RELATIONSHIPS OF MANAGEMENT PRACTICES, POLICIES AND COMPETITIVE SITUATIONS WITH SUCCESS MEASUREMENTS USED BY OKLAHOMA GRAIN AND SUPPLY COOPERATIVES

By

JUNXIANG LU

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ACKNOWLEDGEMENT

It is impossible to thank all those individuals who helped me during my graduate program. The instructors, staff and my fellow graduate students in the Department of Agricultural Economics at OSU, who gave me encouragement, assistance and challenge, made my study enjoyable and rewarding. Those times spent with them became my life long memories.

My deepest appreciation goes to Dr. Bob Oehrtman, my major advisor. He helped me develop the project and taught me the process of research. He was generous with his time and patiently explained each question I encountered in my research. His help and encouragement were invaluable. My progress and success in this project would have been impossible without him.

I sincerely appreciate Dr. Phil Kenkel, one of my committee members. He was helpful from the beginning of my research, especially with the survey and data. He assisted me during the entire project and helped me improve the final copy of this thesis. He contributed a lot to this project.

My committee members, Dr. David Henneberry and Dr. Dean Schreiner, gave me comments on the survey and provided suggestions for improvements to my thesis, which I appreciate.

Ms. Betty Harris helped me with the final copy of the thesis, to whom I am especially grateful.

I also would like to thank Min Fah, Yumei and Vicki for their assistance in my computing needs.

My special appreciation goes to Wenhui, my wife and Alan-Yizhou, my 15 month old son. My wife's sacrifice and my son's "cooperation" became a part of this thesis.

Finally, I must appreciate Mr Yongxiang Hua, my father-in-law, who understood and supported my study in the United States.

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CHAPTER I

INTRODUCTION

General Problem

Since the early 1980's, U.S. agricultural cooperatives have been in economic downturn. Although a few individual firms may have experienced increased profitability, most of them have experienced reduced sales and smaller profit margins (Parker and Anderson).

Economic stress characterized by high inflation rate and high interest rate has had a substantial impact on agriculture. Agriculture depends heavily on purchased supplies and services, so the availability and affordability of credit are critically important for the development of agriculture. One result of such economic stress is that typical agricultural cooperative experienced a decrease in borrowing, as expansion activities were curtailed in response to the decline in the agricultural economy (Parliament and Taiff, 1989). Costs of farm supplies have been up, and interest expenses have increased. Farm operators have been cautious in investing and their buying has been less. As a result, agricultural cooperatives' net margins have been smaller. At the same time, cooperatives have been reducing their fixed assets and increasing their uses of debt as a

responsive measure. Economic environment also influences farmers's business operations. Farmers face great dependence on export markets. The long-term prospects for continued U.S. grain exports depends on factors largely beyond the control of U.S. government--worldwide weather condition and policies in foreign countries. The reduction of government programs such as the grain storage program also affects the size and financial condition of farmers. The changing agricultural structure brought about fewer and larger farms. These larger farmers request favorable policies and treatment from their cooperatives and the government. The news that larger farmers separated from their cooperatives as members have been frequently heard. Farmers' capital requirement increases, as they are confronted with new technology, new environmental and worker safety regulations, in addition to inflation.

Farmers' economic conditions directly influence existence and development of agricultural cooperatives. Approaching 1990's, agricultural cooperatives face a host of new challenges. These challenges are mainly external and environmental, but need internal managerial adjustment. What concerns agricultural cooperative managers most are the level of business volume, macroeconomic conditions, environmental legislation, competition with investor-owned-firms, and the loss of large-scale farmers as members (Kenkel and Sanders, 1991).

In this challenging time, management is critically important for cooperative survival and development, especially

as environmental factors complicate with changing macroeconomic conditions and government regulations on environment protection and worker safety. By Kenkel and Sanders (1991), agricultural cooperative managers overwhelmingly agreed that management of a cooperative is more difficult than that of an investor-owned-firm. Therefore management has its own unique role for agricultural cooperatives to challenge the changing economic and environmental conditions. How well cooperatives adjust to this changing environment may decide whether they survive. The survival of cooperatives depends, to a large extent, on whether they adjust to the environment or do not change with the environment. Certain strategies can help cooperative managers and directors to lead in adjusting to their environment. So the notion of cooperative survival and development is up to cooperatives themselves (French, Moore, Fraenzle and Harling, 1980).

Specific Problems

Identification of cooperative management practices, policies and competitive situations which are related to cooperative survival and success, and their possible relationships with success measurements is critically important for successful decision making. Few related studies have been done since early 1970's (Benitz, 1972; Oehrtman, 1975; Lowe, 1988). These studies dealt with inter-relationships between success measurements and factors which

heavily influence success in grain and supply cooperatives in Oklahoma. In 1992, Kenkel, Sanders, and Smith conducted research on the critical issues facing grain and supply cooperatives in Oklahoma and Texas. Barton and Fertherstone (1992) explore the optimal capital structure of local grain marketing and farm supply cooperatives. In their comparative analysis of Kansas grain and supply cooperatives and all cooperatives of such kind in the U.S., they describe those characteristics which are most closely related to cooperatives' high profitability.

The purpose of this study is to analyze cooperative management practices, policies and competitive situations which are related to cooperative success and determine their relationships with cooperative success measurements. Cooperative managers and directors can use the information provided in this study to identify which aspects they ignore, and which they should focus on in order to make better decisions. Based on such information, certain strategies could be expected to help grain and supply cooperatives adjust to their environment with ultimate benefits being passed to cooperative members and their communities.

Objectives

The general objective of this study is to analyze cooperative management practices, policies and competitive situations which are related to cooperative success and to quantify those relationships with success measurements by

surveying grain and supply cooperative managers in Oklahoma. Specific objectives include:

(1) Summarize those descriptive aspects related to the survival and success of grain and supply cooperatives.

(2) Identify cooperative management practices, policies and competitive situations which are related to cooperative success as perceived by Oklahoma grain and supply cooperative managers, and describe those cooperatives' financial performance.

(3) Establish the relationships of cooperative management practices, policies and competitive situations with cooperative financial strength and performance.

Specific objective one is satisfied by literature review in Chapter II and enhanced by the details covered in Chapter III. Specific objective two is accomplished by analyzing the results of a mail questionnaire survey sent to all grain and supply cooperative managers in Oklahoma, which is the content of Chapter III. The achievement of specific objective three is found in Chapter V which presents the results of statistical analysis of the data.

Organization of the Thesis

This study is divided into four remaining chapters. The following chapter will review information and previous research that is relevant and supportive as background and

foundation for this study. Chapter III is a discussion of an analysis of a mail questionnaire survey administered to Oklahoma grain and supply cooperative managers. The financial data collected is described in this chapter. Chapter IV contains a description of a statistical procedure and data used. Chapter V is a discussion of the results from this statistical analysis. Chapter VI summarizes this study and makes implications of this study, as well as recommendations for further study.

CHAPTER II

LITERATURE REVIEW

The Origin and Development of Cooperatives

Although embryonic forms of cooperatives were doubtlessly in existence, dating back from the beginning of old Egyptian Empire in the year 3,000 B.C., many people recognize the first formal cooperative of modern times to be the Rochdale Society of Pioneers in England in 1884. The original twenty-eight members of this early cooperative joined together in an effort to purchase supplies for their businesses. Their formal principles have served as a model for the development of a great many modern cooperatives. The Rochdale Principles can be summarized as (Roy, 1964; Downey and Trocke, 1981):

(1) member ownership;

(2) proportional dividend;

(3) one man, one vote;

(4) current market price to avoid price wars;

(5) member control by democratically elected directors

(6) a definite percentage of profit for education and training; and

(7) limited return on capital.

Cooperatives in the United States began to develop in the late 1800's. Local co-operative buying and selling clubs

among farmers were founded to demonstrate the value of group action in marketing and purchasing. At the turn of this century, cooperatives were established in nearly all states and for the handling of all major farm products (Roy, 1964).

It was during the 1920's when agricultural cooperatives in the United States really expanded. The growing recognition that farmers could significantly improve their economic condition through cooperatives generated much state and federal legislation that encouraged the growth and development of farm cooperatives (Downey and Trocke, 1982). The Capper-Volsterd Act of 1922 contributed most significantly to the growth of farm cooperatives, as it ensured the right of farmers to organize and market their products collectively without violation of antitrust law. During that period, the number of local cooperatives increased greatly. Many cooperatives reorganized and consolidated into larger units to gain much more power to better serve their memberships.

Definitions, Principles and Characteristics

Roy (1964) defined a true cooperatives as:

> a business organized, capitalized and managed by, of and for its member-patrons, furnishing and/or marketing, at cost, goods and/or services to patrons.

According to Agricultural Cooperative Service, USDA (1987), a cooperative is:

> a user-owned and controlled business from which benefits are derived and distributed equitably on the basis of use.

Based on this definition, Agricultural Cooperative Service identifies three fundamental principles for a cooperative as:

(1) The User-Owner Principle. The people who own and finance the cooperative are those who use the cooperative.

(2) The User-Control Principle. The people who control the cooperative are those who use the cooperative.

(3) The User-Benefits Principle. The cooperative's sole purpose is to provide and distribute benefits to its users on the basis of their use.

Another school of thought for cooperative principles is given by Sargent (1982):

(1) Voluntary membership;

(2) Cooperative societies are democratic organizations;

(3) Limited rate of interest;

(4) Surplus or savings are redistributed fairy on patronage basis;

(5) Education of members in the principles and techniques of co-operation; and

(6) To actively co-operate with other cooperatives.

An agricultural cooperative is a unique form of cooperative. The goal of agricultural cooperatives is to help member-patrons increase the profit from their business operations. Agricultural cooperatives achieve this goal by providing member-patrons with those products and services they need to lower their costs and/or to operate more efficiently.

Downey and Trocke summarized the characteristics of the agricultural cooperatives as: (1) to serve the needs of their own user-member rather than to make a profit on their own as a basic purpose; (2) to operate at cost; (3) to be member controlled and member owned; and (4) to benefit member-patrons by limited returns on capital.

Sargent (1982) summarized the characteristics in which they differ from other types of business thus:

(1) They are collective property;

(2) They are owned by the members, exist for the members and at their risk; and

(3) There is limitation on individual shareholding. Shares cannot increase in value and carry on by a limited rate of interest; they are impermanent, repayable and transferable when the member ceases trading with the cooperative,

(4) Their control has to be democratic;

(5) They operate at cost or pay a limited rate of interest on money invested by members: any surplus in excess of this is returned to members in proportion to their trade or is ploughed back into the business.

Roy (1964) identified the obvious differences between the cooperative corporations and the profit-type corporations in following ways:

(1) Recipients of goods and services;

(2) Joining the business;

(3) Control of the business;

(4) Ownership of the business;

(5) Return on investment;

(6) Disposition of net earnings; and

(7) Taxation of net earnings.

Role of Agricultural Cooperatives

Historically, U.S. agricultural cooperatives expanded in the early 1900's when farmers were not satisfied with the price and quality of input supplies and services available then. Those farmers organized agricultural cooperatives to help themselves reduce prices paid for farm inputs and improve prices received for farm outputs. By organizing a cooperative, farmers gained both their own source of supplies and a place to market their products. In the free enterprise system, agricultural cooperatives were particularly effective as pacesetters and power balances during the early years of agricultural cooperative development (Downey and Trocke, 1981).

Agricultural cooperatives provided input supplies and services to farm members, and they also helped farm members with their needs for credit, utility services like electricity power, telephone and so on. French, Moore, Fraenzle and Harling (1980) stated that:

> Historically, agricultural cooperatives have helped farmers face their environment in three important ways: providing competitive outlets through which farmers can be assured of marketing channels; providing farmers with a competitive source of supplies; and providing farmers a competitive basis

> for acquiring services like credit and electricity. In some instances, cooperatives have benefited farmers by providing a voice to obtain desired legislation.

Agricultural cooperatives play a major role in agribusiness by providing a farmer with a means to integrate vertically backward into the agricultural input sector with farm supply cooperative, and forward into the processing-manufacturing sector through farm marketing cooperatives. Many cooperatives perform both types of activities. Farm supply cooperatives help members with the purchase of product inputs, such as feed, fertilizer, seed and fuel. The share of farm inputs purchased through farm supply cooperatives is substantial, and is particularly strong in fertilizer, petroleum products and chemicals. Farm marketing cooperatives assist members with marketing their products. They have a significant market share of many farm products. The third form of agricultural cooperatives is service cooperatives, providing credit and utilities services to farmers. In many local areas and markets, cooperatives are an established fact of life in the American agribusiness community (Berlin and Woolverton, 1991). Since the beginning of the industrialization process, farmers' position in public policy making has been eroding gradually. They must organize what political power they have in an effective and efficient way. Some farmers believe that the cooperative must be used more effectively as the leading edge of the means to accomplish this. Others say this can be done by better coalitions between commodity cooperatives and general farm organizations.

Regardless, agricultural cooperatives need to be aware of their public policy obligations and opportunities.

Today, cooperatives as a specific business institution, face a set of new economic and environmental challenges, and are endowed with a new mission in influencing public policy.

> Cooperatives' role in influencing public policy reflects (1) their members' needs, (2) the business interests of the organization, (3) their role in enhancing market competition, and (4) the need for healthy rural environment. A Cooperative's working relation with governmental bodies is an important element in promoting and protecting the farmer's interests and those of their off-farm business (Agricultural Cooperative Service, USDA).

Measuring Cooperative Performance

The evaluation of a cooperative's performance relates directly to its objectives and role. If the cooperative has a role in influencing public policy, the evaluation is getting more complex.

Agricultural Cooperative Service (1987) states that:

> Many of the performance measures commonly used by investor-oriented firms, such as net earnings and return to assets are quite valuable measures of aspects of cooperative performance, particularly with respect to individual operations and investments. They are inadequate, however, to provide a complete assessment of cooperative performance.

Because user-benefits is one of the principles of a cooperative, key elements of performance involve whether the cooperative provides the desired product and service mix at a price or cost perceived to be fair and at least comparable to the competition by their members. Agricultural Cooperative

Service (1987) emphasizes the significant and sustained market share over the long term as one of the combined elements of cooperative performance. They state that cooperative performance must focus on: (1) farm profitability; (2) efficiency and competitiveness of the market place; and (3) technical progress and efficiency of farm products.

Sargent (1982) referred to cooperative performance in terms of success and failure. Failure is easier to be precise about, such as when the business ceases to operate and is wound up, but success is a far more intangible concept both in terms of criteria and for whom. He believes the reason is because in cooperatives where ownership and managerial control of the business is separate, farmers may have quite different expectations from management as to what constitutes successful performance.

Perrin (1968) suggests six "approaches" to the assessment of success:

(1) The human relations approach. This approach emphasizes human satisfactions and adjustments, but is impossible to quantify accurately. Success may depend more on providing satisfaction to customers (or consumers) than to the owners.

(2) The social policy approach. This approach measures inputs in terms of their social utility and on an opportunity cost basis, but, because these are difficult to quantify, this approach has a very

limited practical use.

(3) The economic approach. The economic approach pays full heed to prevailing market forces, the price mechanism and distribution in the long and short terms. This approach has the great advantage of facilitating comparison with other firms in different industries even though some of the factors are not always easily quantifiable and available.

(4) The accounting approach. This approach emphasizes liquidity and profitability. The former is emphasized in assessing the short term survival potential and the latter in long term survival. It is important that inflation is taken into account and the records be true management accounts.

(5) The management approach. This approach emphasizes physical measures.

(6) The investor approach. This approach is dominated by return on capital.

