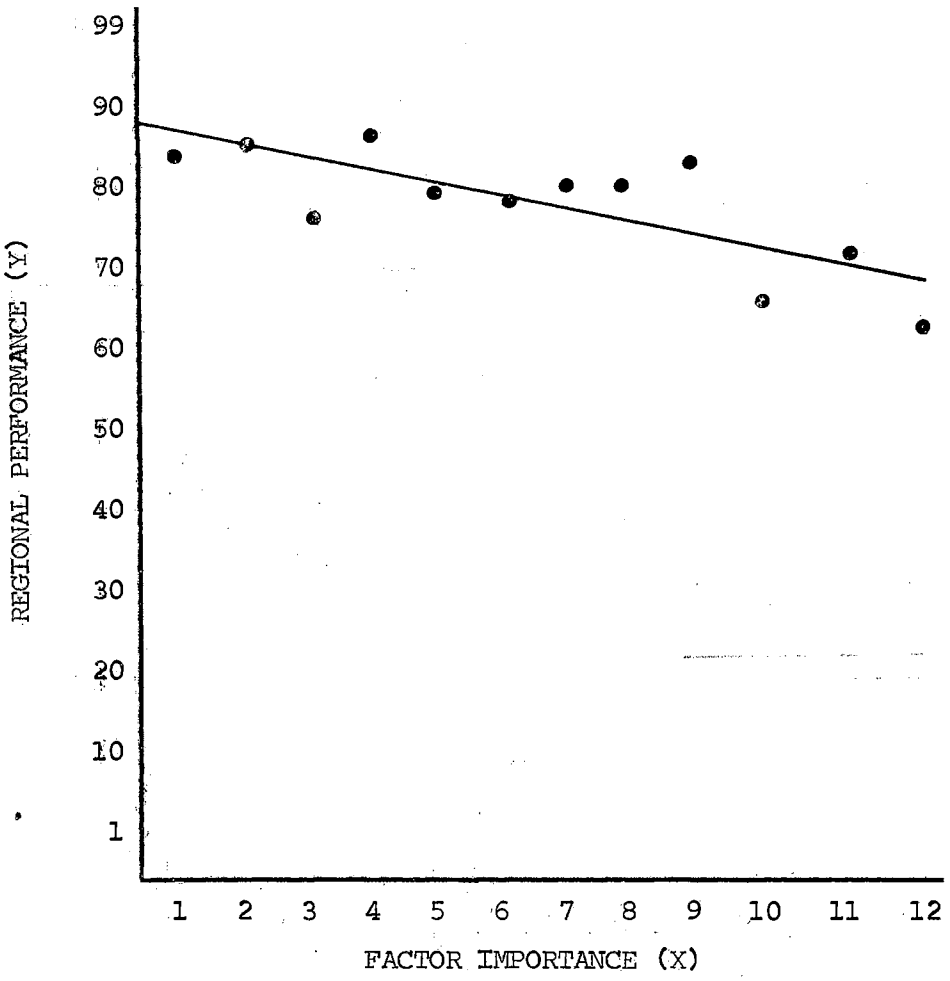

Figure 7. Regression of Performance of the Regional on Importance of Selected Marketing Factors.[a]

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[a]/ The factors are ranked here according to their influence on marketing decisions for all sample locals, beginning with the most influential.

cooperative with respect to the marketing decision factors previously mentioned, had a direct effect on the local manager's commitment of grain to the regional cooperative. Regression analysis was used to measure possible relationships between the percentage of merchandised grain marketed through the regional, and the rated performance of the regional in providing selected decision factors to the local cooperative members. The regression equation is given below.

$$Y = .428 + .457X_1 - .038X_2 - .090X_3 - .514X_4 + .436X_5 + .145X_6 +$$
$$\quad (.205) \quad (.349) \quad (.250) \quad (.265) \quad (.380) \quad (.424) \quad (.386)$$
$$1.021X_7 - .561X_8 + .150X_9 - .069X_{10}$$
$$\quad (.380) \quad (.382) \quad (.050) \quad (.045)$$

where:

Y = percentage of the total grain marketed by local associations which was committed to the regional,

X_1 = price,

X_2 = time and manner of payment to the local,

X_3 = weights and measures,

X_4 = source of frequent and consistent bids,

X_5 = source of market information,

X_6 = regional personnel expertise,

X_7 = contractual arrangements for cash grain delivery,

X_8 = cooperative loyalty,

X_9 = Texas Plains region dummy variable,

and

X_{10} = Oklahoma region dummy variable.

Variables X_1 through X_8 are performance rated variables and were coded by dividing by 1000. Dummy variables were used in the equation to account for area differences in grain commitment due to size or differences in operation of local associations between regions. The intercept term of .428 represents the adjustment for South Texas in percentage sales to the regional. The regression coefficients for variables X_9 and X_{10}, when added separately and individually to the intercept term, represent the region effects for the Texas Plains and Oklahoma regions, respectively. The standard error of the regression coefficients are given in parentheses.

Thirty-one percent of the variation of the dependent variable was explained by the regression analysis with the regression effect being significantly different from zero at the .05 probability level. The intercept term, and the regression coefficients for X_7 and X_9, were the only regression coefficients significantly different from zero at the .05 probability level. Thus, there appears to be some difference between South Texas and the Texas Plains in grain commitments to regionals. Also, an increase in the rated performance of the regional with respect to contractual arrangements (given the performance levels of the other factors) tends to increase the percentage of merchandised grain committed to the regional. Many of the other regression coefficients have signs which don't support the hypothesis of positive relationships between performance and grain commitment. However, those coefficient values are so close to zero that a small change in some of the observations might have caused a change of sign on a coefficient.

The correlation coefficients between these dependent and independent variables are given in Table XXXVI. Except for X_1 and X_5,

none of the coefficients were significantly different from zero at the .10 probability level. The coefficients of .25 and .21 for price (X_1) and source of market information (X_5) were significant at the .05 and .10 probability levels, respectively. Thus, when considered separately, the performance ratings for 'price' and 'market information' explained more of the variance in grain commitment than did any other measured factor.

TABLE XXXVI

CORRELATION MATRIX OF GRAIN COMMITMENT TO THE REGIONAL COOPERATIVE AND SELECTED DECISION FACTORS PERFORMED BY THE REGIONAL

	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
Y	1.00	.248	.033	.078	.103	.210	.186	.192	.056
X_1		1.00	.54	.39	.16	.29	.24	-.06	.56
X_2			1.00	.45	.17	.24	.16	.08	.48
X_3				1.00	.07	.18	.25	.14	.36
X_4					1.00	.55	.21	.35	.24
X_5						1.00	.45	.08	.30
X_6							1.00	.29	.32
X_7								1.00	.19
X_8									1.00

A.8 General Attitudes

While in the process of doing business with the regional cooperative, local cooperative personnel formulate opinions and develop attitudes pertaining to the regional's business affairs, operations,

and personnel. The regional personnel also formulate opinions and develop ideas about local cooperative operations and its management. Sometimes these opinions and attitudes can affect business relationships and hinder coordination of activities, programs, and sales.

The interviewed managers were presented selected statements about the regional cooperative (Table XXXVII). Managers responded to these statements according to their total agreement, total disagreement, or any feeling in between. The extent of their agreement was recorded by the manager selecting a number from a 1-99 response scale which most represents his attitude, 99 signifying total agreement with the statement. As shown in Table XXXVII, the managers in the three regions had somewhat similar attitudes toward the regional with which they did business. All managers strongly agreed that the regional was needed to provide competition for independent buyers (statement 7). However, managers from South Texas, relative to managers of the other regions, tended to show some weakness in agreeing that the regional was innovative and progressive (statement 6) and that it provided necessary services not otherwise economically available (statement 5).

Chi-square analysis supported the hypothesis that differences in attitudes toward regionals exist between managers in Oklahoma and South Texas (Table XXXVIII). However, chi-square values measuring differences between other regions were not sifnificant at the .05 level.

B. Summary

Target delivery, or delivery at a specified time and at an arranged price, was used most frequently by local associations when contracting grain to the regional cooperative and other buyers. Such

TABLE XXXVII

GENERAL ATTITUDES OF THE LOCAL COOPERATIVE MANAGERS TOWARD THE REGIONAL COOPERATIVE, BY REGION, 1973[a]

Selected Statements About the Regional	Oklahoma	Texas Plains	South Texas
1. The existence of the regional coop enables you to get a higher price for your grain in the market place	87	83	77
2. The regional coop is not a strong competitive force in the market place	14	11	16
3. Because of competition provided by the regional coop, you receive better treatment from independent merchandisers and processors	72	79	82
4. The regional coop is little more than just another outlet for your grain	11	28	22
5. The regional coop provides you with necessary services you could not get elsewhere economically	80	75	61
6. The regional coop is an innovative, progressive, and growing enterprise	90	77	69
7. Without the presence of the regional coop, you would be at the mercy of independent merchandisers and processors in marketing your grain	87	90	89
8. The regional coop is staffed by competent people who understand your business problems and needs	82	78	77
9. The regional coop is staffed by competent people who want to help you in your business	86	81	73
10. The regional coop is undercapitalized	53	63	73
11. You often use the services of the regional coop	83	83	80
12. The regional coop has poorer management than do independent processors	12	25	27

[a] These numbers originated from the 1-99 scale, 99 signifying total agreement with the statement.

contracting was particularly prevalent in the marketing of wheat.

TABLE XXXVIII

CHI-SQUARE VALUES FOR ATTITUDINAL DIFFERENCES OF LOCAL COOPERATIVE MANAGERS TOWARD REGIONAL COOPERATIVES, BY REGION, 1973

	Texas	Texas Plains	South Texas
Oklahoma	9.872	8.813	18.536[a]
Texas Plains			5.716

[a]/Coefficient is significant at the .05 level.

Differences existed in 1973 with regard to managers' responses relating to the possibility of receiving premiums for various marketing practices. Some managers agreed that premiums for various practices were available from the regional cooperative while other managers in the same region disagreed. In general, most managers felt that premiums were not available for following certain marketing practices, except possibly for the delivery of high protein wheat.

Regional grain cooperatives in Oklahoma and Texas provided short-term credit to 26 percent and 11 percent of the sampled locals, respectively. The locals receiving credit from the regional had smaller current ratios in 1973, on the average, than locals who did not receive credit from the regional.

Local managers disagreed on the availability of several services from the regional cooperative, such as providing transportation scheduling services, and brokerage and hedging services. In general,

a larger percentage of Oklahoma sampled local managers stated that several marketing services were available than did Texas sampled managers. Chi-square analysis substantiated that there was a statistical difference (at the .01 probability level) between responses from the two states relating to the availability of services.

The ranking of the marketing services according to importance by all sampled managers revealed that managers placed a high priority on market information, information about regionals' operations, and information from the regional to help solve the local's problems and needs. Grain hedging services, however, were given a low priority for 1973, when compared to the other services; but according to the manager's ratings, hedging services may be nearly twice as important in 1978 as they were in 1973. No statistical differences (at the .05 probability level) in the rated importance of services were found to exist between regions.

Local cooperative managers have other criteria to consider when deciding with whom they market their grain. Managers must choose among grain buyers, who are competing with one another for local association grain. Grain buyers offer competitive factors such as early time stipulations for payment to the local, various contractual arrangements for cash grain delivery, as well as competitive prices for grain. The Spearman rank correlation test illustrated that for all region sampled managers, the relative rank given by managers to each of 17 decision factors according to the factor's influence on grain marketing decisions, was similar. The rank correlation coefficients between each region, measuring the correlation of the relative rank of factors by region, were significant at the .01 probability level.

The amount of influence these decision factors exerted on marketing decisions did not change significantly (.05 probability level) from 1973 to 1978.[9] Likewise, the performance of the regional in providing these factors to local cooperative members did not change significantly (.05 probability level) over the 1968 to 1973 period.

The rated performance of the regionals, with respect to factors affecting marketing decisions of local managers, decreased as the importance or influence of the decision factors decreased. Thus, the regionals were rated by local managers to have performed best on the most influential decision factors. Regression analysis tended to substantiate a positive relationship between regional performance and influence of factors on local cooperative marketing decisions.

Regression analysis was also used to measure the relationship between the variation in grain commitment of local cooperatives to the regional cooperative and the variation in performance ratings given the regional cooperative. The regression explained 31 percent of the variation in the percentage of grain committed to the regional cooperative. The regression relationship was significant at the .05 level. Thus, the performance of the regional with respect to key decision factors may have some effect on the commitment of grain by local cooperatives.

In general, local cooperative management had a high regard for the operations of the regional cooperatives. Most local cooperative

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[9] Sampled managers rated the factors according to how influential they felt the factors would be on decisions in 1978.

managers interviewed agreed strongly that without the presence of the regional cooperative, the locals would be at the mercy of independent merchandisers and processors in marketing their grain. They also agreed that the existence of the regional cooperative enables them to get a higher grain price in the market place.

CHAPTER V

SUMMARY AND CONCLUSIONS

A. Introduction

Chapter V contains a condensed version of this research, concentrating on its highlights. The underlying problem is presented along with a discussion of the objectives and the procedure used to satisfy the objectives. The results are then summarized starting with marketing practices and patterns existing at the local level in the cooperative grain marketing system. Next, and probably of more importance to this study, is a discussion of the existing local - regional coordinating arrangements of services and marketing decision factors.

Concluding remarks are then made pertaining to the fulfillment of the objectives.

B. Problem

Information concerning the nature, implications, and potentials of closer vertical coordination among grain marketing cooperatives and their members is available in insufficient quantities. Previous work in this area has tended to deal with operations at a given level of the marketing system. Increasing the marketing efficiency at one level of the system, however, does not necessarily increase the efficiency of the marketing system as a whole. Thus, a need prevails for research

which includes at least two levels of the cooperative grain marketing system. Only then can more realistic conclusions be drawn which conform to the basic idea that systems research, as opposed to research of only one marketing level, might offer insights for improved coordinating relationships between marketing levels, thereby increasing grain cooperative member returns.

C. Objectives

The objectives of this research were to describe: 1) existing marketing practices and patterns of local cooperatives in Texas and Oklahoma, 2) coordinating arrangements between local cooperative grain elevators and the regional cooperatives with whom they sell grain, and 3) to investigate those possibilities and potentials which may exist or can be developed that would enable grain marketing cooperatives to increase producer returns through closer vertical coordination within the cooperative grain marketing system.

D. Procedure

Because of the large population and the large variation in size of local grain cooperatives in Oklahoma and Texas, a random sample, stratified according to storage capacity size, and by state, was selected to represent the grain cooperative population. The managers of each local cooperative in the sample were personally interviewed concerning their operation and their relationship with the regional cooperative through which they sold grain. The questionnaire used in the interviews was designed to extract information pertaining to marketing patterns and the coordination of marketing services and

decision factors between the local and regional grain cooperatives. The data were then processed for the computer to facilitate simple statistical and accumulative analysis. A summary of the results follows in sections E and F.

E. Existing Marketing Patterns of Local Cooperative Marketed Grain

Chapter III dealt with the marketing practices and patterns of local cooperative associations in the handling and movement of grain. The most important grains handled by cooperatives in the sample were grain sorghum and wheat, most of which was either purchased at harvest or stored for the farmers and purchased later. A major portion of the grain sorghum marketed through South Texas sampled local cooperatives was contracted from producers. Very little forward contracting was used by sampled Oklahoma and Texas Plains cooperatives since most of the grain was purchased at harvest for cash.

An important factor in the marketing of grain is the availability of large amounts of operating capital. Local cooperatives in this study had several sources of operating capital. The Bank for Cooperatives and delayed payments to farmers were the most frequently used sources of local association peak operating capital, i.e., capital used during peak grain handling and movement periods.

The utilization of grain storage space by local cooperatives was also analyzed. The Texas Plains cooperatives frequently used operating space for the storage of grain during harvest. Forty-seven percent of the grain storage facilities of sampled cooperatives in this region were flat structures which characteristically has large amounts

of storage space which can be used interchangeably as operating space. The other regions do not make much use of this type of space for grain storage at least partially because of a predominance of upright storage type of facilities.

Local cooperative managers were asked what percentage of grain handled was eventually committed to a regional cooperative. Ninety-five percent and six percent of the wheat and grain sorghum, respectively, handled by Oklahoma cooperatives in the sample were committed to a regional cooperative. Of the wheat and grain sorghum handled by Texas Plains cooperatives, 72 and 58 percent, respectively, were committed to a regional cooperative. South Texas cooperatives in the sample sold 74 percent of their associations' only crop, grain sorghum, to the regional.

Next, gross margins received by locals for marketed grain were studied. Oklahoma locals, on the average, received 18.8 cents gross margin per bushel for wheat in 1973 while Texas Plains locals received 27.1 cents per bushel. Gross margins for other grains ranged from approximately 15 cents per bushel for South Texas sorghum to 32.7 cents per bushel for soybeans in Oklahoma.

Managers of the local cooperatives were asked how often and from whom they obtained grain price bids. The majority of the sampled association managers relied on bids from grain buyers (both cooperatives and independents) for their quoted board grain prices. The larger associations received or acquired price bids several times per hour during harvest. Evidence suggested that larger association managers tended to stay better informed of market forces and everyday activities than those of smaller associations.

A major portion of the interviewed managers used forward contracting to protect their financial grain position from unfavorable price flucuations. Hedging in the futures market was used by only a very few respondents.