Elements of Success

Several studies have been done to identify elements of cooperative success.

Erdman and Tinley (1957) suggested four elements important to cooperative success: (1) suitable corporate and financial structure; (2) suitable records, accounts and audits; (3) competent management; and (4) dynamic leadership.

Sargent (1982) based success on the following criteria:

(1) Prices and incomes for farmers and growers;

(2) Cooperative business performance;

(3) Efficiency in marketing and operation; and

(4) Bargaining strength.

Jewett and Voorhies (1963) identified several principal weaknesses and causes of failure of early farmer cooperatives as: dissension among members, poor and dishonest management, inadequate financing, and a lack of strong leadership. They summarize their elements of cooperative success as follows:

(1) Adherence to sound cooperative principles;

(2) Capable and progressive management;

(3) Qualified directors;

(4) Adequate financing;

(5) Favorable return to producers;

(6) Standardized quality of product or services;

(7) Sufficient volume of business for economic operation, and to afford bargaining and/or purchasing power;

(8) Equitable treatment of members;

(9) Stable and loyal membership;

(10) Good employee relations;

(11) Dynamic planning and decisive program execution; and

(12) Comprehensive accounting and periodic auditing.

Organization of Agricultural Cooperatives

The cooperative system in the United States is highly complex and interwoven. It ranges from simple, local, and independent cooperatives to vast interregional cooperatives that link literally thousands of local and regional cooperatives into one complex organization. Regional cooperatives are conglomerations of local cooperatives, joined together in either a formal or informal manner. Their primary purpose is to gain strength to compete with corporate giants to better serve locals in providing manufacturing, processing, and wholesaling services (Downey and Trocke, 1981).

The structure of cooperatives may consist of: (1) independent, local units; (2) co-op federations; (3) centralized cooperatives; and (4) combination of (2) and (3). Independent, local cooperatives stand alone in their purchasing, marketing and servicing activities. The number of strictly independent local cooperatives is declining. Federated associations are organized on a "bottom up" plan of organization. Individuals are members of local associations, and locals are members of overhead federated associations. A federation is a cooperative of existing local associations. They have an advantage of great responsiveness to acquire local needs on the supply side, however, self interest and lack of commitment to the federation from local associations threaten stability and strength of federations. The centralized association, dispenses with autonomous local associations. Control and authority are centralized in the

organization's headquarters, whereas in federated associations control is decentralized in those autonomous local associations. A distinct advantage of a centralized cooperative is in developing effective product market programs. In some cases, large regional cooperatives may have a dual structure involving both federated and centralized types.

Cooperatives also gain strength by economic integration. For vertical integration, the cooperative must horizontally integrate first to aggregate a sufficient number of independent firms so a sufficient volume of business can be mustered to effect economies. Vertical integration remains an excellent opportunity for farmers to reduce costs and increase the value added returns to their products (Roy, 1964; Agricultural Cooperative Service, 1987).

Strategies of Agricultural Cooperatives

Strategies are defined as "a program of actions and implied deployment of emphasis and resources to attain comprehensive objectives" (Koontz, O'Donnell and Weihrich, 1984). They imply objectives, employment of resources to attain these objectives, and major policies to be followed in using these resources. Strategies are closely related to policies. Policies are identified as guides to thinking in decision making and are intended to guide managers in their decision commitment when they make decisions.

Agricultural Cooperative Service (1987) states that:

> The strategy of any business organization is a complex combination of decisions made with respect to organizational and operating structure; product, service and pricing practices; sales program design; market orientation; and philosophical approach.

They also identify the following as cooperative strategies:

(1) Vertical Integration. This is broadly defined as participation of a business organization in two or more vertically adjacent industries.

(2) Cooperative subsidiaries. The use of subsidiaries often has strong financial, tax, regulatory, or operational rationale.

(3) Joint ventures. Through partnership in joint ventures, a cooperative can gain great leverage from its limited capital, pool risks, expand market, and enter new activities.

(4) Broad cooperative system design. This strategy suggests creation of organizations that can effectively operate in an environment of concentrated economic power.

Some specific strategies are:

(1) Differential treatment programs. Debate on differential treatment is often cast in terms of equal versus equitable or fair treatment of members.

(2) Pooling. Pooling capital and volume to obtain

economic benefits is the essence of cooperative efforts. Cooperatives are to use the secure base provided by pooling to build successful marketing efforts.

(3) Specialization versus diversification. This issue relates the degree to which farmers choose to focus on a single product or spread their efforts on several products.

(4) Involvement in the biotechnology industry. This approach emphasizes businesses involved in the food and fiber sector.

(5) Promoting the "Cooperative Identity". Identity can be a valuable feature to attract farmers' businesses.

Today cooperatives are much more affected by economic environment than before. Cooperative strategy can not ignore the changing economic and social environment. The two social movements--consumer movement and agricultural public relation--are only related and illustrate important issues of cooperative strategies. Cooperative leadership must keep abreast of a wide array of changing social thoughts (French, Moore, Fraenzle and Harling, 1982).

French, Moore, Fraenzle and Harling (1982) discussed in details general marketing strategies, organizational strategies and facilitating strategies. Planning enables those activities of the cooperative to be programmed around its strategies.

Membership

Management of cooperatives concerns three entities: 1) membership, the board of directors and the operating manager. 2) Cooperative members are legal owners of their cooperative. It is the members, not the board of directors or the managers, who control authority over the cooperative. The members plan and form the cooperative, and it is again members who receive benefits from the cooperative business operation and at the same time bear the operating risk. 3) The key to any cooperative is its members.

Roy (1964) identifies a list of responsibilities of co-op members:

(1) Providing the necessary capital;

(2) Controlling the cooperative;

(3) Patronizing the cooperative;

(4) Assuming business risk;

(5) Paying operating cost;

(6) Keeping informed about the business operation; and

(7) Maintaining the cooperative.

Roy (1964) details item (7) as:

(i) continuing to support this cooperative during temporary adverse conditions, such as price wars;

(ii) bringing new numbers;

(iii) taking suggestions and criticism to the board of directors;

(iv) abiding by majority rule concerning

decisions affecting the cooperative, in spite of personal disagreement; and

(v) serving conscientiously on the board of directors or committees if elected or called for.

By the owner-user principle, users of the cooperative should be the current owners of this business organization. Roy (1964) states that the member is both a patron and an owner. Most people have valid qualifications for being patrons, but a much smaller group qualify for ownership. The serious mistake for many cooperatives is that qualifications for membership are too loose or too open.

Laze (1937) lists nine qualifications for being a co-op member which still deserve attention today.

(1) They are efficient in their own businesses;

(2) They believe in cooperatives;

(3) They are financially solvent and active in their own businesses;

(4) They know the value of merchandise and are aware of buying and selling practices;

(5) They are not looking for something for nothing;

(6) They are self-reliant, able and resolute;

(7) They understand business competition and do not expect to win each and every battle;

(8) They are willing to forego immediate gains in trade for a better future; and

(9) They are interested in the cooperative, its

affairs, its progress, and its success.

Roy (1964) also emphasizes the importance of membership education and a mechanism for members to exercise control over the cooperative. He puts forward that all members should be thoroughly educated in co-op principles and practices before being admitted to membership, and that there must be a mechanism for members to exercise control. The annual meeting is a part of this mechanism. Special membership meetings by a required majority number of the members should also be granted.

Jewett and Voorhies (1963) discuss how to maintain member relations. They note the following:

> As membership expands, the manager no longer is personally acquainted with his cooperative's patrons. He "loses touch ". Members' attitude and reactions, their satisfactions and dissatisfactions, seldom reach him directly, and when they do, he may lack the time to give them the consideration they deserve. He delegates membership contacts to other personnel; he may even fail to realize that those employees who most often directly contact members (clerks, truck drivers, warehousemen) are poorly informed of the cooperative's policies and activities and unaware of their role in membership relations.

So they suggest publications, farm visits, correspondence and routine employee contacts as supplementary devices for strengthening and cementing membership relations.

Downey and Trocke (1981) discuss the challenge of changing membership. As young educated farmers, who may have specific needs join the cooperative, the cooperative faces a formidable challenge in meeting the needs of these members. The young members do not "naively" believe in cooperative,

they are not as loyal as their fathers or grandfathers.

Cooperatives are continuing to lose large farmers as their members. Large-scale farmers complain that they do not receive their special needs and they do not have their deserved control over the cooperative, so they look for other business opportunities. Democratic control (one member, one vote principle) is being challenged. Proportional voting may be attractive to large farmers, but is not, in itself, sufficient to attract and hold those farmers (Agricultural Cooperative Service).

Board of Directors and Management

The Board of Directors is the governing body of a cooperative. Acting as a group, directors employ the manager, establish specific operating policies and supervise the management of the cooperative. Management is responsible for day-to-day operation of the cooperative. The manager is selected and accountable to the Board of Directors. The Board of Directors must be a constant challenge to the manager if he is to work effectively with them (Roy, 1964).

Directors set goals for the manager and periodically evaluate management performance. They must set reachable goals and allow managers flexibility and tools needed to achieve them (Agricultural Cooperative Service, 1987).

Agricultural Cooperative Service (1987) emphasizes the importance of the Board of Directors as:

> A strong Board of Directors, knowledgeable and experienced in carrying out their responsibilities

> in over-seeing their cooperative's activities and setting its policies, are a key ingredient to a healthy and successful cooperative. When a Board of Directors is less than effective, the problem usually can be traced to four causes: lack of quality and experienced individuals; inadequate or ineffective nominating procedures; absence of effective board orientation and training; and conflicts between board and management.

Agricultural Cooperative Service (1987) goes further,

> To minimize potential conflicts, management have to be forthcoming with the type of information directors need for informed decision making. Directors have to recognize that their role is in policy making, not operations. Managers must be allowed to manage.

French, Moore, Fraenzle and Harling (1982) state that formulating and implementing strategies is the team work of the Board of Directors and the Management.

> The Board of Directors and the management form a team that must keep the cooperative in step with the changing environment. The major function of this team rests in formulating and implementing strategies and then monitoring and controlling the organization to make sure the strategies are followed.
>
> Within the cooperatives this team has unique advantages that are attributable to the cooperative form of organization that has special social treatment. These advantages enable the cooperative to be better aware of changing patron needs and to provide it with more ways of satisfying these needs.

Both board training and management training are necessary for them to better serve in the team. They need to keep informed of the changing environment and their patron members's needs.

Biser (1985) asks managers of both regional and local cooperatives in the Midsouth to rate the most important aspects needing improvement. They indicated that the

following aspects needed to be improved:

(1) Management and staff participate in cooperative education and training;

(2) Board members know and understand financial operations of the cooperative;

(3) Management promotes programs to improve member and public relations;

(4) Management regularly reviews the decision making process; and

(5) Management structure clearly indicates responsibility of the board, manager and staff.

Downey and Trocke (1981) discuss the necessity of grading leadership. The impact of international economics and political issues has brought entirely new dimensions to farmers and their cooperatives. Many cooperatives have not been ready to cope with this external environment. Management and directors have often not had the experience and training to deal with these problems. Directors can no longer be elected by a "popularity contest". The responsibility and the legal obligations of the directorate are far too great for people who do not understand the full scope of their responsibilities or are incapable of meeting the challenge. Directors must concentrate on upgrading their own business skills and competence. Directors must also work to upgrade the quality of the professional management that they employ. Quality management must be developed or hired and supported. Only when top managers' salaries and compensations are

commensurate with their level of responsibilities and competitive with their counterparts in non-cooperative businesses will agricultural cooperatives attract the level of management that they desperately need.

Financing Agricultural Cooperatives

Agricultural cooperatives are distinct from their competitors in ownership and distribution of their proceeds. The patrons--users of these cooperative's services--are owners of the business. Typically, the contribution of money is in direct proportion to their patronage (Jewett and Voorhies, 1963).

Agricultural Cooperative Service (1987) lists four sources for financing cooperatives: (1) member patron equity contributions, (2) unallocated capital reserves, (3) investment-based equity capital, and (4) debt capital. They emphasize the importance of a source of equity capital being from the membership as:

> A cooperative's members or users must have substantial financial stake in the cooperative. Without this financial link, the user-owner principle is violated and the user-control principle is jeopardized. Substantial user equity in the cooperative encourages increased use of and commitment to the cooperative.
>
> The equity structure of the cooperative should reflect current pattern of usership. Farmers benefiting from the cooperative today should be those financing the cooperative today. Relatively heavy users of the cooperative should provide a relatively larger share of the cooperative's equity capital. Whatever form of financing, the ability of current cooperative users to control the organization must be protected.

Many farmers are not willing or able to provide an optimal level of capital to cooperatives. Some are dubious and have relatively more confidence in the investment of their own business or other business opportunities. Some feel that cash flow is of extreme importance, especially as it becomes more difficult in getting operating loans (Roy, 1964; Lowe, 1988).

Agricultural Cooperative Service also discusses other sources in financing cooperatives.

Use of unallocated capital reserves is frequently criticized as having negative implication for member control of the cooperative. As it is the cooperative "corporation's" capital as opposed to member capital, and its use becomes discretionary for cooperative management.

Investment-based equities, such as various types of stock, can be valuable sources of capital. It is highly important that no voting rights are attached and the level of return paid is either fixed in advance or based on broad market financial measures.

The most effective use of farmers' equity investment in a cooperatives is accomplished through some degree of leveraging equity with additional capital borrowed from various sources. CoBank System and other commercial banks are some of these sources.

Financial Performance

Financial performance is not sufficient to reflect measures of cooperative performance. Yet, in order to survive and succeed, agricultural cooperatives, like other profit-type business firms, must remain financially viable, and adapt to industry changing conditions and strive for increased efficiency (Kenkel and Sanders, 1992).

Financial analysis generally consists of examining balance sheet data based on the percentage of total assets, examining income statement data based on percentage of sales, and examining the relationship within and between balance sheet and income statement data through ratio analysis.

Cooperatives benefit from evaluating performance relative to previous operating periods, budgeted performance, and industry performance (Park and Anderson).

Liquidity ratios measure the ability of a firm to meet short-term financial obligations and include such measures as current ratio and quick (acid test) ratio. Asset management ratios assess a firm's effectiveness in managing asset level relative to its sales level. Asset management ratios include inventory turnover, average collection period, fixed asset turnover and total asset turnover. Solvency ratios measure a firm's ability to meet short and long-term obligations and include measures such as total debt to total assets, total debt to total equity, and times interest earned. Profitability ratios measure profitability relative to sales, asset, and equity levels. These measures include profit

margin on sales, return on total assets and return on common equity (Park and Anderson).

Chen and Shimerda (1981) grouped hundreds of financial ratios into seven categories to forecast the potential failure of a business firm. They are:

(1) Return on investment;

(2) Capital turnover;

(3) Financial leverage;

(4) Short-term liquidity;

(5) Cash position;

(6) Inventory turnover; and

(7) Receivable turnover.

Lowe (1988) chooses the following measures as criterion variables to analyze their dependence on a set of explanatory variables.

(1) Total net savings after tax;

(2) Total return on equity;

(3) Total return on assets;

(4) Local net savings after tax;

(5) Local return on equity; and

(6) Local return on assets.

Challenging Environment

As an economic organization, a cooperative's success, growth and general health are impacted by its surrounding economic and social environment. Abrahamsen, in speaking of factors affecting various periods of cooperative development,

says:

> Current economic conditions, legal concepts, adjustments in agriculture, and aspects of worldwide social economic and political forces influenced each of these periods.