Most of the grain purchased by local cooperatives was sold on a target delivery basis where a price and delivery date are specified and premiums and discounts are awarded if delivery is early or late. Most of the grain was sold for shipment within one month. A majority of the feed grains handled by Oklahoma cooperatives was retailed back to farmers as whole grain, in feed, or sold to feedlots. Texas cooperatives handled much larger amounts of grain sorghum than did Oklahoma cooperatives, but the sorghum was marketed in much the same pattern as in Oklahoma.

F. Existing Local-Regional Coordinating Arrangements

Target delivery was the principal contracting arrangement between local and regional cooperatives. No premiums were generally given by regional cooperatives for early delivery. (This was also true for independent grain buyers.)

Short-term credit arrangements between regional and local cooperatives were analyzed. The regional cooperatives extended short-term credit to 18 percent of the sampled member cooperative associations. The financial condition of all sampled locals showed that the regionals made provisions for short-term credit to locals whose current ratios on the average were less than the locals who did not receive credit from the regionals.

Large discrepancies existed between sampled local cooperative managers concerning the availability of services to the local cooperative. Based on managers' responses, more services were seemingly available to Oklahoma respondents than to Texas respondents. Chi-square analysis was used to test the hypothesis of no difference in availability of services between Oklahoma and Texas. This hypothesis was rejected at the .01 probability level, signifying a difference in service probably does exist between states, at least according to sampled managers' responses.

Managers from both states required the same kinds of services, the more important services being market information, transportation scheduling, and informational meetings sponsored by the regional.

The services were ranked by the managers from each region according to the importance of the service to the local association. Spearman rank correlation coefficients were calculated between Oklahoma and Texas Plains regions, South Texas and Oklahoma regions, and Texas Plains and South Texas regions. All correlation coefficients were significant at the .05 probability level which supports the hypothesis of a correlation between regions in the ranking of services to the local cooperative. However, Oklahoma and Texas Plains managers placed more emphasis on the importance of transportation services than did South Texas managers.

Regardless of the region, managers who were interviewed, ranked district informational meetings concerning the local's problems and needs, and concerning the regional's operations, highly important relative to other services. Local cooperative managers realized they must become better informed in the area of marketing grain in the

cooperative system.

Research also showed local managers felt certain services, of little importance to them in 1973, were going to increase greatly in importance by 1978. They proposed, for instance, that grain hedging services will be very important in the future because of the increased demand for price protection, although managers rated this service as relatively unimportant in 1973.

All regions also had similar opinions regarding the factors that influence their marketing decisions. Factors such as 'price','time and manner of payments to the local','source of market information', 'advice on rail freight rates and tariffs', along with 13 other factors considered in the analysis, were ranked by the managers according to their influence on marketing decisions in 1973. 'Price' and 'source of market information' were ranked among the highest of the factors listed in all regions. Spearman rank correlation coefficients, measuring the correlation of average rankings between each region, were significant at the .05 probability level. This test supported the hypothesis that cooperative managers ranked the factors in a similar pattern, regardless of region.

The regional cooperatives' performance in connection with the decision factors, such as price, generally received a high rating from local managers. Oklahoma cooperative managers tended to rate the regionals' performance higher than did managers in Texas. The regionals were rated as having performed best those factors which local sampled managers as a whole felt were most important.

It was hypothesized in Chapter IV that the performance of the regional with respect to decision factors would have an effect on the

commitment of grain by the local to the regional cooperative. Regressing the percentage of marketed grain committed to the regional on the performance of the regional[10] in providing the decision factors, supported the hypothesis, at the .05 probability level, that a relationship does exist. When measured on an individual one-at-a-time basis, 'price' and 'source of market information', were the only variables significantly (.05 and .10 probability level, respectively) correlated with the percentage of marketed grain sold to the regional cooperative.

Local managerial attitudes of a more general nature toward the regional cooperative were highly positive. A list of selected attitude statements about the regional were given scores by the sampled managers from 1-99, with 99 signifying total agreement with the statement. Included in the list was 'the existence of the regional coop enables you to get a higher price for your grain in the market place' and 'the regional coop provides you with necessary services you could not get economically elsewhere'. The sampled managers rated these attitude statements an average of 70 or better.

G. Conclusions

Concluding remarks are focused on three areas of importance to this study. First, an overview of the performance of the regional cooperatives is presented which pertains to the services and competition the regional provides to local cooperatives. Secondly, conclusions are drawn from analyses of the availability and importance of marketing services. Finally, ending remarks are given concerning

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[10]The performance of the regional was measured using the 1-99 scale, with 99 signifying the highest possible performance in providing the factors.

cooperative marketing decision making, i.e., the factors that affect such decisions.

A complete dicussion of coordinating arrangements, within the local-regional sector of the cooperative grain marketing system, cannot be limited to either of the three conclusion sections. Rather, vertical coordination is the underlying consideration in the preceding analysis and is referred to in the remaining sections.

G.1 Local Managers' Attitudes of Regional Performance: An Overview

Evaluating the regional cooperative from an overall standpoint, through the sentiments of this study's sampled locals, is relatively straightforward. Without the presence of the regional cooperative, the local managers expressed deep concern of the possibility of doing business with giant independent merchandisers and processors in marketing their grain. Most local managers felt that the regional was staffed by competent people who want to help them with business problems and that the regional was a strong competitive force in the market place. Thus, the existence of regional cooperatives was strongly supported by local cooperative managers.

Regional cooperative personnel devote a large amount of effort to providing marketing factors to cooperative members such as market information and transportation scheduling, which have an effect on local grain marketing decisions. Analysis of local manager opinions indicated that the greater the influence of the factor on marketing decisions, the greater was the rated performance on the regional in providing that factor to the local. This trend gives support to the

evidence that regional cooperatives have devoted more resources to the most influential factors than is true with the less influential factors.

G. 2 Culmination of Marketing Services Analysis

Local cooperative managers in the sample were extremely supportive of the cooperative system of marketing grain, and in particular the existence of regional grain marketing cooperatives, as was pointed out in the preceding section. However, there were large discrepancies among local associations with regard to which marketing services were available from the regional. As local-regional business relationships were more closely scrutinized, inconsistencies became apparent concerning local-regional coordination of marketing informational services. A possible explanation is that local association managers do not realize the importance of acquiring regionally based services to help them become a more viable force in marketing grain, so that local associations are not attentive to what services are available from the regional. Another possible explanation of the different managerial responses is a lack of coordination between the two levels in rendering and accepting marketing services. Only when local association managers become more informed of market forces and relationships, new grain transfer methods, regional contractual arrangements, hedging operations and other services, all of which the regionals may provide, can they develop the knowledge needed to more efficiently manage modern cooperative grain marketing businesses.

A lack of knowledge concerning regional operations and services at the producer level may give rise to the leakage of grain out of

the cooperative grain marketing system. If local managers are not aware of the benefits of cooperative grain marketing accruing from the various services of regional cooperatives, then the full benefits of cooperative grain marketing may not be explicitly apparent to grain producers. With this possibility in mind, a tighter more highly coordinated system could increase cooperative members returns through improved bargaining power by committing through the local and the regional cooperative a larger percentage of the total production of grain.

Economic incentives yielded by regional cooperatives to local association members, for increased participation and coordination of services, might prove to be a profitable long run investment for the regional since a more knowledgeable, vertically coordinated grain marketing system would result.

The incentive program would center around the degree of vertical integration the local associations achieved in a new role of decreased independence in marketing grain. The magnitude of the incentive would depend upon the savings of the regional associated with increased managerial efficiency, technical efficiency, and market power, brought about by economies of size. Although beyond the scope of this study, savings, under a more vertically integrated system, possibly could be obtained through regional control of pricing, hedging, and merchandising. The incentives would be in the form of increased regional performance on marketing decision factors, dicussed further in the following section.

Local associations could then coordinate producer incentive programs aimed at total grain commitment to the cooperative system. The

regional grain marketing incentives would thus be funneled through member associations to producers to gain the same kinds of efficiencies at the local level.

G.3 Culmination of Marketing Decision Factor Analysis

The criteria involved in a local cooperative association's decision of with whom the association markets its grain, are the price of the commodity under consideration, market information, contractual arrangements for the delivery of cash grain, time and manner of payment to the local and several others referred to in the text. In the true sense of the free enterprise system, these factors constitute the competition exerted on the grain marketing industry by a regional grain buyer whether that buyer be a cooperative or an independent. The regional cooperatives, with whom the local associations do business, provide and/or perform the marketing decision factors relatively well in relation to each other. However, it appears that the regionals' performance has not improved on the factors as a group even though the decision factors have basically been the same for the time horizon considered in this study. There possibly could be a lagged effect of the performance of the regional in providing these services as marketing decision factors change. But even if that is true, regionals should work toward updating their marketing arrangements so as to shorten the time span of such a lag. The regional grain cooperatives must become more viable and competitive in the market place particularly with respect to price and contractual arrangements, so that the cooperative grain marketing system will be increasingly appealing to

member locals, member producers, and prospective members. Still higher regional performance in providing marketing decision factors in the form of prices, cash patronage refunds, more precise market information, more professional assistance with transportation services, public relations and short-term credit, would be the form of incentives to make the cooperative system more vertically coordinated. These were the factors deemed most important to local cooperative operations by sampled cooperative managers.

Local cooperative management will place increasing importance in the future on certain services from the regional cooperative. Included are grain hedging services, advice on rail freight rates and tariffs, and rail scheduling. In addition, advanced financial planning and engineering assistance; high quality informational meetings aimed at improving the expertise of local management, personnel and members of the board of directors; and intricate truck scheduling assistance will be sought by local cooperative grain association managers.

H. Implications for Further Research

Research is needed at the regional cooperative level with objectives of discovering and investigating other possibilities which would strengthen regional competition in buying grain from members. Further research is also needed to determine potential gains from efficiencies of size which might result from a more tightly coordinated vertical cooperative commitment of grain up through the cooperative grain

marketing system. Finally, research is needed to determine what efficiencies may be gained through regional cooperative mergers.

This study will hopefully be helpful in filling the void in the systems approach to grain marketing analysis.

BIBLIOGRAPHY

(1) Benitz, Pedro. "Oklahoma Cooperative Managers: Their Managerial Problems and Objectives for Success." (Unpub. M. S. thesis, Oklahoma State University, 1972.)

(2) Black, W.E. "Cooperative Grain Marketing-Today and Tomorrow." Sixth Annual Meeting of Far-Mar-Co., Inc., Kansas City, Missouri, February 5, 1974.

(3) Blankertz, Donald F. "Cooperative Marketing of Grains." In Marketing Cooperatives. New York: The Ronald Press, 1940, p. 276.

(4) Cannell, Charles F., and Robert L. Kahn. "The Collection of Data by Interviewing." In Leon Festinger and Daniel Katz (ed.), Research Methods in the Behavioral Sciences. New York: Dryden Press, 1953, p. 327.

(5) Draper, N.R., and H. Smith. Applied Regression Analysis. New York: John Wiley & Sons, Inc., 1966.

(6) Godwin, Marshall R., and L.L. Jones. "The Emerging Food and Fiber System: Implications of Agriculture." AJAE, 53 (1971), pp. 806-815.

(7) Goldberg, Ray A. Agribusiness Coordination: A Systems Approach. Boston: Harvard University Graduate School of Business Administration, 1968.

(8) "How Grain Producers Can Improve Marketing." News for Farmer Cooperatives, 40 (February, 1974), p. 8.

(9) Juillerat, Monte E., and Paul L. Farris. "Grain Export Industry Organization and Facilities in the United States." Lafayette: Purdue University Agricultural Experiment Station, Research Progress Report 390, August, 1971.

(10) Kohls, R.L., "Toward a More Meaningful Concept of Marketing Efficiency." J.F.E., 38 (February, 1956), pp. 68-73.

(11) _____, "A Critical Evaluation of Agricultural Marketing Research." J.F.E., 39 (December, 1957), pp. 1600-1609.

(12) _____, "Decision-Making in Integrated Production and Marketing Systems." J.F.E., 40 (December, 1958), pp. 1801-1811.

(13) Manchester, Alden C. "Vertical Coordination in Agriculture as a Field of Research." In Workshop Proceedings on Vertical Coordination in Livestock Marketing. Houston: Southern Regional Livestock Marketing Research Committee, March, 1969, pp. 1-12.

(14) Marketing. Washington: USDA, Yearbook of Agriculture, 1954.

(15) Oehrtman, Robert L. "A Hierachical Factor Analysis of the Adjustment Problems Facing Milk Bottling Firms." (Unpub. Ph.D. dissertation, Iowa State University, 1970.)

(16) Purcell, Wayne D. "An Approach to Research on Vertical Coordination: The Beef System in Oklahoma." AJAE, 55 (February, 1973), pp. 65-68.

(17) Purcell, Wayne D., and Terry L. Dunn. "Economic Implications of Conflict and Inconsistency in the Beef Marketing System: The Feeder-Packer Subsector." Stillwater: Oklahoma Agricultural Experiment Station, Research Bulletin B-700, August, 1972.

(18) Rathwell, P. James, and Wayne D. Purcell. "Economic Implications of Conflict and Inconsistency in the Beef Marketing System: The Producer-Feeder Subsector." Stillwater: Oklahoma Agricultural Experiment Station, Research Bulletin B-704, October, 1972.

(19) Schruben, Leonard W. "Systems Approach to Marketing Efficiency Research." J.F.E., 50 (December, 1968), pp. 1454-1468.

(20) Schwartz, Donald R. "Vertical Coordination in Cooperative Grain Marketing Systems." (Unpub. Ph.D. dissertation, Purdue University, May, 1974.)

(21) Smith, Eldon D. "Discussion: Goals and Conflicts in Agricultural Marketing Research." J.F.E., 44 (December, 1962), pp. 1533-1536.

(22) Snedecor, George W. and William G. Cochran. Statistical Methods. Ames: The Iowa State University Press, 1967.

(23) Stelly, Randell, Roland D. Smith, Robert L. Degner, William E. Black, and Robert E. Branson. "Current and Alternative Marketing Systems for Texas Grain Sorghum." College Station: Texas Agriculture Experiment Station, Research Report MRC 73-8, February, 1974.

(24) "Summary." In A Framework for Marketing Research. Gainesville: Southern Marketing Research Committee, August, 1963, p.v.

(25) Thurston, Stanley K. "35th Annual Report of the Regional Grain Cooperatives." Washington: USDA, Farmer Cooperative Service, Service Report 144, February, 1975.

(26) Thurston, Stanley K. and Charles H. Meyer. "32nd Annual Report of the Regional Grain Cooperatives." Washington: USDA, Farmer Cooperative Service, Service Report 124, August, 1971.

APPENDIX A

THE QUESTIONNAIRE

Oklahoma State University
Agricultural Experiment Station
Department of Agricultural Economics
Stillwater, Oklahoma 74074

Local Cooperative Grain Elevator Survey

1. Name of Cooperative _____

2. Location of main office Town _____ County _____

   Phone and Area Code _____

3. Please list the names of the branch elevators or stations and their addresses _____

   _____

   _____

4. Person interviewed. Name _____ Position _____

   (Information requested for calendar year 1973.)

5. What was your total grain storage capacity as of December 31, 1973? Upright _____bu.

   Flat _____bu.

6. a. Did your co-operative own capital stock or certificates in any other firm which marketed your grain during 1973? Yes ( ) No ( )

   b. If yes, is any of this capital stock or certificates in: (please check)

   1) ( ) local grain elevators
   2) ( ) regional grain elevators
   3) ( ) grain export facilities
   4) ( ) grain processing facilities
   5) ( ) trucking firms
   6) ( ) other (please specify) _____

7. What are the name(s) of the regional cooperative(s) and/or independent merchandiser(s) or processor(s) through which you marketed your grain during 1973?

   Regional cooperative(s) _____

   Independent firm (s) _____

8. What percentage of your total grain volume (including feed grains) was marketed through the following outlets for the years indicated:

	Percent of total grain volume marketed		
	In 1968	In 1973	Expected in 1978
		(Percent)	
a. Regional cooperative (terminal or processor)			
b. Independent merchandiser or processor			
c. Retail to producers (whole grain, or in feed)			
	100%	100%	100%

9. During the year 1973, did you store in your facilities any grain owned by a regional cooperative terminal or processor?

   a. Yes ( ) No ( ) (If no, skip to question 10, if yes continue with part b.)

   b. How many bushels? _____

   c. How many months was the grain stored? _____

   d. In which one of the following periods did you store the most grain for a regional cooperative?

      (1) ( ) January to April
      (2) ( ) May to August
      (3) ( ) September to December

   e. Was all of the grain that you stored for the regional cooperative removed within one week? Yes ( ) No ( )

10. How was your grain storage space utilized when your total grain on hand was greatest between January 1, 1973, and December 31, 1973?

Type of Utilization		Bushels
Operating Space (includes workhouse and unused)		_____
Storing Grain on Your Own Account		_____
Hedged Grain	_____	
Unhedged Grain but not Contracted	_____	
Contracted Grain	_____	
Storage for Others		_____
Warehouse Receipted	_____	
Open	_____	
Grain Bank	_____	
CCC	_____	
Terminal or Processor	_____	Total _____

11. Was it possible for you to obtain premiums of any kind for your grain from the regional cooperative by using any of the following marketing practices?