French, Moore, Fraenzle and Harling (1980) state that economic history has always shown institutions to be products of their economic times. Those that adjust to new conditions survive; those that do not adjust die. Smart cooperative leaders should innovate and adjust with strategies that fit the economic climate in which they find themselves.

Sanders, Kenkel and Smith (1992), after surveying agricultural cooperative managers in Oklahoma and Texas, found that critical issues challenging cooperative management are: (1) cost/availability of insurance; (2) business volume; (3) environmental regulation; (4) farm financial conditions of the members; and (5) labor regulation. These critical issues occupy most of management's time in agricultural cooperatives.

Strong and weak cooperatives have different perceptions of critical issues. Strong cooperatives are more likely to list environmental regulations, environmental penalties and legal liabilities as their critical issues, while managers in weak cooperatives tend to identify business volume, changing commodity programs and uncertain commodity programs as critical issues. Managers in strong cooperatives tend to cope with emerging challenges, while their counterparts in weak cooperatives concentrate on traditional areas such as changes in farm policy. The result of their survey is consistent with Peters and Waterman's concept that managers in successful

cooperative understand the importance of recognizing and adapting to changes.

Sanders, Kenkel and Smith (1992) identify common features how strong cooperatives cope with challenges.

(1) More positive and forward looking on issues and/or government programs/actions;

(2) Maintain large farmer members;

(3) Better equity redemption planing;

(4) Engaged in strategic planing; and

(5) Participate in education programs.

According to Kenkel and Sanders (1992), most grain and supply cooperative managers believe that meeting community needs might threaten the survival of their cooperatives.

CHAPTER III

DESCRIPTION AND RESULTS OF THE SURVEY

The purpose of this chapter is to describe the information from the questionnaire administered by mail to Oklahoma grain and supply cooperative managers and a set of data collected from the CoBank. There were 112 grain and supply cooperatives which were 1993 members of Oklahoma Grain and Feed Association. The population members under study were the managers of those cooperatives.

The pilot version of the questionnaire was pretested in early April, 1994. The purpose of pretesting was to see if every question was well understood by cooperative managers and if they have any other questions to add which were believed important by them. The final version of the questionnaire consisted of 49 easy-to-fill out questions and a financial data release form by which respondents could either authorize CoBank to release their financial data to the researcher or enclose their financial data with the returned questionnaire. A valid response required that both the questionnaire was completely answered and their financial data was released. The first mailing of the questionnaire was sent out on May 29, 1994. Thirty six questionnaires were returned in four weeks. Then a second mailing was sent to those managers who had not

returned any questionnaires after the first mailing. Six questionnaires were returned from the second mailing, making a total of 42 returned questionnaires, or a return rate of 37.5 percent. Of these returned questionnaires, 11 were rejected because they were not accompanied by financial data, or they were accompanied by incomplete financial data. This leaves a total of 31 valid questionnaires which made up the number of observations in this study. Ten of these 31 questionnaires had one or two questions unanswered. A follow-up telephone interview procedure was used to obtain answers to these questions. The questionnaire was based upon a one year time period of 1993. Financial data used in this study were collected from the CoBank Wichita Banking Center in Wichita, Kansas. Those data were for a five year period of 1989-1993. Most of the financial data sent with returned questionnaires were incomplete.

Figure 1 shows the location of these 31 cooperative responded to the survey and released financial data for the past five years. Most of the cooperatives in this study were located within the "wheat belt" of Oklahoma.

In order to gain additional information for the survey, the respondents were divided into three size categories according to the average of the cooperatives' total assets over the five year period (1989-1993). Cooperatives with a five year average of total assets less than 1.89 million dollars were grouped into the small size (low quartile or the first twenty-five percent) category as seen in Table I. Medium

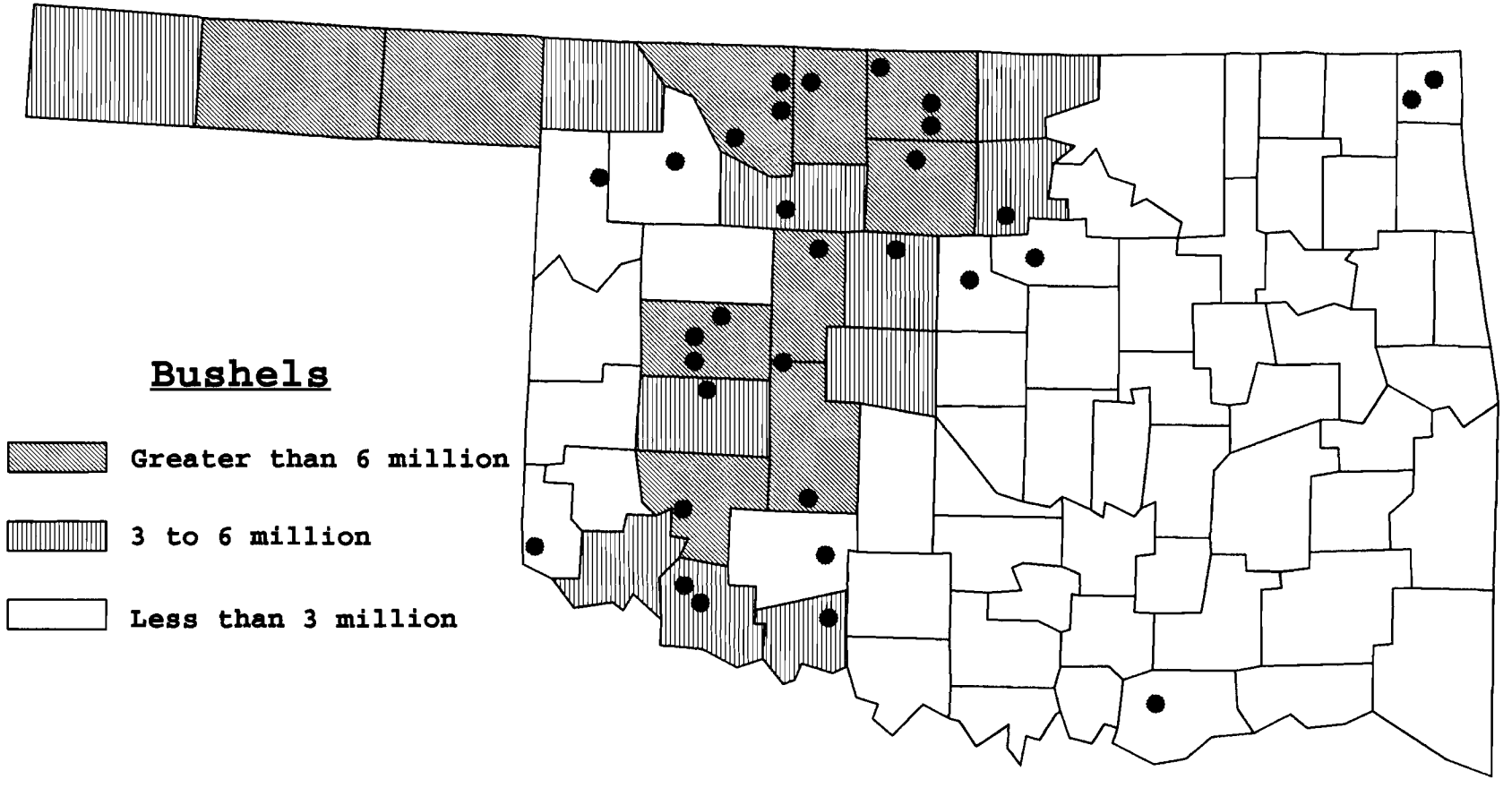

Figure 1. Oklahoma Wheat Production and Location of Grain and Supply Cooperatives in the Study.

TABLE I

SIZE CATEGORIES OF COOPERATIVES IN THE STUDY

Cooperative Size	Number of Cooperatives	Five Year Averages Total Assets (million dollars)
Small:	7	Less than $ 1.89 million
Medium:	16	Between $ 1.89 and $ 4.0 million
Large:	8	Greater than $ 4.0 million

size cooperatives were those in the middle two quartiles (the middle fifty percent) with an average of total assets in the range of 1.89 to 4.0 million dollars. Those with an average of total assets exceeding 4.0 million dollars were considered to be in the large size (top quartile or the highest twenty-five percent) category. This division resulted with seven small cooperatives, 16 medium cooperatives and eight large cooperatives. The sample is typical and representative of all Oklahoma grain and supply cooperatives in terms of membership, total assets, total sales and financial performance. Appendix A shows the comparison of key characteristics between the cooperatives in this study and all Oklahoma grain and supply cooperatives.

Subsequent sections of this chapter provides detailed information from the questionnaire and financial data

collected. These sections are: General Descriptive Information, Membership, Board of Directors and Management, Goals and Objectives, Management Practices and Policies, Competitive Situations, Financial Performance and Critical Issues.

General Descriptive Information

The average volume of grain handled by the 31 cooperatives surveyed was 1.19 million bushels over the last five years (1989-1993). Small cooperatives handled 0.54 million bushels, medium cooperatives handled an average of 1.19 million bushels and large cooperatives handled an average of 1.77 million bushels. Large cooperatives procured 2.3 times more grain than small cooperatives.

Sixty-Five percent of those 31 cooperatives operated branch locations. Those with branch locations operated an average of 2.4 operations year-around, and 1.4 operations as seasonal operations. The number of year-around operations dominated seasonal operations. By size category, all large cooperatives had branch operations, while 56 percent of medium cooperatives had branch operations and 43 percent of small cooperatives had branch operations. Larger cooperatives were more likely to operate branch locations than smaller cooperatives. Among those branch locations, 57 percent were operated all year around, while 43 percent were operated only seasonally.

Managers indicated their grain procurement from main

locations as: 50 percent of the grain originated within five mile radius, 36 percent within a six to 10 mile radius and 14 percent within 11 to 15 mile radius; for branch locations, 57 percent, 29 percent and 12 percent were procured within five, six to 10 and 11 to 15 mile radii, respectively. Over half of all grainn was procured within a five mile radius and over 85 percent was procured within 10 mile radius for both main and branch locations.

Managers also indicated the number of competitors for grain procurement. For main locations, there were 1.1 competitors within a five mile radius, 1.9 competitors within a 10 mile radius, and 3.0 competitors within a 15 mile radius. Grain procurement competitors for branch locations were 1.4, 2.5, and 3.1 within five, 10, and 15 mile radii, respectively.

In 1993, all cooperatives in this study were involved in grain handling and storage, 90 percent were involved in fertilizers and chemical sales, 77 percent handled fuel and/or tires, 77 percent handled fertilizers and chemical application service, and 90 percent handled feed and livestock supplies. Other business enterprises reported were seeding, convenience and hardware store, cotton ginning, lumberyard and building materials, and custom feeds.

General descriptive information for all cooperatives is summarized in Table II and information on primary business enterprises is presented in Table III.

Membership

Table IV contains comprehensive information on the membership of cooperatives studied. The average number of members for all cooperatives was 997 members. Managers indicated, 53 percent of their membership were active members. An active member needs to be actively involved in patronage and capital investment. He or she must also be active in his or her cooperative control activities (Agricultural Cooperative Services, USDA, 1987). Small cooperatives had an average active membership of 41 percent, medium cooperatives had 53 percent and large cooperatives had 61 percent, respectively. It appears that there is a direct relationship between membership activity and the size category.

In 1993, an average of 6.6 member/customer meetings were held by all cooperatives. Member/customer meetings include annual meetings and informational meetings on feed, fertilizer technology, to name a few examples. There was about one meeting every other month. The maximum number of meetings held by a cooperative was 30, while one cooperative did not have any meetings in 1993.

In 1993, business with non-members consisted of 18 percent of the total operation for all these cooperatives. Both small and large cooperatives averaged 21 percent, while medium cooperatives had a smaller share of business with non-members, i.e., 15 percent.

TABLE II

GENERAL DESCRIPTIVE INFORMATION ABOUT
ALL COOPERATIVES IN THE STUDY

Characteristic	All Cooperatives
Average Volume	1.19 Million
By Size:	
Small	0.54 Million Bushels
Medium	1.19 Million Bushels
Large	1.77 Million Bushels
Branch Location Operation	65 Percent
By Size:	
Small	43 Percent
Medium	56 Percent
Large	100 Percent
Branch Location Operation	
Open Year Around	57 Percent
Open Seasonally	43 Percent
Grain Procurement, Main Locations	
Within 5 Mile Radius	50 Percent
Within 5- 15 Mile Radius	36 Percent
Within 10-15 Mile Radius	14 Percent
Grain Procurement, Branch Locations	
Within 5 Mile Radius	57 Percent
Within 5 -15 Mile Radius	29 Percent
Within 15 Mile Radius	12 Percent
Number of Grain Competitors, Main Locations	
Within 5 Mile Radius	1.1 Competitors
Within 10 Mile Radius	1.9 Competitors
Within 15 Mile Radius	3.0 Competitors
Number of Grain Competitors, Branch Locations	
Within 5 Mile Radius	1.4 Competitors
Within 10 Mile Radius	2.5 Competitors
Within 15 Mile Radius	3.1 Competitors

TABLE III

PRIMARY BUSINESS ENTERPRISES HANDLED
BY COOPERATIVES UNDER THE STUDY

Characteristic	All Cooperatives
Grain Handling and Storage	100 Percent
Fertilizers and Chemical Sales	90 Percent
Fuel and/or Tires	77 Percent
Fertilizer and Chemical Application Service	77 Percent
Feed and Livestock Supply	90 Percent
Others:	
Seeding	
Convenience and Hardware Store	
Cotton Ginning	
Lumberyard and Building Materials	

TABLE IV

MEMBERSHIP INFORMATION ABOUT ALL COOPERATIVES

Characteristic	All Cooperatives
Average Membership	997 Members
Percentage of Active Membership	53 Percent
By Size:	
Small	41 Percent
Medium	53 Percent
Large	61 Percent
Average Number of Meetings Held in 1993	6.6 Meetings
Average Percentage of Cooperatives' Business with Non-members	18 Percent
By Size:	
Small	21 Percent
Medium	15 Percent
Large	21 Percent
Cooperatives Providing Unprofitable Products or Services	65 Percent
By Size:	
Small	71 Percent
Medium	50 Percent
Large	88 Percent
Cooperatives Desiring to Discontinue These Unprofitable Products or Services	35 Percent
By Size:	
Small	0 Percent
Medium	43 Percent
Large	57 Percent

As shown in Table V, seven percent of all managers perceived that membership commitment in their cooperatives was very strong, 58 percent perceived theirs to be strong, and the remaining 35 percent believed that their membership commitment in their cooperatives was weak or very weak. Those cooperatives which were weak or very weak in membership commitment fell mostly in the small size category. With regards to equity investment, 29 percent of all managers strongly agreed that their members were willing to make sufficient equity investments through retained patronage refunds and other methods to keep their cooperatives a viable entities in the long-run period. Fifty five percent agreed, three percent disagreed and 13 percent strongly disagreed with this statement, respectively. All these cooperatives lacking in membership's willingness to make sufficient equity investment were medium or large cooperatives.

Managers were asked to describe the number of members that make up most of the cooperatives' sales volume, and how the cooperatives' net margins were generated by the size of producers. Tables VI and VII contain this information. Thirteen percent of cooperatives had less than 25 members which accounted for 80 percent of their cooperatives' sales volumes. Thirty-Two percent, 13 percent, 13 percent and 29 percent of cooperatives had 26 to 50, 51 to 75, 76 to 100 and over 100 members which accounted for 80 percent of their cooperatives' sales volumes, respectively.

TABLE V

MANAGERS' PERCEPTION OF MEMBERSHIP COMMITMENT AND MEMBERS' WILLINGNESS TO MAKE SUFFICIENT INVESTMENTS

Characteristic	All Cooperatives
Membership Commitment	
Very Strong	7 Percent
Strong	58 Percent
Weak	35 Percent
Very Weak	0 Percent
Comment on Membership's Willingness to Make Sufficient investment	
Very Strong	29 Percent
Strong	55 Percent
Weak	3 Percent
Very Weak	13 Percent

An average of 38 percent of cooperatives' net margin was generated by large-size producers, 44 percent by medium-size producers, and small-size producers contributed 12 percent respectively, while the remaining 6 percent was from part-time producers. Large-size and medium-size producers made up more than 80 percent of net margins.

Sixty-Five percent of all cooperatives provided products or services that lose money. Among them, 71 percent were small cooperatives, 50 percent and 88 percent were medium and large cooperatives.

Thirty-Five percent of these cooperatives indicated the desire to discontinue unprofitable products or services. Among these, 43 percent were medium size cooperatives, and 57

TABLE VI

NUMBER OF MEMBERS MAKING UP 80 PERCENT
OF THE COOPERATIVES' SALES VOLUME

Number of Members	All Cooperatives
Less than 25 (1.3 Percent*)	13 Percent
26-50 (3.8 Percent)	32 Percent
51-75 (6.3 Percent)	13 Percent
76-100 (8.8 Percent)	13 Percent
Over 100 (N/A)	29 Percent

* indicates the percentage of total membership.

TABLE VII

COOPERATIVES' NET MARGINS GENERATED
BY THE SIZE OF PRODUCERS

Size of Producers	All Cooperatives
Large size Producers	38 Percent
Medium Size Producers	44 Percent
Small Size Producers	12 Percent
Part Time Producers	6 Percent

percent were large cooperatives. No small cooperatives expressed such a desire or intention. Apparently, managers of small cooperatives were less likely to discontinue unprofitable products and services than were managers of larger cooperatives.

Managers were asked to rank three major unprofitable products or services by the extent of loss. Table VIII lists those products or services, with service stations (including fuel service), feed mill and tire repairing being the top three unprofitable products or services by the extent of loss.

Reasons why those cooperatives may continue to provide unprofitable products or services were also identified by responding managers. Serving the membership, complimenting other profitable services, and being not available locally were reported as the most frequently expressed reasons as illustrated in Table IX.

Table X shows those comments and criticisms that customers offered and how frequently they occurred. The number in the table represents the number of cooperatives receiving these types of comments and criticisms. The criticism occurring most frequently was that input prices were not competitive (prices too high). Other comments were: other services needed but not provided, and wheat offers not competitive (price too low). The less frequently occurring criticism were poor employee service and poor advice. One cooperative received complaints that grain grading and dockage were too strict.

Managers reported those means they were using to stay in touch with member needs. Table XI contains information on the number of cooperatives that used these means. Most frequently

TABLE VIII

THE TOP THREE UNPROFITABLE PRODUCTS OR SERVICES PROVIDED BY THE COOPERATIVES

Unprofitable Products and Services	Ranks by Extent of Loss[1]
Service Station(Including the Fuel Service)	1
Feed Mill	2
Tire Repair	3
Others[2]	
Fittings and Parts	
Hardware	
Elevator	
Soil Sampling	
Animal Health	
Crop Consulting	
Seed Cleaning	
Bulk Fuel Delivery	
Lumberyard and Building Materials	
NH_3 Application	

[1] Some managers provided multiple rankings.
[2] Other unprofitable products and services are not ranked.

TABLE IX

REASONS FOR CONTINUING UNPROFITABLE PRODUCTS OR SERVICES SPECIFIED BY THE COOPERATIVES

Reasons	Ranks by Frequency[1]
Serving the Membership	1
Complimenting Other Profitable Services	2
Not Available Locally	3
Others[1]	
Temporally Unprofitable	
Minor Part of Total Business	

[1] Some managers provided multiple rankings.
[2] Other reasons are not ranked.

used means by managers were farm visits, and by emphasizing employees' service skill. Only three cooperatives conducted customer surveys, one cooperative had a newsletter and no cooperatives had a customer suggestion box. Managers were focusing on face to face contacts instead of communicating in written forms.

Eighty-Seven percent of all cooperatives (71 percent of small cooperatives, all medium and 75 percent of large cooperatives) admitted new young farmer members in the past

TABLE X

NUMBER OF COOPERATIVES RECEIVING COMMENTS AND CRITICISMS FROM CUSTOMERS: RANKED BY FREQUENCY OF OCCURRENCE

Comments and Criticisms	Ranked by Frequency of Occurrence* Most Frequently 1	2	3	4	Least 5
Input Prices Not Competitive (Prices Are Too High)	19	4		1	
Other Services Needed But Not Provided	5	4	7	2	
Poor Employee Service	1	5	1	4	
Poor Advice		2	3	4	3
Wheat Offers Not Competitive (Prices Are Too Low)	2	7	3	5	4
Too Strict on Grain Grading and Dockage	1				

* Some managers gave multiple responses.

TABLE XI

MEANS USED BY COOPERATIVE MANAGERS TO STAY IN TOUCH WITH MEMBER NEEDS

Means	Number of Cooperatives
Customer Suggestion Box	0
Customer Survey	3
Farm Visit	22
By Emphasizing Employees' Customer Service Skill	21
Others	
Newsletter	1

two years. Fifty-Nine percent of those cooperatives which enrolled new young farmer members indicated that these new young farmer members had specific needs different from, or greater than older members' needs. Managers identified these specific needs. Credit terms, marketing service, and application and rental services were among their top three specific needs. Tables XII and XIII show this information for new young farmer members.

Boards of Directors and Management

The overall information about Boards of Directors and Management is described in Table XIV. The average number of members on a board was six members. An average of 3.9 members

have attended a Director Development Training program in the past five years. Small cooperatives averaged 3.6 members in such a program, and medium and large cooperatives averaged 3.8 members and 4.3 members, respectively. Fifty-Five percent of all cooperatives studied indicated that their directors had participated in other training activities during the past five years. These training activities included meetings, seminars, workshops on management problems, environmental problems, and

TABLE XII

INFORMATION ABOUT NEW YOUNG FARMER MEMBERS BY ALL COOPERATIVES

Characteristics	All Cooperatives
Cooperatives Enrolled New Young Farmer Members	87 Percent
By Size:	
Small	71 Percent
Medium	100 Percent
Large	75 Percent
Cooperatives Indicating Their New Young Farmer Members Had Specific Needs	59 Percent

critical issues. Twenty-Nine percent of all cooperatives studied provided formal training and orientation programs for new board members.

TABLE XIII

SPECIFIC NEEDS OF NEW YOUNG FARMER MEMBERS EXPRESSED BY THE NUMBER OF COOPERATIVES

Specific Needs	Number of Cooperatives
Credit Terms	12
Product Line	3
Application and Rental Services	7
Marketing Services	12
Better Prices	6
Cash Patronage Refunds	2

Nineteen percent of these cooperatives had associate board members who attended board meetings but were not permitted to vote. Using associate board members is one important way to develop and train potential board members. Oklahoma grain and supply cooperatives did not often use associate board members.

Nineteen percent of all cooperatives had a term limit for board members. The average length of each term was 4.5 years. In 1993, the average number of days managers spent on informational meetings, seminars, and etc. was 11.4 days. Managers of small cooperative averaged 11.3 days, while medium and large cooperative managers averaged 10.4 and 13.4 days,

TABLE XIV

INFORMATION ABOUT BOARDS OF DIRECTORS AND MANAGEMENT FOR ALL COOPERATIVES

Characteristic	All Cooperatives
Average Number of Board Members	6 People
Average Members Having Attended a Director Development Training Program	65 Percent
Cooperatives with Board Members Participated Other Training Programs	55 Percent
Cooperatives Providing Formal Training or Orientation Programs for New Board Members	29 Percent
Cooperatives with Associate Board Members	19 Percent
Cooperatives with a Term Limit for Board Members	19 Percent
Average Length for Each Term	4.5 Years
Average Number of Days Mangers Spent on Informational Meetings, etc.	11.4 Days
Cooperatives with a Annual Formal Job Appraisal of the Manager	58 Percent
Average Number of Employees	
Full-time	16.5 People
Part-time	7.5 People

respectively. Fifty-Eight percent of all cooperatives studied had an annual job appraisal of managers.

Ten percent of all the managers in this study believed that their salaries and compensations, in relation with their counterparts in other firms of similar size, were higher, 38 percent perceived their salaries and compensations to be about the same, 26 percent expressed the belief that theirs were lower, and 26 percent had no idea. When asked to comment if their salaries and compensations were competitive salaries and compensations of their peers in other cooperatives, 10 percent strongly agreed, 60 percent agreed, 27 disagreed, and three percent strongly disagreed. More than two thirds of the managers in this study indicated that their compensation levels were competitive with those of their peers. The information on managers' levels of salary and compensation is illustrated in Table XV. In this survey, there were four questions concerning responsibilities of Boards of Directors and Managers, and the collaboration between them. Managers' perceptions in these respects are reflected in Table XVI. Thirty-Nine percent of all managers in this study strongly agreed that manager's responsibilities and board's responsibilities were well defined and understood. Fifty-Two percent agreed, nobody disagreed, and nine percent strongly disagreed, respectively with that same statement.

TABLE XV

THE LEVEL OF SALARIES AND COMPENSATIONS PERCEIVED BY COOPERATIVE MANAGERS

Characteristic	All Cooperatives
The Level in Relation with Their Counterparts in Other Firms of Similar Size	
High	10 Percent
About the Same	38 Percent
Low	26 Percent
Don't Know	26 Percent
The Level was Competitive with That of Their Counterparts in Other Cooperatives	
Strongly Agree	10 Percent
Agree	60 Percent
Disagree	27 Percent
Strongly Disagree	3 Percent

Thirty-Nine percent of the responding managers indicated that their boards set reachable goals, allowed managers flexibility, and provided resources needed to achieve these goals all the time. Forty-Two percent indicated this situation occurred most of the time, 19 percent some of the time, and no body indicated never, respectively.

Managers were asked that if formulating and implementing strategies depend on a team work between boards and managers. Thirty-Nine percent of the managers indicated that formulating and implementing strategies depended on team work between the boards and managers all the time, 42 percent, 16 percent and

TABLE XVI

RELATIONSHIPS BETWEEN THE BOARD AND THE MANAGER PERCEIVED BY THE COOPERATIVE MANAGERS

Characteristic	All Cooperatives
The Manager's Responsibilities and the Board's Responsibilities Are Well Defined and Understood	
Strongly Agree	39 Percent
Agree	52 Percent
Disagree	0 Percent
Strongly Disagree	9 Percent
The Board Sets Reachable Goals, Allows Managers Flexibility, and Provides the Resources to These Goals	
All the Time	39 Percent
Most of the Time	42 Percent
Some of the Time	19 Percent
Never	0 Percent
Formulating and Implementing Strategies Depend on the Team Work Between the Board and the Manager	
All the Time	39 Percent
Most of the Time	42 Percent
Some of the Time	16 Percent
Never	3 Percent
The Relationship Between the Board and the Manager	
Always Supportive	68 Percent
Sometimes Supportive	22 Percent
Sometimes Conflicting	10 Percent
Always Conflicting	0 Percent

three percent of the managers indicated that this team work existed most of the time, some of the time and never, respectively.

Sixty-Eight percent of all managers indicated that their relationships with their boards were always supportive. Twenty-Two percent and 10 percent of the managers indicated that their boards were sometimes supportive, sometimes conflicting, respectively. No managers indicated that their relationships with their boards always conflicted. Thus it can be said that 90 percent of all cooperatives had supportive relationships between boards and managers.

Goals and Objectives

Forty-five percent of all cooperatives have a long-run strategic plan. Twenty-One percent of small cooperatives, 64 percent of medium and 14 percent of large cooperatives have written long-run strategic plans. More medium cooperatives havelong-run strategic plans than other size cooperatives. Thirty-six percent of the cooperatives had long-run strategic plans that were two to three years long, 64 percent four to five years long, and no cooperative had a strategic plan that was for a period of over five years.

Thirty-Two percent of all cooperatives had written job descriptions. Thirty percent of the small cooperatives, 60 percent of the medium and 10 percent of the large cooperatives had written job descriptions. Table XVII shows information about long-run strategic plans and written job descriptions.

More medium cooperatives had written job descriptions than other size cooperatives.

Managers were asked to rank in order of importance (one being the most important) the following factors they used in measuring cooperative success: growth in trade, net savings, patronage refund cash reimbursement, return on assets, return on equity, service to membership and others specified by the responding managers. Table XVIII shows overall information how these various factors were chosen and how they were ranked by perceived importance by cooperative managers. The number

TABLE XVII

LONG-RUN STRATEGIC PLANS AND WRITTEN JOB DESCRIPTIONS FOR ALL COOPERATIVES SURVEYED

Characteristics	Percentage
Cooperatives with Long-run Strategic Plans	45 Percent
By Size	
Small	21 Percent
Medium	64 Percent
Large	14 Percent
The Length of Long-run Strategic Plans	
2 to 3 years	36 Percent
4 to 5 years	64 Percent
Over 5 years	0 Percent
Cooperatives with Written Job Descriptions	32 Percent
By Size	
Small	30 Percent
Medium	60 Percent
Large	10 Percent

TABLE XVIII

FREQUENCY OF RANKED FACTORS USED AS SUCCESS MEASUREMENTS BY ALL COOPERATIVES

Factors Used as Success Measurement	Frequency of Ranking of Success Factors* (Ranked by Cooperatives in Order of Importance)					
	Most Important					Least
	1	2	3	4	5	6
Growth in Trade	9	5	6	3	2	4
Net Savings	19	7	4			1
Patronage Refund(Cash)	4	5	7	2	6	5
Return on Assets	3	9	5	6	2	1
Return on Equity	1	5		4	8	6
Service to Membership	13	5		7	1	
Others:						
Stock Retirement		1				
Labor to Gross Income			1			

* Some cooperatives may give the same ranking to more than one success measurement.

in the table is the number of cooperatives choosing each of the various factors and the importance of that factor by their ranking. Tables XIX through XXI contain similar information for three size groups of cooperatives. From an overall picture shown in Table XVIII, net savings, service to membership and growth in trade were ranked as the most important factors by the respondents. All these three factors were almost proportionately distributed among three size groups, implying that success factors do not vary significantly across the size of cooperatives. If we count each factor by the number of cooperatives who selected this factor as the most important or second most important (some cooperatives may give same ranking of importance), then net savings was chosen by 26 cooperatives, service to membership by 18 cooperatives, growth in trade by 14 cooperatives, and return on assets by 12 cooperatives. These factors will be further analyzed in Chapter V.

Management Practices and Policies

Fifty-Five percent of all cooperatives provided free storage of grain for their members/customers. Eighty-Six percent of small cooperatives, 38 percent of medium, 63 percent of large cooperatives provided this service. An average length of this free service was 33 days with a maximum of six months and a minimum of only two days.

During the past five years, 81 percent of all cooperatives made major investments in facilities, i.e.,

TABLE XIX

FREQUENCY OF RANKED FACTORS USED AS SUCCESS MEASUREMENTS BY SMALL COOPERATIVES

Factors Used as Success Measurement	Frequency of Ranking of Success Factors* (Ranked by Cooperatives in Order of Importance)					
	Most Important					Least
	1	2	3	4	5	6
Growth in Trade	1	2	3		1	
Net Savings	5	2				
Patronage Refund(Cash)	1		3	1		
Return on Assets		3				1
Return on Equity		2		3	1	
Service to Membership	5			1		

* Some cooperatives may give the same ranking to more than one success measurement.