Marketing Practices	Yes	No	Don't Know
a. Sales in large volumes and round lots	_____	_____	_____
b. Forward contracting with regional cooperative for future delivery of cash grain	_____	_____	_____
c. Pooling	_____	_____	_____
d. Multiple shipments	_____	_____	_____
e. Delayed pricing	_____	_____	_____
f. Rapid delivery of grain	_____	_____	_____
g. Immediately contracting with the regional cooperative all elevator purchased grain	_____	_____	_____
h. Storage of grain for the regional cooperative	_____	_____	_____
i. Sale of consistently high quality grain	_____	_____	_____
j. Long history of a good business relationship	_____	_____	_____
k. Delayed shipment	_____	_____	_____
l. Sale of high protein grain	_____	_____	_____
m. Other (please specify) _____ . . .	_____	_____	_____

12. During 1973 did your regional cooperative terminal or processor make any provisions for short term credit in the merchandising of your grain?

Yes ( ) No ( ) (If no, go to question 13.)

Please describe the credit arrangements with regard to each of the following:

a. Average length of credit arrangement in months _____

b. Interest rate or discount allowed: _____% interest rate; _____% discount allowed.

c. Payment arrangements, including time periods involved. _____

_____

d. Average borrowing limit as a percentage of the value of your grain? _____

_____

e. How is the value of this grain determined? (specify) _____

_____

f. What collateral is required, if any, other than grain? _____

g. Under such financial arrangements as above, are you obligated to sell this grain to the regional cooperative? Yes ( ) No ( ) Don't Know ( )

13. a. What was your peak cash requirement at any point in time for purchasing grain during 1973, including deferred payments? $_____

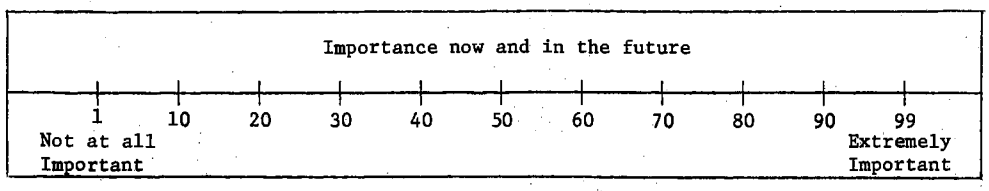
b. During 1973, what amount of your peak cash requirement for purchasing grain was obtained from the following sources?

Source	Dollars of Peak Operating Capital for Purchasing Grain
1) Commercial Banks	_____
2) Bank for Cooperatives	_____
3) Interest bearing advances from buyers and coops	_____
4) Non-interest advances from buyers and coops	_____
5) Farmers who delivered grain to you under delayed payment arrangements	_____
6) Your own capital	_____
7) Farmer patron loans	_____
8) Other (please specify) _____	_____

14. Indicate in column (a) whether or not your regional cooperative makes available to you any of the following services. Indicate in column (b) whether or not the available service is free. Indicate in column (c) the frequency that you used each of the services when and if available within the past five years. Please express each answer as a percentage of the maximum that you could have used each service.

Areas of Service	(a) Is Service Available? Yes	No	Don't Know	(b) Is Service Free? Free	Not Free	Don't Know	(c) Frequency of Use (Percent)
1) Assistance with rail car scheduling							
2) Assistance with truck scheduling							
3) Assistance with barge scheduling							
4) Advice on rail freight rates and tariffs							
5) Market information							
6) Brokerage Services							
7) Grain hedging services							
8) Auditing and/or billing services							
9) Financial planning assistance							
10) Assistance with stock and bond sales, and credit procurement							
11) Investment opportunities							
12) Engineering assistance							
13) Public relations assistance							
14) Management and personnel training programs							
15) Board of directors development programs							
16) District informational meetings directed to your problems and needs							
17) District informational meetings concerning the regional's operations							
18) Other (please specify)							

15. Rate each of the services listed below according to their importance now and in 1978. These questions are answered by placing scores from the range 1 through 99 in the blanks below. The higher the score, the more important the service. The lower the score, the less important the service. A check mark (√) indicates no opinion, undecided, or do not know.



		In 1973	In 1978
1)	Assistance with rail car scheduling		
2)	Assistance with truck scheduling		
3)	Assistance with barge scheduling		
4)	Advice on rail freight rates and tariff		
5)	Market information		
6)	Brokerage services		
7)	Grain hedging services		
8)	Auditing and/or billing services		
9)	Financial planning assistance		
10)	Assistance with stock and bond sales, and credit procurement		
11)	Investment opportunities		
12)	Engineering assistance		
13)	Public relations assistance		
14)	Management and personnel training programs		
15)	Board of directors development programs		
16)	District informational meetings directed to your problems and needs		
17)	District informational meetings concerning the regionals operations		
18)	Other (please specify) _____		

16. Respond in columns (a) through (e) according to the respective instructions as follows: A check mark (✓) indicates no opinion, undecided, or do not know.

(a) indicate the degree of influence each of the following factors had on decisions as to whom the cooperative marketed grain in 1968.

(b) indicate the degree of influence each factor had on decisions as to whom the cooperative marketed grain in 1973.

(c) indicate the degree of influence each factor will have on decisions as to whom the cooperative markets grain in 1978.

(d) indicate the degree of performance of the regional regarding the following factors in 1968.

(e) indicate the degree of performance the regional had regarding each of the following factors in 1973.

These questions are answered by placing scores from the range 1 to 99 in the blanks provided. The score is considered an indication of the degree of influence or performance analogous to the usage of the scale in previous questions.

For Columns a, b, & c
Influence of Factors
on Marketing Decisions

1 10 20 30 40 50 60 70 80 90 99

Not at all Influential — Extremely Influential

For Columns d, e
Performance of Regionals
Regarding these Factors

1 10 20 30 40 50 60 70 80 90 99

Poor Performance — Excellent Performance

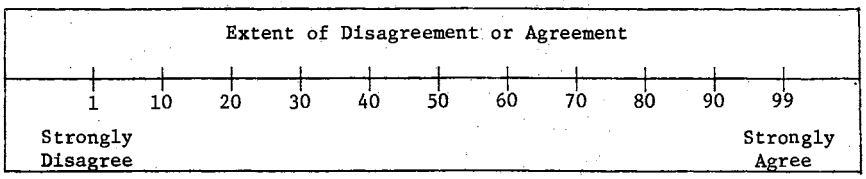
Factors	Influence on Decisions (a) In 1968	(b) In 1973	(c) Expected In 1978	Performance of Regional (d) In 1968	(e) In 1973
1) Price					
2) Advances or short term credit					
3) Time & manner of payment to the local					
4) Premium and discount practices					
5) Weights and measures					
6) Penalties for delays in shipment					
7) Premiums for large volumes					
8) Source of frequent & consistent bids					
9) Source of market information					
10) Brokerage services					
11) Regional personnel expertise					
12) Terminal or processor facilities					
13) All transportation services					
14) Management and financial services					
15) Size of dividends, patronage refunds and investment opportunities					
16) Contractual arrangements for cash grain delivery					
17) Cooperative loyalty					
18) Other (please specify)					

17. Please rank the three most important of the factors listed above in their order of importance in 1973, beginning with the most important. After this, do the same with the three least important factors. Do not include those factors for which you had no opinion.

Most Important 1st _____ 2nd _____ 3rd _____

Least Important 1st _____ 2nd _____ 3rd _____

18. Indicate the extent of your agreement or disagreement with each of the following statements. Again, use the associated scale for your answers similarly to previous questions. A check mark (√) indicates no opinion, undecided, or do not know.



a. The existence of the regional coop enables you to get a higher price for your grain in the market place . . . . . |___|

b. The regional coop is not a strong competitive force in the market place . . . |___|

c. Because of competition provided by the regional coop, you receive better treatment from independent merchandisers and processors . . . . . |___|

d. The regional coop is little more than just another outlet for your grain . . . |___|

e. The regional coop provides you with necessary services you could not get economically elsewhere . . . . . |___|

f. The regional coop is an innovative, progressive and growing enterprise . . . . |___|

g. Without the presence of the regional coop, you would be at the mercy of giant independent merchandisers and processors in marketing your grain . . . . |___|

h. The regional coop is staffed by competent people who understand your business problems and needs . . . . . |___|

i. The regional coop is staffed by competent people who want to help you in your business . . . . . |___|

j. The regional coop is undercapitalized . . . . . |___|

k. You often use the services of the regional coop . . . . . |___|

l. The regional coop has poorer management than do independent processors . . . . |___|

m. Other (please specify) _____ . . . . |___|

19. In 1973 did you restrict the length of time during which producers could store grain with you by:

a. requiring that all stored grain be sold by some specified time (such as harvest)? Yes ( ) No ( )

b. reassessing a minimum storage charge at harvest Yes ( ) No ( )

c. Other (please specify) _____ Yes ( ) No ( )

20. How much of each of the following grains did you <u>buy</u> from <u>producers</u> between January 1, 1973, and December 31, 1973? (Also, include in the totals here any grain you may have purchased from the C.C.C.)

Wheat _____bu. Barley _____bu. Oats _____bu.

Sorghum _____bu. Rye _____bu. (_____) _____bu.

Soybeans _____bu. Corn _____bu. (_____) _____bu.