TABLE XX

FREQUENCY OF RANKED FACTORS USED AS SUCCESS MEASUREMENTS BY MEDIUM COOPERATIVES

Factors Used as Success Measurement	Frequency of Ranking of Success Factors* (Ranked by Cooperatives in Order of Importance)					
	Most Important					Least
	1	2	3	4	5	6
Growth in Trade	5	1	3			
Net Savings	10	2	4			
Patronage Refund(Cash)	2	4	3	1	3	
Return on Assets	3					
Return on Equity	1	2	3		5	4
Service to Membership	5	2	4	5		
Others:						
Stock Retirement		1				
Labor to Gross Income			1			

* Some cooperatives may give the same ranking to more than one success measurement.

TABLE XXI

FREQUENCY OF RANKED FACTORS USED AS SUCCESS MEASUREMENTS BY LARGE COOPERATIVES

Factors Used as Success Measurement	Frequency of Ranking of Success Factors* (Ranked by Cooperatives in Order of Importance)					
	Most Important 1	2	3	4	5	Least 6
Growth in Trade	3	2			1	
Net Savings	4	3				1
Patronage Refund(Cash)	1			2		
Return on Assets		3	2	1		
Return on Equity		1	2	3	1	
Service to Membership	3	2	1			

* Some cooperatives may give the same ranking to more than one success measurement.

either plant or equipment. By size category, 86 percent of small, 75 percent of medium and 88 percent of large cooperatives made such investments, implying that medium cooperatives were less likely to make these investment than the other two size groups. Managers identified reasons for making these investments, with updating obsolete equipments,

increasing volume in the same business areas and increasing member services being the three most important reasons. Some cooperatives gave the same ranking to more than one reason. Other reasons identified by responding managers were business diversification and reducing labor cost, as shown in Table XXII.

Seventy-Four percent of all cooperatives (71 percent of small, 81 percent of medium and 63 percent of large cooperatives) had a formal equity retirement plan. The criteria most often identified were special situations (retirement, leaving farming or estates), age of patrons and age of stock (revolving fund). Table XXIII contains this information.

With regards to financial management control methods that cooperatives were using, age accounts receivable, analyzing financial ratios at a regular basis and analyzing actual costs compared to budget were the most frequently chosen methods by responding cooperatives. Table XXIV shows the number of cooperatives choosing each of these financial management control methods.

Managers reported types of marketing alternatives they used for selling their 1993 grain. The numbers of cooperatives using each marketing alternatives are shown in Table XXV.

The primary pricing strategies for purchasing crops from their members and for pricing agricultural inputs were identified by the responding managers. Most of the responding

TABLE XXII

COOPERATIVES'S MAJOR INVESTMENTS IN THE LAST FIVE YEARS

Characteristics	All Cooperatives
Cooperatives Having Made Major Investment	81 Percent
By Size:	
Small	86 Percent
Medium	75 Percent
Large	88 Percent
Cooperatives Having Made Major Investment	
By Reasons:	
Increasing Member service	14 Cooperatives
Diversification	4 Cooperatives
Reducing Labor Cost	6 Cooperatives
Increasing Volume in Same Business Areas	15 Cooperatives
Updating Obsolete Equipment	16 Cooperatives
Others	
Bought a Location	1 Cooperative
Bought a Terminal Elevator	1 Cooperative

TABLE XXIII

COOPERATIVES WITH FORMAL EQUITY RETIREMENT PLAN

Characteristics	All Cooperatives
Cooperatives with Formal Equity Retirement Plans	74 Percent
By Size:	
Small	71 Percent
Medium	81 Percent
Large	63 Percent
Cooperatives with Formal Equity Retirement Plans	
By Criteria:	
Percentage of All Equities	1 Cooperatives
Age of Stock (Revolving Fund)	4 Cooperatives
Age of Patron	12 Cooperatives
Special Situation (Retirements, Left Farming, Estates)	13 Cooperatives
Others	
Pay Estates only	1 Cooperative

TABLE XXIV

FINANCIAL MANAGEMENT CONTROL METHODS USED BY THE NUMBER OF COOPERATIVES

Financial Control Methods	Number of Cooperatives			
	Total	Small	Medium	Large
Actual Costs Compared to Budget	24	4	14	6
Analyze Financial Ratio on a Regular Basis	26	6	13	7
Analyze Volume and Cost Trend	21	4	9	8
Monitor Average Collection Period	18	4	9	5
Age Accounts Receivable	28	7	14	7

TABLE XXV

TYPES OF 1993 GRAIN MARKETING ALTERNATIVES USED BY THE NUMBER OF COOPERATIVES

Marketing Alternatives	Number of Cooperatives			
	Total	Small	Medium	Large
Back to Back	28	7	14	7
Storage Hedge	15	2	7	6
Minimum Price Contract	22	2	13	7
Deferred Price	11	2	5	4
Forward Contract-Wheat Purchase	22	5	11	6
Forward Contract-Wheat Sold	19	3	10	6
Unprotected	2	1		

managers used simple pricing strategies. Maintaining a constant basis in relation to the Texas Gulf Price, and setting the price equal to competition were the most frequently used primary pricing strategies for purchasing crops.

When pricing agricultural inputs the dominating strategy was pricing above cost. Table XXVI shows the numbers of cooperatives using these pricing strategies.

Competitive Situation for Cooperatives

Cooperatives have been losing large size farmers as their members in past decades as shown in Table XXVII. When asked about their relationships with large grain producers in their trade areas, 58 percent of all cooperatives (71 percent of small, 63 percent of medium and 38 percent of large cooperatives, respectively) described that they were attracting and maintaining large size producer members, 32 percent of cooperatives (14 percent of small, 31 percent of medium, and 50 percent of large cooperatives, respectively) indicated that their large size producer members were bypassing both their local cooperatives and their local independent firms and hauling directly to regional or port facilities. The remaining 10 percent of cooperatives were losing large size producer members to local competing firms (14 percent of small, six percent of medium, and 13 percent of large cooperatives, respectively). Smaller cooperatives were doing well in attracting and maintaining large size producer

TABLE XXVI

PRIMARY PRICING STRATEGIES FOR PURCHASING CROPS AND PRICING AGRICULTURAL INPUTS USED BY ALL COOPERATIVES

Primary Pricing Strategies	Number of Cooperatives
For Purchasing Crops:	
Set the Price for Competition	3 Cooperatives
Set the Price Equal to Competition	12 Cooperatives
Set the Price Above Competition	
Follow the Competition's Pricing	
Maintains a Constant Basis in Relation to the Texas Gulf Price	15 Cooperatives
Not a Consistent Price Leader or Follower	1 Cooperative
For Pricing Agricultural Inputs:	
Set the Price for Competition	2 Cooperatives
Set the Price Equal to Competition	6 Cooperatives
Set the Price Above Competition	
Follow the Competition's Pricing	4 Cooperatives
Pricing Above Cost	18 Cooperatives
Others:	
Set Prices Competitively with Others	1 Cooperative

TABLE XXVII

THE RELATIONSHIPS OF COOPERATIVES WITH THEIR LARGE SIZE PRODUCER MEMBERS

Characteristics	All Cooperatives
Attracting and Maintaining Large Size Producer Members	58 Percent
By Size:	
Small	71 Percent
Medium	63 Percent
Large	38 Percent
Large Size Producer Members were Bypassing Both Local Cooperatives and Local Independent Firms and Hauling Directly to Regional Terminal or Port Facilities	32 Percent
By Size	
Small	14 Percent
Medium	31 Percent
Large	50 Percent
Losing Large Size Producer Members to Local Competing Firms	10 Percent
By Size:	
Small	14 Percent
Medium	6 Percent
Large	13 Percent

members than larger cooperatives. Larger cooperatives had bigger potential risk in losing large size producer members to either regional cooperatives or local competing independent firms.

Eighty-one percent of all cooperative managers agreed that failure to vary prices across locations and/or use volume discounts, places cooperatives in a disadvantageous position with respect to investor owned firms. As shown in Table

XXVIII, seventy-one percent of small, 88 percent of medium and 75 percent of large cooperatives supported this viewpoint. In practice, only 23 percent of all cooperatives (14 percent of small, 13 percent of medium and 50 percent of large cooperatives, respectively) had a policy against offering volume discounts for farm supply purchases. Large cooperatives had a tendency to have a policy against offering volume discount to their members. Fifty-five percent of all cooperatives (43 percent of small, 69 percent of medium and 34 percent of large cooperatives, respectively) offered volume discounts for their members. Medium cooperatives were more likely to offer volume discounts to their members than the other two size groups. An average discount was 6.9 percent with a range between two percent and 15 percent.

Twenty-nine percent of all cooperatives have formally considered diversifying into non-traditional or non-agricultural enterprises in the past five years. Thirty-eight percent of medium and 38 percent of large cooperatives had such contemplation. No small cooperatives have considered diversification into other enterprises. Managers specified enterprises into which they have considered diversifying as: convenience stores, truck stops, mechanic shops, U-Haul, tire shops, clothing stores, car wash and pet food stores.

Table XXIX contains information about merger opportunities. Eighty-Seven percent of all managers indicated that their board members would be receptive to merger opportunities. Sixty-Four percent of responding managers

TABLE XXVIII

INFORMATION ABOUT VARYING PRICE ACROSS LOCATIONS AND OFFERING VOLUME DISCOUNT BY ALL COOPERATIVES

Characteristics	All Cooperatives
Agree that Failure to Vary Prices Across Locations and/or Use Volume Discounts Places Cooperatives a Disadvantage with Respect to Investor Owned Firms	81 Percent
By Size:	
Small	71 Percent
Medium	88 Percent
Large	75 Percent
Cooperatives Having a Policy Against Offering Volume Discounts	23 Percent
By Size:	
Small	14 Percent
Medium	13 Percent
Large	50 Percent
Cooperatives Offering Volume Discounts for Their Members	55 Percent
By Size:	
Small	43 Percent
Medium	69 Percent
Large	34 Percent
Average Volume Discount	6.9 Percent
Minimum Discount	2 Percent
Maximum Discount	15 Percent

TABLE XXIX

RECEPTIVENESS TO MERGER OPPORTUNITIES AND ATTITUDE TOWARD MERGER BY ALL COOPERATIVES

Characteristics	All Cooperatives
Receptive to Merger Opportunities By Board Members	87 Percent
Receptive to Merger Opportunities By Cooperative Members	64 Percent
Attitude toward Merger:	
Actively Pursuing Merger Opportunities	
By Members	10 Percent
By Board Members	20 Percent
By Managers	26 Percent
Considering Favorable Merger Opportunities Presented to Them	
By Members	55 Percent
By Board Members	50 Percent
By Managers	71 Percent
Concentrating on Existing Trade Territory	
By Members	35 Percent
By Board Members	30 Percent
By Managers	3 Percent

indicated that their membership were receptive to the cooperative pursuing merger opportunities. The major reasons for lack of receptiveness to merge by board members were: (1) having tried before but failed, (2) continuing to improve current operations. Managers indicated reasons for lack of receptiveness as: (1) bad experience with mergers in the past, (2) possible but would take a big selling job, and (3) most members do not want mergers.

Managers were asked about their attitude toward mergers and their perception of their board's and their membership's attitude. Twenty-six percent of the managers indicated that their cooperatives should actively pursue merger opportunities. However, only 20 percent of the managers indicated that their board members supported the active pursuit of merger opportunities and only 10 percent of the managers indicated that their members supported pursuing these opportunities. Seventy-one percent of the managers indicated that their attitude toward mergers was "I respond to favorable merger opportunities presented to me". Fifty percent of the managers selected that choice as representing their board's attitude and 55 percent selected that statement as representing their membership's attitude. Three percent of the managers had a negative attitude toward mergers. However, 30 percent of the managers indicated that their board had a negative attitude toward mergers and 35 percent of the managers thought that their members were negatively inclined towards considering mergers. The conservative attitude was

most popular among cooperative members, followed by board members and then by managers.

Financial Strength and Performance

Tables XXX and XXXI contain comparisons of financial ratios categorized into four groups: profitability, liquidity, solvency and efficiency. Two different time scenarios were used to evaluate these ratios. Five year averages were used for the data from 1989 through 1993. Ratios for 1993 were also computed from 1993 data. Table XXX contains five year average ratios and Table XXXI contains 1993 ratios. Profitability ratios and working capital to sales are expressed in percentage.

Profitability

Profitability is a firms' ability to generate savings. Profitability ratios measure profitability relative to levels of sales, assets and equity. Three ratios were used in this study.

1. Return on Assets (ROA) expresses total net savings before tax as a percentage of total assets. For five year average data, medium cooperatives had the largest return on assets (3.17 percent), followed by small and large cooperatives (3.11 percent and 1.94 percent, respectively). In 1993, small cooperatives had largest return on assets (6.42 percent), followed by medium cooperatives (4.60 percent) and then by large cooperatives (2.36 percent). Large cooperatives

TABLE XXX

COMPARATIVE FINANCIAL RATIOS,
FIVE YEAR AVERAGE 1989-1993

Financial Ratios	Total	Small	Medium	Large
Profitability:				
1. Return on Assets (%)	2.84	3.11	3.17	1.94
2. Return on Local Assets (%)	1.68	1.63	2.35	0.38
3. Local Return on Sales (%)	0.67	0.44	1.07	0.08
Liquidity				
4. Current Ratio	2.62	3.60	2.68	1.63
5. Quick Ratio	1.51	2.02	1.58	0.93
6. Working Capital to Sales(%)	8.88	11.43	10.12	4.03
Solvency				
7. Local Leverage Ratio	0.33	0.11	0.25	0.69
8. Ownership Ratio	0.73	0.78	0.77	0.62
9. Term Debt to Fixed Assets	0.22	0.17	0.20	0.32
10. L.T.Debt to Members' Equity	0.11	0.06	0.09	0.19
Efficiency				
11. Productivity Ratio	0.17	0.16	0.18	0.14
12. Labor Income Ratio	0.47	0.49	0.46	0.46
13. Prsnl Expend.to Total Expend.	0.47	0.50	0.47	0.45
14. Average Collection Period	16.39	20.77	14.20	16.92
15. Sales to Inventory	15.75	12.62	17.47	15.06
16. Sales to Total Assets	2.31	2.31	2.30	2.34
17. Sales to Fixed Assets	8.43	9.69	7.84	8.52

TABLE XXXI

COMPARATIVE FINANCIAL RATIOS, 1993

Financial Ratios	Total	Small	Medium	Large
Profitability:				
1. Return on Assets (%)	4.43	6.42	4.60	2.36
2. Return on Local Assets (%)	4.94	7.22	5.31	2.19
3. Local Return on Sales (%)	1.37	1.96	1.56	0.47
Liquidity				
4. Current Ratio	2.78	3.22	3.06	1.84
5. Quick Ratio	1.61	1.77	1.86	0.99
6. Working Capital to Sales(%)	7.91	10.66	8.62	4.09
Solvency				
7. Local Leverage Ratio	0.45	0.07	0.19	1.29
8. Ownership Ratio	0.74	0.78	0.77	0.64
9. Term Debt to Fixed Assets	0.21	0.12	0.18	0.36
10. L.T.Debt to Members' Equity	0.11	0.04	0.08	0.23
Efficiency				
11. Productivity Ratio	0.16	0.16	0.17	0.14
12. Labor Income Ratio	0.43	0.42	0.43	0.44
13. Prsnl Expend.to Total Expend.	0.47	0.48	0.48	0.45
14. Average Collection Period	14.16	19.03	11.65	14.93
15. Sales to Inventory	15.82	13.09	17.15	15.67
16. Sales to Total Assets	2.42	2.48	2.30	2.57
17. Sales to Fixed Assets	8.97	10.13	8.20	9.48

had smallest return on assets for both time scenarios.