21. Show the percentage of your 1973 grain purchases by the following method of purchase:

(For ease of answering, complete each column before going to the next grain.)

Method of Purchase	Grain - (Exclude specialty crops and seed)							
	Wheat	Sorghum	Soybeans	Barley	Rye	Corn	Oats	(Other)
	Percent of Purchase							
a. Traditional cash purchase at harvest (cash delivery)								
b. Contracted prior to harvest for delivery and payment at harvest								
c. Stored for farmer and purchased later								
d. Purchased (after harvest) from farm storage (1) for cash								
(2) on forward contract								
e. Purchased but with a delayed price								
f. Grain pool								
g. Other (specify)								
Total	100%	100%	100%	100%	100%	100%	100%	100%

22. Considering all grains combined, please rank those three methods of purchase in question 21 above according to the volume of total grain purchased in 1973, starting with the method by which the most volume is purchased. (Please consider d (1) and d (2) as separate methods.)

1) _____ Method of purchase with largest volume.
2) _____ Method of purchase with second largest volume.
3) _____ Method of purchase with third largest volume.

23. [IF NO CONTRACTING PRIOR TO HARVEST (21b), GO TO #25] When contracting for grain from farmers prior to harvest what percent of the contracts are made:

	Grain (Exclude specialty crops and seed)							
	Wheat	Sorghum	Soybeans	Barley	Rye	Corn	Oats	(Other)
	Percent of Contract Purchase							
a. Prior to Planting								
b. After Planting								
c. Total	100	100	100	100	100	100	100	100

24. Which method if any did your cooperative use in 1973 to protect the cooperative's grain purchase against risk of price change? (please check)

a. ( ) No method
b. ( ) Sell a contract in the futures market
c. ( ) Sell a cash contract with another grain firm
d. ( ) Other (please specify)_____

25. The following statements refer to cash purchases and some types of delayed pricing and contracting arrangements which have been observed in buying grain.

Indicate in column (a) how often each of these methods was used in 1968; in (b) how often each was used in 1973; and in (c) expected use in 1978. Express all answers as percentage of all types of buying transactions.

Types of Buying Transactions	(a) In 1968	(b) In 1973	(c) In 1978
		Percent	
I. Cash purchases (non-contracting)			
II. Delayed pricing and contracting arrangements			
1) Title passes to you at the scales when you receive the grain, but the seller can choose any price in the next 10 days.			
2) Title passes to you at the scales (when you receive the grain) but the seller chooses the price after 10 days. .			
3) Title passes to you at the scales (when you receive the grain) and the seller agrees that the price will be set when the basis (near futures minus cash price) reaches a certain amount			
4) Commitment is made to purchase grain at a given price with delivery of the grain at some specified future date. Price premiums or discounts apply if the seller delivers the grain before or after the specified date. .			
5) Other types of delayed pricing and contracting			
Total	100%	100%	100%

26. Rank the three most important sources of information you use in arriving at the quoted board price for the following grains:

Source	Grain					
	Wheat	Sorghum	Soybeans	Barley	(Other) _____	(Other) _____
a. Grain merchandiser bid						
b. Processor bid						
c. Cash grain broker bid						
d. Futures market report						
e. Instruction from parent firm						
f. Advisory service						
g. Competitor's bid						
h. Local demand (e.g., feed mill)						
i. Other (specify)						

27. How frequently do you receive price bids during the peak of the harvest season for the purchase of each of the following grains? (Please indicate time units--weekly, daily, hourly.)

Wheat . . . . . _____ times per _____
Sorghum . . . . _____ times per _____
Soybeans. . . . _____ times per _____
Barley. . . . . _____ times per _____
Other (specify) _____ times per _____
Other (specify) _____ times per _____

28. What gross operating margin did you realize during 1973 (in cents per bushel) for:

Wheat _____ Soybeans _____ Rye _____ Oats _____
Sorghum _____ Barley _____ Shelled Corn _____ Other (_____)_____

29. a. During 1973 did you participate in the marketing of grain which did not physically move through your elevator? (An example might be the movement of grain from farmers in your normal procurement area direct to a processing plant or to a terminal or sub-terminal facility on which you were paid a margin.)
Yes ( ) No ( ) (If no skip to #30)

b. Indicate the margins you received on grain marketed in this way (in cents per bushel) for:
Wheat _____ Soybeans _____ Rye _____ Oats _____
Sorghum _____ Barley _____ Shelled Corn _____ Other (_____)_____

c. Did you perform any physical function related to these grain movements (such as transportation or grading). Yes ( ) No ( ) (If no, go to #30)

d. (If yes to c) Please describe _____

30. a. Have you provided any services such as weighing, storing, loading or other functions for farm marketing organizations, such as NFO, Farm Bureau, etc. Yes ( ) No ( )

b. (If yes) please describe the functions you performed, the charges you made, and the organization for which you performed such functions.

_____

_____

_____

_____

31. Report percentage of sales or disposition (on basis of bushels) of purchased grain by method of sale and major grain sold for the year 1973.

Method of Sales	Grain (Exclude specialty crops and seed)							
	Wheat	Sorghum	Soybeans	Barley	Rye	Corn	Oats	Other (Specify)
	-----	--------Percent of total bushesl purchased---						----------
a. Retailed back to farmers as whole grain or in feed								
b. Sold at agreed price for shipment: 1. Immediately (on track or to arrive), up to 15 days								
2. 15 to 30 days								
3. After 30 days								
c. Pooled								
d. Consignment								
e. Other (specify) _____								
Total	100%	100%	100%	100%	100%	100%	100%	100%

32. What changes have you observed in method of sale or disposition of purchased grain since 1968?

_____

_____

_____

_____

Rank only those methods for which a percentage was indicated in question 31.

33. a. Please rank the following methods of selling grain in the order of your preference of doing business, beginning with the most preferred method:

1) _____Retail back to farmers.
2) _____Sell at agreed price for immediate (up to 15 days) shipment.
3) _____Sell at agreed price for 15-30 day shipment.
4) _____Sell at agreed price for shipment after 30 days.
5) _____Pool.
6) _____Consignment.
7) _____Other (please specify) _____

b. What is the principal reason for your most preferred method of selling?

_____

_____

34. [IF NO GRAIN WAS SOLD THROUGH POOLS (31c) GO TO #35] If you entered into pooling arrangements in the sale of grain during 1973, please describe as to whom the pool was with, kind of grain, timing, financial arrangements, pricing and other aspects of pooling arrangements.

_____

_____

_____

_____

_____

35. [IF NO GRAIN WAS SOLD BY CONSIGNMENT (31d) GO TO #36] If you sold any grain by consignment during 1973, please give reasons for selecting the consignment method used.

_____

_____

_____

_____

36. In selling grain what percent of the time do you:

	Percent
a. deliver only a specified grade?	_____
b. utilize a contract which specifies a price and delivery date, but which allows for premiums or discounts if you deliver grain before or after the specified delivery date?	_____
c. utilize multiple shipment contract (several deliveries are provided for in the same contract over a specified time period)?	_____
d. All other methods	_____

37. a. With how many cash grain brokers (they don't take title) do you do business? ________
(If none, skip to question 38)

b. What percentage of your grain was sold through cash grain brokers in 1973? ________%

c. Are your commission fees to cash grain brokers: (please check)

1) ( ) a flat charge
2) ( ) a minimum payment plus a flat charge per bushel
3) ( ) a flat charge per bushel
4) ( ) a minimum payment plus some percent of the final sale
5) ( ) a charge calculated solely as a percent of the value of the final sale
6) ( ) no commission fee charged to the seller

38. For the major grains you handled, indicate the proportion of total sales in 1973 by primary buyers and the number of years you have been dealing with specified buyers (exclude brokers, grain retailed to farmers, pooling and consignment sales).

	Grain (please write in)							
Name of Buyers	Percent of sales in 1973	Number of years dealt with	Percent of sales in 1973	Number of years dealt with	Percent of sales in 1973	Number of years dealt with	Percent of sales in 1973	Number of years dealt with

39. Please give the approximate dollar figure for the last fiscal year for each item listed below: (A copy of an audit report may substitute for this question.)
Fiscal year ending _____

a. Assets:

1)	Current		$_____
2)	Long Term		$_____
	a) Land, plant and equipment less depreciation	$_____	
	b) Other (please specify)_____	$_____	
3)	Total		$_____

b. Liabilities:

1)	Current		$_____
2)	Long Term Debt		$_____
	a) Loans from local banks	$_____	
	b) Loans from regional banks	$_____	
	c) Loans from bank for cooperatives	$_____	
	d) Loans from other corporations	$_____	
	e) Loans from individuals	$_____	
	f) Government loans	$_____	
	g) Debentures	$_____	
	h) Other (please specify) _____	$_____	
3)	Total		$_____

c. Capital:

1)	Proprietor's capital (net worth)	$_____
2)	Retained earnings or surplus	$_____
3)	Common stock	$_____
4)	Preferred stock	$_____
5)	Membership fees	$_____
6)	Retained patronage refunds	$_____
7)	Other (please specify) _____	$_____
8)	Total	$_____

APPENDIX B

MARKETING PRACTICES AND PATTERNS IN RELATION TO THE SIZE OF THE ASSOCIATION

TABLE XXXIX

PERCENTAGE USE OF DIFFERENT METHODS OF GRAIN PURCHASES IN 1973 USED BY THE OKLAHOMA SAMPLED COOPERATIVES, BY GROUP AND GRAIN[a]

Methods of Purchase	Size Group[c]	Grain					
		Wheat	Sorghum	Barley	Corn	Soybeans	Oats
		Percent					
	1	58	75				
Harvest	2	24	50	18			
	3	36	59	34	50	100	20
Cash	4	25	56	51	55	70	44
	5	34	43	22	100	50	22
	1						
Forward	2	1					
	3	3					
Contract	4	1					
	5	2					
	1	28	25				
Elevator	2	61	50	82			80
	3	58	20	64			74
Storage	4	56	44	46	45	25	50
	5	55	57	78		50	78
	1	15					
Farm a) For cash	2	8					
	3	2	1	2			1
Storage	4	3	b	1		5	b
	5	4					
	1						
b) Forward	2	1					
	3	1					
Contract	4	4					
	5	4					
	1						
Delayed	2						
	3						
Price	4	4					
	5	1					
	1						
Grain	2						
	3						
Pool	4			2			6
	5						
	1						
Other	2	6					
	3		20	50			
	4	6					
	5						

[a] The percentages of methods of grain purchases by grain for each group add to 100 except for possible round-off error.

[b] Less than 1 percent.

[c] The groups are defined as follows:

Group	Grain Storage Capacity (Bu.s)
1	less than 100,000
2	100,000 to 399,999
3	400,000 to 599,999
4	600,000 to 999,999
5	1,000,000 and greater

TABLE XL

PERCENTAGE USE OF DIFFERENT METHODS OF GRAIN PURCHASES IN 1973 USED BY THE TEXAS PLAINS SAMPLED COOPERATIVES, BY GROUP AND GRAIN[a]

Methods of Purchase	Size Group[c]	Grain: Wheat	Sorghum	Barley	Corn	Soybeans	Oats
		Percent					
	1	97	99	100			100
Harvest	2	25	70				
	3	62	52				55
Cash	4	15	10		50		
	5	54	33	73	39	70	65
	1	1	1				
Forward	2		3				
	3	5					
Contract	4	1	20				
	5	8	23	3	8	4	
	1	1					
Elevator	2	40	25				
	3	33	42	100	100	100	42
Storage	4	75	25		50		
	5	40	43	24	53	26	35
	1	2					
Farm a) for cash	2						
	3	2	3				
Storage	4	18		100			
	5						
	1						
b) Forward	2						
	3						
Contract	4						
	5						
	1						
Delayed	2	35	5				
	3						
Price	4						
	5		b				
	1						
Grain	2						
	3						
Pool	4						
	5						
	1						
Other	2						
	3						
	4		45				
	5						

[a] The percentages of methods of grain purchases by grain for each group add to 100 except for possible round-off error.

[b] Less than 1 percent.

[c] The groups are defined as follows:

Group	Grain Storage Capacity (Bu.s)
1	less than 100,000
2	100,000 to 399,999
3	400,000 to 599,999
4	600,000 to 999,999
5	1,000,000 and greater

TABLE XLI

PERCENTAGE USE OF DIFFERENT METHODS OF GRAIN PURCHASES IN 1973 USED BY THE SOUTH TEXAS SAMPLED COOPERATIVES, BY GROUP AND GRAIN[a]

Methods of Purchase	Size Group[c]	Grain[b] Wheat	Sorghum	Barley	Corn	Soybeans	Oats
		----------Percent----------					
	1						
Harvest	2		48				
	3		40				
Cash	4		20				
	5		42				
	1						
Forward	2		46				
	3		50				
Contract	4		60				
	5		35				
	1						
Elevator	2		5				
	3		10				
Storage	4		20				
	5		20				
	1						
Farm a) For cash	2						
	3						
Storage	4						
	5		2				
	1						
b) Forward	2						
	3						
Contract	4						
	5						
	1						
Delayed	2						
	3						
Price	4						
	5						
	1						
Grain	2						
	3						
Pool	4						
	5						
	1						
Other	2						
	3						
	4						
	5						

[a] Grain sorghum is the only crop marketed by South Texas sampled associations.

[b] The percentages of methods of grain purchases by grain for each group add to 100 except for possible round-off error.

[c] The groups are defined as follows:

Group	Grain Storage Capacity (Bu.s)
1	less than 100,000
2	100,000 to 399,999
3	400,000 to 599,999
4	600,000 to 999,999
5	1,000,000 and greater

TABLE XLII

SOURCES AND AVERAGE AMOUNTS OF LOCAL COOPERATIVE PEAK OPERATING CAPITAL IN 1973, BY REGION AND SIZE CATEGORY[a]

Region	Size Group	Source of Operating Capital: Commercial Banks	Bank for Cooperatives	Interest Bearing Advances	Non-Interest Bearing Advances	Farmers Delivering Grain Under Delayed Payment Arrangrments	Your Own Capital	Farmer-Patron Loans
		---Thousand Dols.---						
	1			148	40	102		
	2		111		57	336	51	
Oklahoma	3	14	254			323	90	
	4	109	72			416	172	b
	5	204	925			1904	161	8
	1		3			10	68	
Texas	2	8	33			25	67	
	3	12	156	25		190	69	
Plains	4		750	300	250	650	250	
	5	35	1544		62	188	135	18
	1[c]							
South	2					175		
	3		500			150	100	
Texas	4		650			100	50	
	5	58	1083			183	42	

[a] The groups are defined as follows:

Group	Grain Storage Capacity (Bu.s)
1	less than 100,000
2	100,000 to 399,999
3	400,000 to 599,999
4	600,000 to 999,999
5	1,000,000 and greater

[b] Less than 1000.

[c] No local associations of group 1 grain storage capacity size fell into the random South Texas sample.

TABLE XLIII

OPERATING SPACE USED FOR GRAIN STORAGE WHEN TOTAL GRAIN ON HAND IN 1973 WAS GREATEST

Size Group[a]	Oklahoma	Texas Plains	South Texas
	----------Thousand Bu.s----------		
1			
2	37		
3			27
4	58	246	
5		836	

[a/] The groups are defined as follows:

Group	Grain Storage Capacity (Bu.s)
1	less than 100,000
2	100,000 to 399,999
3	400,000 to 999,999
4	600,000 to 999,999
5	1,000,000 and greater

TABLE XLIV

DISTRIBUTION OF THE SAMPLED ASSOCIATION'S GRAIN PERCENTAGE STORAGE CAPACITIES ACCORDING TO LOCAL COOPERATIVE GRAIN OWNERSHIP AND TITLE ARRANGEMENTS BY REGION, 1973[a]

		Oklahoma Size Group					Texas Plains Size Group					South Texas Size Group[b]				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
		Percent														
Grain Owned by the Cooperative	Hedged										c					
	Unhedged, and Uncontracted			c	2	c		18	2	8	c		11		20	2
	Contracted		5	4	12	13		7	15	17	30		85	71	60	74
Grain Not Owned by the Cooperative	Warehouse Receipted		3	22	3	14			1	c	7			4		5
	Open	80	88	64	71	71	100	76	82	60	57		4	25	20	19
	Grain Bank		c	3	4	c					c					
	C.C.C.		c	c	c					3	3					
	Terminal Processor	20		5	8					11	2					
Totals		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

[a] The groups are defined as follows:

Group	Storage Capacity (bu.s)
1	less than 100,000
2	100,000 to 399,999
3	400,000 to 599,999
4	600,000 to 999,999
5	1,000,000 and greater

[b] South Texas had no sample locals in group one.

[c] Less than one percent.