2. Return on Local Assets (ROLA) measures the relationship between local savings and locally-used assets. ROLA is defined as total local savings divided by local assets which is total assets minus regional investment. It indicates if local assets are assisting in generating total savings. ROLA is a key profitability ratio in profitability analysis (Barton and Featherstone, 1993).

Medium cooperatives and small cooperatives had larger ROLA for five year average data (2.35 percent and 1.63 percent, respectively) and 1993 data respectively (5.31 percent and 7.22 percent, respectively) than large cooperatives (0.38 percent for five year average and 2.19 percent for 1993 data). Local assets in larger cooperatives did not assist as well in generating local savings as in smaller cooperatives.

3. Local Return on Sales (LROS) is local savings divided by total sales. It measures profit based on total sales and so is an indicator of market power. For the five year average data, medium cooperatives had largest LROS at 1.07 percent, followed by small at 0.44 percent and then by large at 0.08 percent. For 1993 data, small cooperatives had largest LROS (1.96 percent), followed by medium and then by large cooperatives (1.56 percent and 0.47 percent, respectively). Large cooperatives had the lowest local return on sales.

Liquidity

Liquidity ratios measure short-term cash flow ability. Three liquidity ratios were analyzed in this study.

4. Current Ratio (CR) is defined as current assets divided by current liabilities. It is a measurement of ability to meet current liabilities. It is a key measure of short-term financial strength and adequacy of cash flow to meet near-term obligations, take advantage of cash discounts on purchases, and avoid finance charges on payables (Barton and Feathestone, 1993).

For both five year average data and 1993 data, small cooperatives had largest CR at 3.6 and 3.22 respectively, followed by medium cooperatives (2.68 and 3.06) and then by large cooperatives (1.63 and 1.84). This indicates that smaller cooperatives were in a better position than others to pay their current due bills and to take advantage of cash discounts on purchases.

5. Quick Ratio (QR) is computed by dividing liquid assets by current liabilities. Distinction of QR from the above-mentioned CR is that it excludes the amount of inventories from consideration. A common rule of thumb regarding QR is that it should be at least one to one which means that firms have cash or receivables to meet due bills (Page and Hummer).

Small cooperatives had largest QR at 2.02, followed by medium at 1.58 and then by large cooperatives at 0.93 for five year average data. For 1993, medium cooperatives had largest QR at 1.86, followed by small and large cooperatives (1.77 and

0.99, respectively). The QR for large cooperatives were less than one for both time scenarios.

6. Working Capital to Sales is defined as working capital (Current assets minus Current liabilities) divided by total sales. It is a measure of the degree that working capital should meet daily obligations in relation to business volume.

Small cooperatives had largest working capital to sales at 11.43 percent, followed by medium at 10.12 percent and then by large at 4.03 percent for five year average data. The same pattern persisted for 1993 data (10.6 percent for small, 8.62 percent for medium and 4.09 percent for large cooperatives.

Solvency

Solvency measures firms' long-term financial strength and stability. Four solvency ratios were utilized in this study.

7. Local Leverage Ratio (LLR) is total long term debt divided by total members' equity minus regional investment. It measures the relationship between long term debt and members' equity adjusted for regional investment (CoBank, 1994).

For the five year average data, small cooperatives had the smallest LLR at 0.11, followed by medium at 0.25 and then by large cooperatives at 0.69. 1993 data followed the same pattern (0.07 for small, 0.19 for medium and 1.29 for large cooperatives. This indicates that smaller cooperatives were less risky in long term financial health and stability than larger ones.

8. Ownership Ratio (OR) is computed by total members' equity divided by total assets. It measures the degree to which members own the business.

Small and medium cooperatives did not differ much in terms of OR (0.78 and 0.77, respectively), while large cooperatives had a lower OR (0.62 for five year average and 0.64 for 1993).

9. Term Debt to Fixed Assets is calculated by total long term debt divided by net fixed assets. It measures the relationship between long term debt and fixed assets or other items, such as working capital and if long-term debt has been repaid in accordance with the expected life of fixed assets (CoBank, 1994).

For both five year average and 1993 data, small cooperatives had the smallest ratio of term debt to fixed assets (0.17 and 0.12, respectively), followed by medium cooperatives at 0.20 and 0.18 and then by large cooperative at 0.32 and 0.36, respectively. These data indicate that smaller cooperatives had less long-term debt for financing their fixed assets.

10. Long-Term Debt to Members' Equity is the amount of long-term debt as a percentage of members' equity. It measures the degree to which long-term debt is financed by members' equity and therefore is an indicator of financial stability.

From Tables XXX and XXXI, the values of long-term debt to members' equity increased the larger the cooperatives.

Smaller cooperatives used less members' equity to finance long-term debt. As equity is a shock absorber to absorb unexpected economic shocks and a reserve to use to take advantage of unexpected opportunities (Barton and Feathestone, 1993). Smaller cooperatives had better financial strength in terms of this criteria.

Efficiency

Efficiency suggests how well things are done. Seven efficiency variables are discussed in this study.

11. Productivity Ratio (PR) is total expenses divided by total sales. It measures the dollar amount of expenses required to generate one dollar of sales.

Large cooperatives had the smallest PR at 0.14 both for five year average data and 1993 data, followed by small and medium cooperatives which differed very little (both 0.16 for small, and 0.17 and 0.18 for medium cooperatives). Lower PR for large cooperatives may be explained by economies of size.

12. Labor Income Ratio (LIR) is total personnel expenses divided by gross revenue. It measures the contribution of labor to the generation of income.

For five year average data, small cooperatives had the largest contribution of labor (0.49) to income generation, while medium and large cooperatives had the same value at 0.46. For 1993, large cooperatives had the largest contribution at 0.44, followed by medium and small cooperatives at 0.43 and 0.42, respectively. There was very

little difference in the labor contribution to income generation between size groups.

13. Personnel Expenses to Total Expenses measures the proportion of personnel expenses in total expenses. As personnel expenses is one of the largest and most controllable expenses in a cooperatives' operation, it is one of the most important efficiency variables.

Large cooperatives had lowest personnel expenses to total expenses (0.45), followed by medium (0.47) and then by small cooperatives (0.5) for five year average data. In 1993, this variable is 0.45 for large cooperatives, and 0.48 for both medium and small cooperatives. Larger cooperatives had better efficiency in personnel expenses management than smaller cooperatives.

14. Average Collection Period (ACP) measures the number of days required to collect receivables. It is an indicator of effectiveness of credit management policy and is generally a good indicator of bad debt loss.

Medium cooperatives had the smallest ACP (14 days for five year average data and 12 days for 1993 data), followed by large cooperatives (17 days for five year average data and 15 days for 1993 data) and then by small cooperatives (21 days for five year average data and 19 days for 1993 data).

15. Sales to Inventory measures the amount of sales supported by one dollar of inventory. It is an indicator of sales efficiency.

Medium cooperatives had the largest sales to inventory

(17.47 for five year average and 17.15 for 1993), followed by large cooperatives (15.06 for five year average and 15.67 for 1993) and then by small cooperatives (12.62 for five year average and 13.09 for 1993).

16. Sales to Total Assets divides the volume of total sales by total assets. It is a measure of the turnover or utilization of all business's assets. For both five year average and 1993 data, large cooperatives had largest sales to total assets 2.34 and 2.57, respectively), followed by small (2.31 and 2.48, respectively) and then by medium cooperatives (2.30 for both scenarios). This shows that the large cooperatives had the best efficiency in asset management.

17. Sales to Fixed Assets is a measurement of turnover or utilization of business's fixed assets. Not like the results of sales to total assets, small cooperatives had the best efficiency in fixed asset utilization (9.69 for five year average data and 10.13 for 1993 data), followed by large cooperatives (8.52 for five year average data and 9.48 for 1993 data) and then by medium cooperatives (7.84 for five year average data and 8.2 for 1993 data).

Figure 2 shows the rate of return on local assets (ROLA) in the five year period of 1989-1993 for all cooperatives and by the size breakdown. Overall, all cooperatives experienced increasing return on local assets in the five years except in 1992, although large cooperatives did not suffer similar decline in ROLA as the small and medium size cooperatives experienced in 1992. Comparied to other size groups, small

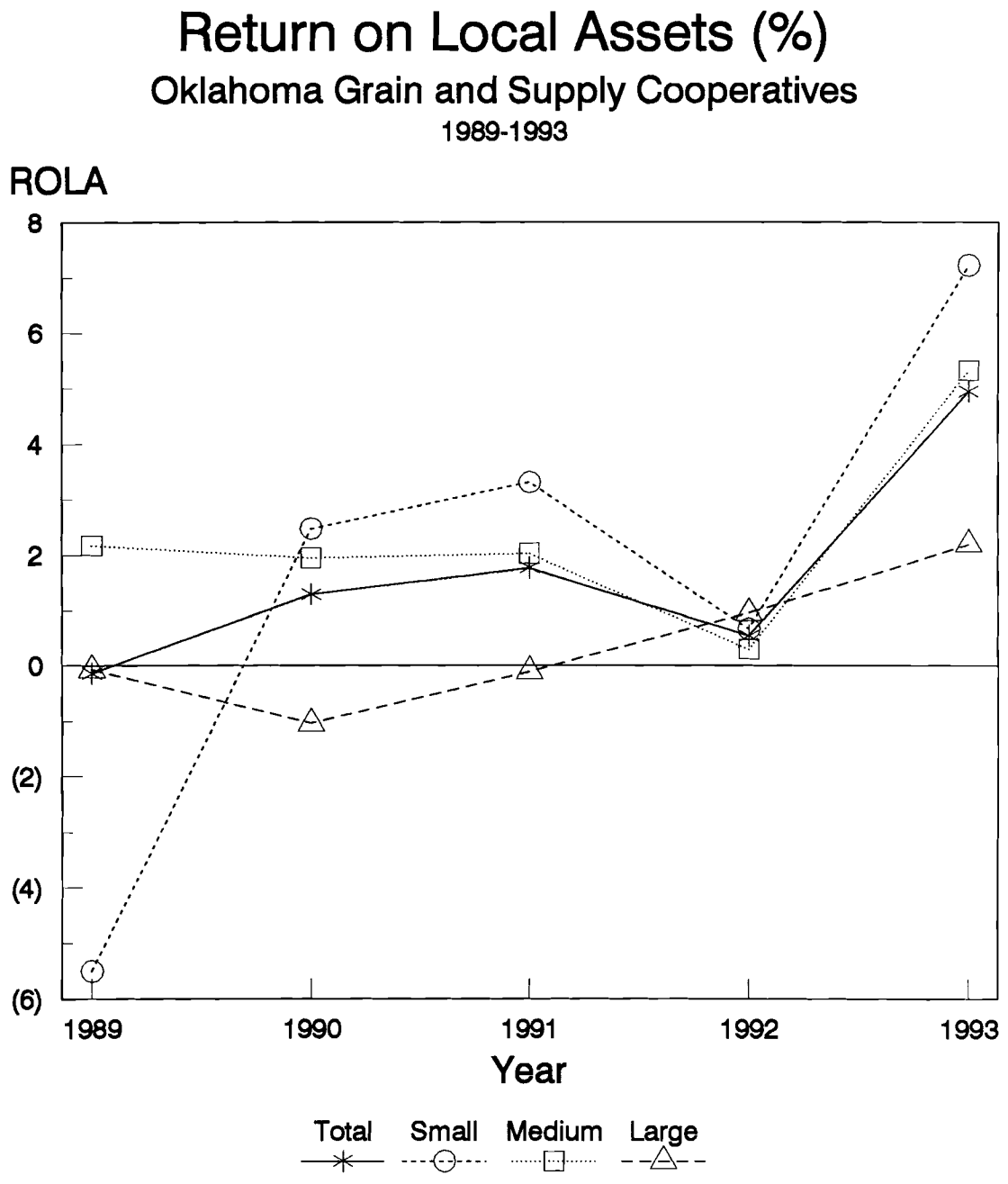

Figure 2. Return on Local Assets, 1989-1993.

cooperatives underwent more dramatic changes. They had the smallest ROLA (-5.5 percent) in 1989 and the largest ROLA (7.2 percent) in 1993. ROLA's were smaller, the larger the cooperative size in the three years 1990,1991 and 1993, while ROLA's were quite close for all three size groups in 1992.

The changing condition of current ratio (CR) is shown in Figure 3. For all five years, there was opposite direction between CR and the size of cooperatives. Like return on local assets, small cooperatives had more unstable changes in current ratio. During 1992, the CR was the best for all cooperatives except large cooperatives. An overall increase in CR for all cooperatives during the five years was not obvious. This means that Oklahoma grain and supply cooperatives had not improved their short-term financial strength during those five years.

The condition of local leverage ratio (LLR) is shown in Figure 4. Average LLR of all cooperatives for the five year period of 1989 to 1993 has increased, although the increase was very small. Large cooperatives had stable increase in LLR over the five years of 1989 to 1993, while medium and small cooperatives saw a small decline in LLR. This shows that large cooperatives had improved their long-term financial strength, but small and medium cooperatives had not improved their long-term financial stability.

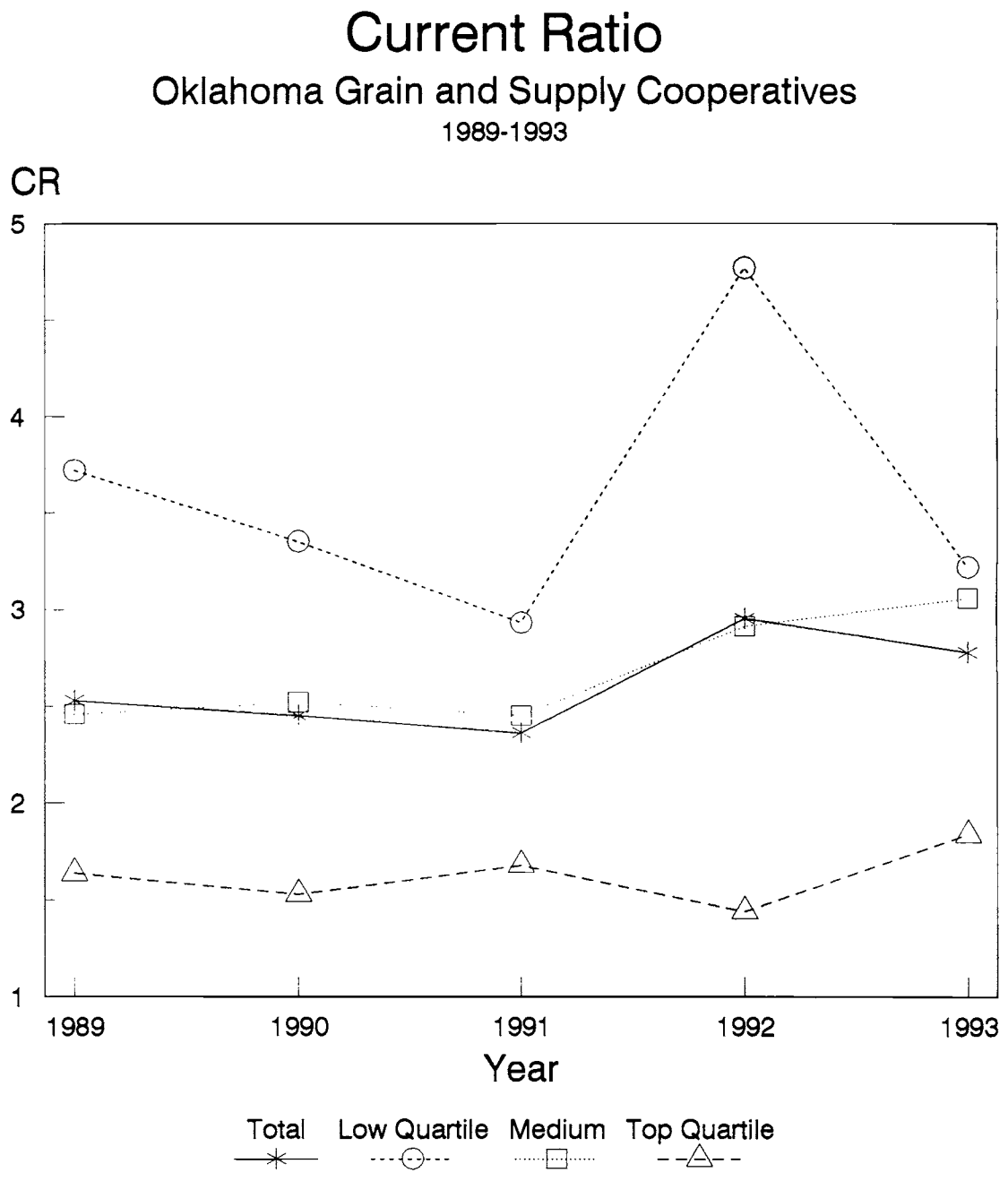

Figure 3. Current Ratio, 1989-1993.

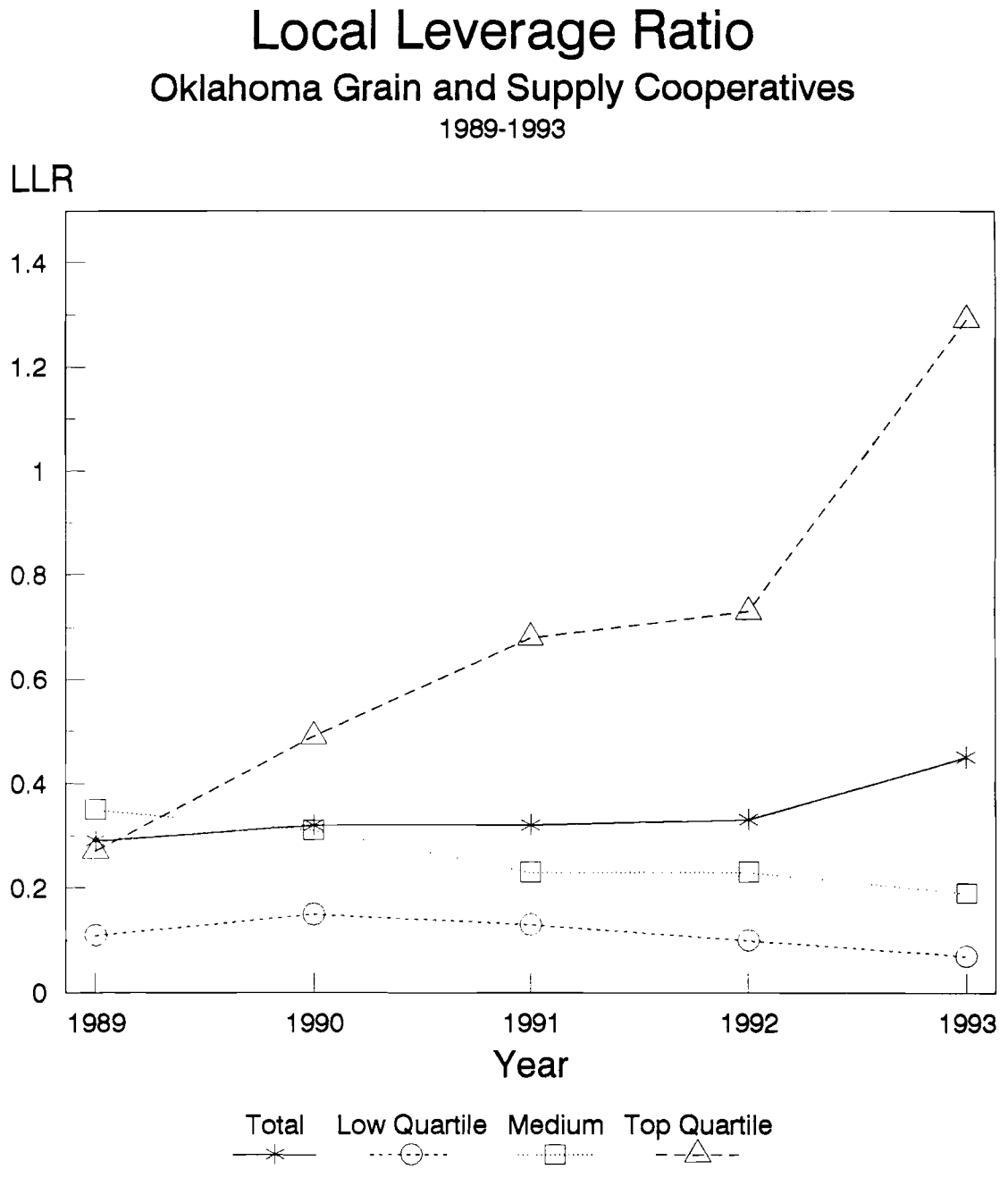

Figure 4. Local Leverage Ratio, 1989-1993.

Critical Issues

The survey requested managers to select three most critical issue areas affecting the survival and development of Oklahoma grain and supply cooperatives and indicate their understanding level of these critical issue areas. Table XXXII provides this information. Environmental regulations, worker safety regulations, competitive situation and changing customer file were the most frequently selected critical issue areas which Oklahoma grain and supply cooperatives faced in 1993. Responding managers identified environmental regulations, worker safety regulations and employee productivity as the top three critical issue areas which they understood best.

Seventy-Four percent of all cooperatives (86 percent of small, 63 percent of medium and 88 percent of large cooperatives) identified environmental regulations as the most critical issue area that affected the survival and development of their cooperatives. This is because chemical use in agriculture had become prominent in recent years (Sanders, Kennel and Smith). The other reason may be government regulations in environmental protection, such as water and soil conservation. These regulations impacted agricultural production and increased cooperatives' operating costs. Medium cooperatives seemed more comfortable with regulations on environment than the other size groups.

The second most critical issue area was worker safety regulations which was shared by 45 percent of all responding

TABLE XXXII

THE IMPORTANCE AND UNDERSTANDING OF CRITICAL ISSUE AREAS SELECTED BY THE NUMBER OF ALL COOPERATIVES

Critical Issue Areas	Number of Cooperatives	
	By Importance	Understanding
Environmental Regulations	23	26
Worker Safety Regulations	14	21
Competition Position	11	7
Changing Customer Profile	11	5
Plant and Equipment Condition	9	7
Mergers	5	3
Employee Productivity	4	9
Employee Training and Development	4	3
Employee Compensation	3	2
Changing Commodity Programs	3	2
Equity Management	3	1
Grain Management	2	
Production and Distribution	1	
Joint Ventures	1	
Transportation	1	

cooperatives (29 percent of small, 50 percent of medium and 50 percent of large cooperatives). This means that worker safety problems in small cooperatives were not as severe as in medium and large cooperatives. More and stricter safety measures came at cost and all of them must be implemented by government legislation and union/association regulations (Sanders, Kenkel and Smith, 1992).

The next most critical issue areas were competitive position and changing customer file. Both of them were shared by 36 percent of cooperatives. Cooperatives' responsibilities in meeting membership needs and community needs put them in a disadvantageous position relative to their competition of investor-owned-firms (Kennel and Sanders, 1992).

Cooperatives have been losing large-size producer farmers in the past decades. As farmers get larger, these larger operations may be less likely to deal with cooperatives (Sanders, Kennel and Smith, 1992). In addition, most cooperatives have had new young farmer members. Over half of the managers perceived that these new members had specific financing and marketing needs. Meeting these specific needs represents a new challenge for cooperative managers.

The other important critical issue areas selected were: plant and equipment conditions, mergers, employee productivity, employee training and development.

When asked about their understanding of these critical issue areas, the responding managers consistently listed environmental regulations as the critical issue area which

they understood best. The managers indicated a much lower level of understanding of their competitive position, the changing customer file of their customer base, employee productivity, and plant and equipment condition. Training in the fields of these critical issue areas needs to be enhanced in the future.

CHAPTER IV

DESCRIPTION OF PROCEDURE AND DATA

This chapter is devoted to describe procedures of the statistical analysis employed by this study. The description of data set is found at the end of this chapter. The objectives of statistical analysis as described by Kachigan (1986) are: (1) data deduction, (2) the service as inferential measuring tool, and (3) the identification of associations or relationships between and among sets of data. Data reduction involves mainly the summary of data. Inference is to provide necessary techniques for making statements of certainty about observations. Identification of associations or relationships that exist between and among sets of observations is, in a broad sense, the goal of statistical analysis.

Associations or relationships uncovered by statistical analysis are basically of two types. In one, a relationship identified between two sets of observations is purely descriptive or "correlational" in nature, and no conclusion about causality can be safely made. There is a second type of relationship, however, in which we can be relatively confident that variables are related in a causal manner. These are experimental relationships (i.e., experimentally based) in

which researchers manipulate the levels of one variable and observe changes in another. This is in contrast to those descriptive or correlational relationships which are simply observed as they occur in the natural environment.

There are many statistical analysis methods available for exploring relationships between variables. Each method has its own virtues and defects. Using a number of alternative methods results in a better understanding of the variables, as each method views a problem from a different angle. Correlation analysis reveals descriptive or correlation associations between variables, and regression analysis probes experimental relationships.

Both correlation analysis and regression analysis are employed in this study to explore relationships between two sets of variables: a set of success measurements (criterion variables or dependent variables) and a set of factors of management practices, policies and competitive situations (explanatory variables or independent variables). Correlation analysis is used to explore relationships between pairs of criterion variables, between pairs of criterion variable and explanatory variable and between explanatory variables. Regression analysis explores relationships between one criterion variable and a set of explanatory variables. Each method of statistical analysis used in this study is discussed independently. All four of the criterion variables and 24 explanatory variables used in this study are described at the end of this chapter.

Description of Statistical Methods

Each method of statistical analysis used in this study is described in this section, with correlation analysis discussed first, followed by regression analysis.

Correlation Analysis

Correlation analysis is one of the most widely used statistical techniques. The purpose of correlation analysis is to merely observe how two variables of interest co-vary in a natural environment. They are random variables in that any given object has a probability of possessing a given value of those variables which is not under control. So correlation analysis makes no distinction between dependent variables and independent variables, and it does not imply causality between the pair of variables, because all are considered to be dependent (Kachigan, 1986; Bender et al, 1989).

For the correlation analysis to be correctly used, several implied assumptions for this statistical method are emphasized:

(1) The total observation is a randomly drawn sample.

(2) The sampled distribution is a multivariate normal distribution.

(3) All variables are dependent variables.

Estimation of linear association between two random variables is indicated by computing a sample correlation coefficient (r). It provides us with some idea of the extent of the relationship between the pair of two dependent

variables X and Y. The formulas for computing sample correlation coefficient is shown in Equation 4.1.

$$r = \frac{(X_i - \overline{X})(Y_i - \overline{Y})}{(n-1) S_x S_y} \qquad (4.1)$$

Where, $(X_i - \overline{X})$ is the deviation of an individual object's value on the X variable from the mean of the that variable, and $(Y_i - \overline{Y})$ is the deviation of that object's value on the Y variable from the mean of that variable. S_x and S_y are the sample standard deviations of X and Y variables respectively, and n is the number of pairs of observations.

The correlation coefficient r is interpreted as follows. If r=1, there exists a perfect positive linear relationship between the two variables, with r=-1 implying a perfect negative relationship. If r=0, then no apparent linear relationship exists between the pair of variables. Higher correlation coefficient means higher linear relationship between two variables, but does not imply any cause and effect relationship, even though a cause and effect relationship may exist between the two variables.

Correlation analysis is employed in this study to explore linear relationships between pairs of criterion variables, between pairs of explanatory variables and between pairs of criterion variables and explanatory variables.

Regression Analysis

Contrasting to correlation analysis, regression analysis (in this study, linear multiple regression is used) explores those experimentally based relationships between a single variable Y (criterion variable or dependent variable) and a set of explanatory variables X's (independent variables). A relationship is usually expressed in the form of a mathematical equation.

In regression analysis, researchers control the values of the variables by assigning them at random to the objects under study, and observe accompanying changes in another variable. Implicit in this type of analysis are the assumptions of a unilateral causality. That is, changes in X's result in changes in Y. This unilateral causality is basic to mathematics underlying regression analysis (Kachigan, 1986; Bender et al, 1989).

One advantage of regression analysis over correlation analysis is its prediction function. While it may seem intuitively clear that the greater the degree of correlation between two variables, the more likely we are to accurately predict values on one from a knowledge of values on the other. In regression analysis we have such a technique.

The overall objectives of regression analysis can be summarized as follows: (1) to determine whether a relationship exists between variables; (2) to describe the nature of that relationship, should one exist (i.e. a possible cause and effect relationship and the direction of the causal

effect), in the form of mathematical equation; (3) to assess the degree of accuracy of description or prediction achieved by regression equation; and (4) in case of multiple regression, to assess the relative importance of the various predictor variables in their contribution to variation in the criterion variable (Kachigan, 1986).

In multiple regression analysis, values of a set of explanatory variables are used to estimate the mean value of a criterion variable. This is accomplished by using a linear function to represent the best-fit of all possible planes passing through the data points. While there are a number of plausible criteria for choosing a best-fitting plane, one of the best and most useful is the least squares criterion. Of all the possible planes, the least squares criterion chooses the plane with the smallest sum of squared deviations of the data points from the fitted plane.

The multiple regression model is expressed in mathematical Equation (4.2).

$$Y_i=\beta_0+\sum_{j=1}^{k}\beta_j X_{ij}+\epsilon_i=\beta_0+\beta_1 X_{i1}+\beta_2 X_{i2}+\ldots+\beta_k X_{ik}+\epsilon_i \qquad (4.2)$$

where,

Y_i is the i^{th} observation of the single criterion variable;

B_0 is the intercept term;

B_j, j=1 to k, are the unknown coefficients that relate the explanatory variables to the single criterion variable;

X_{ij}, i=1 to n, j=1 to k, are the explanatory variables;

k is the number of parameters;

e_i is the unknown random disturbance for the i^{th} observation; and

n is the number of the total observations.

The Ordinary Least Squares technique (OLS) gives the estimation of B_j's,j=1 to k, i.e., B_j's that minimize the sum of the squared residuals. With these B_j's and the corresponding explanatory variables (X_j's), the single criterion variable (Y) can be estimated.

The following assumptions must be satisfied for obtaining the desirable results (Lowe, 1988).

(1) The expected value (or mean) of the disturbance (e_i) is zero.

(2) The disturbances have a common or identical variance and the disturbance are not autocorrelated.

(3) The explanatory variables are uncorrelated with the disturbance term.

(4) The explanatory variables have fixed values in repeated samples.

(5) The explanatory variables are linearly independent.

(6) There must be more observations than the number of explanatory variables.