TABLE XLV

THE AVERAGE PERCENTAGE OF THE TOTAL GRAIN VOLUME HANDLED BY LOCAL ASSOCIATIONS COMMITTED TO REGIONAL COOPERATIVES IN 1973 BY GRAIN, GROUP, AND STATE[a]

Location	Grain	Size Group 1	2	3	4	5
		----------Percent----------				
OKLAHOMA	Wheat	100	99	99	91	89
	Sorghum				3	10
	Barley			10	52	10
	Corn					
	Soybeans					
	Oats				52	
TEXAS	Wheat	92	70	74	45	76
	Sorghum	85	25	62	80	55
	Barley	100				100
	Corn				80	56
	Soybeans				50	40
	Oats	85		99		100

[a] The groups are defined as follows:

Group	Grain Storage Capacity (Bu.s)
1	less than 100,000
2	100,000 to 399,999
3	400,000 to 599,999
4	600,000 to 999,999
5	1,000,000 and greater

TABLE XLVI

LOCAL ELEVATOR MARGINS RECEIVED BY LOCAL ASSOCIATIONS IN MARKETING GRAIN IN 1973, BY SIZE OF FIRM, REGION, AND GRAIN[a]

	Size Group[b]	Wheat	Sorghum	Barley	Corn	Soybeans	Oats
		----------	----------	cents/bu.	----------	----------	----------
	1	27(2)	10(2)				
	2	15(7)	18(2)	21(6)	15(1)		16(4)
Oklahoma	3	18(7)	9(4)	17(6)	15(2)	20(1)	16(6)
	4	22(8)	23(6)	34(8)	21(3)	33(6)	26(7)
	5	17(7)	15(6)	15(7)	10(2)	7(3)	13(5)
	1	14(3)	10(2)	10(2)			10(2)
	2	16(2)	12(2)				
Texas	3	20(4)	26(3)	44(1)	28(1)	29(1)	18(2)
	4	20(2)	16(2)	22(1)	15(1)	32(1)	
	5	33(17)	21(17)	20(6)	20(10)	25(11)	15(2)
	1						
	2		15(2)				
South Texas	3		7(1)				
	4		14(1)				
	5		19(3)				

[a] Data in parentheses pertain to the number of cooperatives involved.

[b] The groups are defined as follows:

Group	Grain Storage Capacity (bu.s)
1	less than 100,000
2	100,000 to 399,999
3	400,000 to 599,999
4	600,000 to 999,999
5	1,000,000 and greater

TABLE XLVII

AVERAGE NUMBER OF GRAIN PRICE BIDS PER HOUR, DAY, AND WEEK RECEIVED BY LOCAL ASSOCIATIONS FROM GRAIN MERCHANDISERS IN 1973 AND THE NUMBER OF LOCAL ASSOCIATIONS RECEIVING THOSE GRAIN BIDS, BY STATE, GROUP, AND GRAIN[a]

LOCATION	GROUP[b]	WHEAT						SORGHUM					
		Hour		Day		Week		Hour		Day		Week	
		N	B	N	B	N	B	N	B	N	B	N	B
OKLAHOMA	1			2	3					2	2		
	2			7	11					1	1	1	1
	3	1	1	6	8					4	1	1	1
	4	1	12	7	13					5	1	1	1
	5	3	3	4	15			1	3	4	1	1	1
TEXAS	1	1	1	2	3					1	1	1	1
	2			2	2					4	1		
	3			4	4					4	5		
	4			2	5					3	7		
	5	3	2	13	6	1	1	4	1	16	5		

LOCATION	GROUP[b]	CORN						BARLEY					
		Hour		Day		Week		Hour		Day		Week	
		N	B	N	B	N	B	N	B	N	B	N	B
OKLAHOMA	1												
	2									1	1	1	1
	3			2	1					6	1	1	1
	4			1	1					8	1		
	5			1	1			1	3	5	1	1	1
TEXAS	1									1	1	1	1
	2												
	3					1	1					1	1
	4			2	4					1	1		
	5	3	2	7	4			2	2	3	2	1	3

LOCATION	GROUP[b]	SOYBEANS						OATS					
		Hour		Day		Week		Hour		Day		Week	
		N	B	N	B	N	B	N	B	N	B	N	B
OKLAHOMA	1												
	2									3	1	1	1
	3			1	1					5	1	2	2
	4			1	3					6	1		
	5	1	3	1	1	1	1	1	3	2	1	1	1
TEXAS	1									1	1	1	1
	2												
	3					1	1			1	3	1	1
	4			1	5								
	5	2	2	10	4			2	3	1	6		

[a] The groups are defined as follows:

Group	Grain Storage Capacity (Bu.s)
1	less than 100,000
2	100,000 to 399,999
3	400,000 to 599,999
4	600,000 to 999,999
5	1,000,000 and greater

[b] N refers to the number of cooperative managers receiving bids. B refers to the number of bids per time period indicated.

TABLE XLVIII

THE PERCENTAGE USE OF ALTERNATIVE CONTRACTUAL ARRANGEMENTS BY SAMPLED LOCAL ASSOCIATIONS IN THE MERCHANDISING OF GRAIN IN 1973 BY GROUP AND REGION

		Specific Grade		Target Delivery		Multiple Shipments		Other[a]	
			(Percent)		(Percent)		(Percent)		(Percent)
Location	Group[b]	N[c]	Use	N	Use	N	Use	N	Use
Oklahoma	1			2	100				
	2			7	100				
	3	1	30	7	94			1	5
	4	1	10	8	81	2	35	1	75
	5	2	40	6	94	2	28		
Texas Plains	1			1	100	1	100	1	100
	2	1	100	2	100				
	3	2	30	3				2	75
	4			1	100			1	100
	5	2	51	12	100	2	51	3	99
South Texas	1								
	2			1	90	1	100	1	10
	3	1	5					1	95
	4					1	10	1	90
	5	1	10	2	100			1	90

[a] The other methods of contractual arrangements referred to here are 1) open sales, 2) advanced payments (borrowed money on cars), and 3) target delivery without premiums for early shipment.

[b] The groups are defined as follows:

Group	Grain Storage Capacity (bu.s)
1	less than 100,000
2	100,000 to 399,999
3	400,000 to 599,999
4	600,000 to 999,999
5	1,000,000 and greater

[c] N refers to the number of local associations using that method.

TABLE XLIX

EXPECTED INFLUENCE LEVEL OF SELECTED FACTORS ON LOCAL MANAGERS MARKETING DECISIONS IN 1978 AND THE RESPECTIVE PERFORMANCE LEVEL OF THE REGIONAL IN 1968, TEXAS PLAINS REGION[a]

		Influence Expected in 1978	Performance of Regional in 1968
1.	Price	87.4	81.0
2.	Source of Market Information	78.7	81.4
3.	Cooperative Loyalty	80.4	79.8
4.	Source of Frequent and Consistent Bids	76.7	82.0
5.	Contractual Arrangements for Cash Grain Delivery	64.6	80.9
6.	Time and Manner of Payment to the Local	73.6	85.0
7.	Weights and Measures	55.7	84.8
8.	Regional Personnel Expertise	65.6	77.1
9.	Terminal Processor Facilities	50.1	85.7
10.	Premiums and Discount Practices	65.2	71.4
11.	Size of Dividends, Patronage Refunds and Investment Opportunities	50.1	55.8
12.	All Transportation Services	45.7	55.4

[a] The numbers originated from the 1-99 scale, with 99 signifying most influential or best possible performance.

TABLE L

EXPECTED INFLUENCE LEVEL OF SELECTED FACTORS ON LOCAL MANAGERS MARKETING DECISIONS IN 1978 AND THE RESPECTIVE PERFORMANCE LEVEL OF THE REGIONAL IN 1968, SOUTH TEXAS REGION[a]

		Influence Expected in 1978	Performance of Regional in 1968
1.	Price	72.1	71.3
2.	Source of Market Information	70.9	78.4
3.	Cooperative Loyalty	74.3	68.6
4.	Source of Frequent and Consistent Bids	72.1	81.1
5.	Contractual Arrangements for Cash Grain Delivery	81.1	84.0
6.	Time and Manner of Payment to the Local	76.9	78.0
7.	Weights and Measures	57.1	72.7
8.	Regional Personnel Expertise	74.0	74.0
9.	Terminal Processor Facilities	69.3	66.4
10.	Premiums and Discount Practices	47.3	58.6
11.	Size of Dividends, Patronage Refunds and Investment Opportunities	82.6	75.4
12.	All Transportation Services	34.4	54.3

a/ These numbers originated from the 1-99 scale, 99 signifying most influential or best possible performance.

TABLE LI

EXPECTED INFLUENCE LEVEL OF SELECTED FACTORS ON LOCAL MANAGERS MARKETING DECISIONS IN 1978 AND THE RESPECTIVE PERFORMANCE LEVEL OF THE REGIONAL IN 1968, OKLAHOMA REGION[a]

		Influence Expected in 1978	Performance of Regional in 1968
1.	Price	75.7	86.8
2.	Source of Market Information	77.7	87.8
3.	Cooperative Loyalty	77.6	79.2
4.	Source of Frequent and Consistent Bids	76.6	89.3
5.	Contractual Arrangements for Cash Grain Delivery	80.5	82.6
6.	Time and Manner of Payment to the Local	73.3	85.6
7.	Weights and Measures	68.2	80.1
8.	Regional Personnel Expertise	77.5	82.4
9.	Terminal Processor Facilities	75.2	90.0
10.	Premiums and Discount Practices	53.9	67.1
11.	Size of Dividends, Patronage Refunds and Investment Opportunities	52.9	54.6
12.	All Transportation Services	64.5	73.0

[a]/ These numbers originated from the 1-99 scale, 99 signifying most influential or best possible performance.

VITA

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