During the construction of regression model, a lengthy list of potential useful variables should be compiled first. The screening-out process will delete or replace some explanatory variables which, (1) may not be fundamental to the

problem, (2) may be subject to large measurement errors, and/or (3) may effectively duplicate other explanatory variables in the list. The next step is to focus on subsets of the pool of explanatory variables, because the number of explanatory variables that remains after the initial screening is still large. Many of these explanatory variables frequently will be highly interrelated.

A variety of computerized approaches have been developed to assist researchers in reducing the number of explanatory variables to be considered for regression models when these variables are correlated among themselves. The first, which is practical for pools of explanatory variables that are small or moderate in size, considers all possible regression models that can be developed from the pool of potential independent variables and identifies subsets of explanatory variables that are "good" according to a criterion specified by the researcher. The second approach employs an automatic search procedure to arrive at a single subset of the explanatory variables. This approach is recommended primarily for reductions involving large pools of explanatory variables (Neter, et al, 1989).

The second approach, more specifically the stepwise regression technique, is used in this study. In this procedure, those variables already in the equation are reevaluated at each stage. Because of intercorrelation, a variable that was important in the earlier stage may not be important at a later stage of the analysis. In stepwise

regression, before a variable is added, the variable already in the regression with the lowest partial F value is dropped (details could be found at Wesolowsky, 1986; Kleinbaum and Kupper, 1978).

The partial F value is computed by the formula (4.3). Suppose there are k explanatory variables in the model. To test the significance of the d^{th} variable of the set of k variables, the partial F-statistic is given by:

$$F_d = \frac{MSR(X_d / x_1, x_2, \ldots, x_d-1, x_d+1, \ldots, x_k)}{SSE(x_1, x_2, \ldots, x_k)/(n-(k+1))} \qquad (4.3)$$

where,

$MSR\ (X_d\ /\ x_1,\ x_2, \ldots,\ x_{d-1},\ x_{d+1},\ \ldots, x_k)$ =

$SSE\ (X_d\ /\ x_1,\ x_2, \ldots,\ x_{d-1},\ x_{d+1},\ \ldots, x_k)$

$-\ SSE\ (x_1,\ x_2, \ldots, x_k)$;

$SSE\ (x_1,\ x_2, \ldots, x_k)$ is the error sum of squares after fitting the model with all k variables in the model;

$SSE\ (X_d\ /\ x_1,\ x_2, \ldots,\ x_{d-1},\ x_{d+1},\ \ldots, x_k)$ is the error sum of squares after fitting the model with the d^{th} variable removed;

n is the number of total observations; and,

k is the number of explanatory variables in the model.

This process is repeated again, and the model is then refitted with the remaining variables. The F's are obtained and reexamined, and the process continues until no more variables can be added or removed (Lowe, 1988).

Data Set Description

The data set was constructed from two sources: a mail questionnaire survey and financial data from CoBank Wichita Banking Center in Wichita, Kansas. Two time scenarios were analyzed: a five year average of years 1989-1993 and a one year time period of 1993.

The criterion variables used in this study were from the results of the survey. Oklahoma grain and supply cooperative managers identified net savings, service to membership, return on assets, growth in trade were the most important factors they used in measuring the cooperative success (see previous chapter). As service to membership was not quantifiable, it was not included as one of the criterion variables. The four criterion variables used in this study were total net savings before tax (NSVGB4T), total sales (TSALES), return on asset (ROA) and return on local assets (ROLA).

Table XXXIII contains the explanatory variables employed in this study. All of these 24 explanatory variables were related theoretically to a cooperatives' success measurement by previous studies and the results of the questionnaire survey in this study, but the degree of significance they had on the four criterion variables in this was not known. Correlation analysis and regression analysis were used in this study, and Chapter V provides the results of these statistical analysis.

TABLE XXXIII

EXPLANATORY VARIABLES USED IN STATISTICAL ANALYSIS

Explanatory Variables
Number of Cooperative Membership
Percentage of Active Membership
Number of Competitors(Main Location and Branch Location)
Average Volume of Grain Handled, 1989-1993
Operate Branch Locations
Number of Member/Customer Meetings Held in 1993
Number of Board Members Attended Director Development Training programs, 1989-1993
Offer Formal Training or Orientation Programs for New Board Members
Number of days Manager Spent on Informational Meetings, Seminars, etc.
Have Long-Run Strategic Plan
Have Annual Formal Job Appraisal of the Manager
Provide Products and Services Which Lose Money
Have Made Major Investments in Facilities
Percentage of Cooperative Business with Non-Members
Have Formal Equity Retirement Plan
Number of Days Provided for Free Storage of Grain
Percentage of Volume Discount Offered to Members
Current Ratio
Working Capital to Sales
Local Leverage Ratio
Long-Term Debt to Members' Equity
Productivity Ratio
Personnel Expenditure to Total Expenditure
Sales to Total Assets

CHAPTER V

RESULTS OF STATISTICAL ANALYSIS

Correlation Analysis Results

As described in the previous chapter, correlation analysis measures the extent of association or relationship between a pair of variables. These two variables are considered independent and nothing could be derived about the causal effect. Two time scenarios, one is five year average data for the period of 1989 through 1993 and the other is data for the year of 1993, were used in the calculation of correlation coefficients between pairs of criterion variables, between pairs of criterion and explanatory variables and between pairs of explanatory variables. A listing of these variables, code names and their units is given in Table XXXIV.

Table XXXV shows selected correlation coefficients whose absolute values are greater than or equal to 0.5. A complete list of all correlation coefficients is provided in Appendix B.

Among pairs of criterion variables and explanatory variables, the greatest association existed between return on assets(ROA) and return on local assets(ROLA). This means that ROA and ROLA varied closely at the same direction. ROLA differs from ROA by excluding regional patronage income from

TABLE XXXIV

LIST OF VARIABLES, CODE NAMES AND UNITS

Code Name	Variable	Unit
Criterion Variables:		
NSVGB4T	Total Net Savings Before Tax	Dollars
TSALES	Total Sales	Dollars
ROA	Return on Assets	Ratio
ROLA	Return on Local Assets	Ratio
Explanatory Variables:		
MEMBR/T	Number of Cooperative Membership	Members
MEMBR/A	Percentage of Active Membership	Percent
COMPTTR	Number of Competitors	Firms/Cooperatives
VOLUME	of Grain Handled	1,000 Bushels
BRANCH	Operate Branch Location	1=Yes 0=No
MEETNG	Number of Member/Customer Meetings	
BOARD/D	Number of Board Members Attended Director Development Training Programs, 1989-1993	Members
TRNG/BD	Offer Formal Training or Orientation Programs for New Board Members	1=Yes 0=No
MNGR	Number of days Manager Spent on Informational Meetings, Seminars, etc.	Days
PLAN	Have Long-run Strategic Plan	1=Yes 0=No
APRSL	Have Annual Formal Appraisal of the Manager	1=Yes 0=No
PRD/SVC	Provide Products and Service Which Lose Money	1=Yes 0=No
INVST	Have Made Major Investment in Facilities	1=Yes 0=No
N/MEMBR	Percentage of Cooperative Business with Non-members	Percent
EQUTY	Have Formal Equity Retirement Plan	1=Yes 0=No
STRG	Number of Days Provided for Free Storage of Grain	Days
DSCUNT	Percentage of Volume Discount Offered to Members	Percent
CR	Current Ratio	
WCPTL/S	Working Capital to Sales	Percent
LLR	Local Leverage Ratio	
LDT/MEQ	Long-term Debt to Members' Equity	Ratio
PR	Productivity Ratio	
PSNL/EXP	Personnel Expenditure to Total Expenditure	Ratio
TS/TA	Sales to Total Assets	Ratio

TABLE XXXV

SELECTED CORRELATION COEFFICIENTS

Variable Correlation	Correlation Coefficient Five Year Average	1993
Criterion - Criterion Correlation		
Net Savings Before Tax - Return on Assets	0.87	0.83
Net Savings Before Tax - Return on Local Assets	0.80	0.79
Return on Assets - Return on Local Assets	0.93	0.95
Criterion - Explanatory Correlation		
Net Savings Before Tax - Active Membership	***	0.51
Total Sales - Total Membership	0.56	0.56
Total Sales - Branch Operation	0.50	0.50
Total Sales - Member/Customer Meetings	0.63	0.64
Explanatory - Explanatory Correlation		
Member/Customer Meeting - Length of Free Grain Storage	0.57	0.57
Non-Member Business - Formal Equity Retirement Plan	***	-0.67
Long-Term Debt to Members' Equity - Formal Equity Retirement Plan	-0.51	***
Long-Term Debt to Members' Equity - Local Leverage Ratio	0.88	0.95
Current Ratio - Working Capital to Sales	***	0.75
Productivity Ratio - Working Capital to Sales	0.85	***
Productivity Ratio - Total Sales to Total Assets	-0.53	***

*** Indicates the absolute value of correlation coefficient is less than 0.5.

total net savings before taxes and excluding regional investment from total assets. The greatest association between ROA and ROLA means that regional investment was not a significant factor in distinguishing profit generation from local assets or from regional investment.

Other associations among criterion variables that existed were total net savings before taxes and return on assets, and total net savings before taxes and return on local assets. Both of the associations were fairly large, with the former larger than the later, which is justifiable as return on local assets excludes regional patronage income from total net savings before taxes as its numerator in the later case.

Five year average data and 1993 data had similar information on above associations, meaning that time period is not a significant factor in these associations. Total sales had no association with any of the other criterion variables. This means that the volume of trade handled by a cooperative is not significantly related to profitability.

Among pairs of criterion variables and explanatory variables, total net savings before taxes had a positive association with the percentage of active membership for 1993 data. While this association was less significant (0.34) for the five year average data.

Total sales were highly associated with total number of membership, branch operations and number of member/customer meetings held in 1993. The first two associations can be explained by general business practice. The high association

between total sales and number of member/customer meetings merits attention.

Profitability ratios were not significantly associated with other financial ratios in liquidity, solvency and efficiency.

Among explanatory variables, long-term debt to members' equity was highly related to local leverage ratio for five year average data. This is expected as both are measurements of a cooperative's long-term financial strength and stability. A similar relationship existed between current ratio and working capital to sales for the 1993 data, as both of them are measurements of short-term financial strength.

Long-term debt to members' equity was negatively associated with a formal equity retirement plan for the five year average data. This means that a cooperative that has long-term financial strength is likely to have a formal equity retirement plan. Formal equity retirement plan in the 1993 data was negatively associated with non-member business. This means that a cooperative with a formal equity retirement plan tends to have less percentage of business dealt with non-members.

The length of free grain storage was positively associated with the number of member/customer meetings held in 1993. This relationship was true only for the five year average data.

Working capital to sales was also highly related to productivity ratio for the five year average data. This means

that a cooperative with more working capital to meet daily business obligations is usually the one with bigger expenses in generating each dollar of its sales. Reducing business expenses generally contradicts with raising working capital to sales. Managers need to work out the appropriate level of working capital to sales.

Productivity ratio was also negatively associated in long-run with total sales to total assets ratio. This is because a cooperative with bigger expenses in generating each dollar of its sales is likely to have less total assets turnover ratio. It is within our expectation that higher expenses in a business operation reduce assets management efficiency.

Regression Analysis Results

Multiple linear regression analysis was used to determine the extent of the relationships between the criterion variables and the explanatory variables. All the explanatory variables were hypothesized to be related to the criterion variables by previous studies and by the results of this questionnaire survey. The technique of stepwise regression procedure was employed to choose the best subset of the explanatory variables to explain the variation of criterion variables.

The relationships are expressed in mathematical equations. SAS, a computer software package, was used to estimate the coefficients and signs of the explanatory

variables. All the variables which are significant at 0.15 level are included in the regression equations. The t-values are in parentheses directly below the explanatory variables, with most of them being statistically significant at the 0.05 probability level. R^2 and F-values are also presented below each equation.

Albeit the regression equations have the function of predicting the criterion variables by the knowledge of explanatory variables, as illustrated in Chapter IV, the discussion will focus on the sign and the explanation of relationships between the criterion variables and explanatory variables. This is because the purpose of this study is to explore those relationships which may exist between each criterion variable and the set of explanatory variables, instead of trying to predict the value of each criterion variable by a set of explanatory variables.

The results are presented by the success measurements which were specified as important factors to measure cooperative success by the responding managers. These success measurements were total net savings before tax(NSVGB4T), total sales(TSALES), return on assets(ROA) and return on local assets(ROLA). Each success measurement contains two equations, one for five year average data and the other for the data of the year 1993. The subscripts are used to denote the number of years of data that was averaged and used in the corresponding model.

Total Net Savings before Tax

Equations (5.1a) and (5.1b) shows relationships between total savings before tax and a set of explanatory variables

$$NSVGB4T_5 = -621{,}551 + 2{,}910\,MEMBR/A - 4{,}506\,COMPTTR + 15{,}218\,MEETNG$$
$$(5.146) \quad (-2.724) \quad (7.290)$$
$$+10{,}093\,MNGR + 119{,}136\,INVST + 7{,}028\,N/MMBR - 3{,}473\,PLAN$$
$$(7.212) \quad (4.397) \quad (6.786) \quad (-7.511)$$
$$-13{,}745\,DSCUNT - 22{,}783\,CR + 1{,}352{,}526\,WCPTL/S$$
$$(-4.574) \quad (-2.232) \quad (4.279)$$
$$-332{,}152\,LDT/MEQ + 109{,}174\,TS/TA$$
$$(-4.109) \quad (5.125)$$

$$R\text{-}SQUARE = 0.6952, \; F\text{-}VALUE = 19.38$$

(5.1a)

$$NSVGB4T_1 = -410{,}482 + 4{,}192\,MEMBR/A - 126{,}313\,TRNG/BD + 7{,}457\,MNGR$$
$$(4.374) \quad (-3.197) \quad (3.018)$$
$$-214{,}812\,LDT/MEQ + 115{,}807\,TS/TA$$
$$(2.272) \quad (3.081)$$

$$R\text{-}SQUARE = 0.7466, \; F\text{-}VALUE = 10.02$$

(5.1b)

for the five year average data and 1993 data, respectively. Percentage of active membership, number of days managers spent on informational meetings, seminars, etc. and total assets turnover are all positively related to net savings before taxes for both time scenarios. This means that members' active involvement in cooperatives is an important factor for generating profit. Total assets turnover is also a positive factor. Managers' knowledge in management, competition and critical issues facing cooperatives from meetings and seminars helps cooperatives raise their profit levels.

Investment in plants and facilities positively relates to net savings before taxes, but it does not relate significantly in the short term (one year period). This could be explained

by the fact that the function of investment takes years to take effect, as most of the investment was for updating obsolete equipment, as managers indicated earlier in Chapter III.

Percentage of business volume with non-members is positively related to net savings before taxes for the five year average data. The positive relationship between working capital to sales and net savings before taxes exists also in the five year average data. Keeping an appropriate level of working capital is important to gain long-term profitability.

For the five year average data, number of competitors, programs in free grain storage and volume discounts are all negatively associated with net savings before taxes. The existence of competitors (independent firms or other cooperatives) threatens the ability for cooperatives to make a profit. Programs in free storage of grain handled and volume discount, as expected, decrease the profit level.

Long-term debt to members' equity is negatively related to net savings before taxes. A higher level of debt in a cooperative reduces its long-term financial stability and strength and hence decreases the profitability for the cooperative.

Total Sales

Equations (5.2a) and (5.2b) give the relationships between total sales and explanatory variables. Like their effects on net savings before taxes, total assets turnover and

active membership have positive effects on total sales, but the effect of member/customer meetings is not significant for the one year period.

$$
\begin{aligned}
TSALES_5 = {} & -4{,}184{,}508 + 22{,}963\,MEMBR/A + 1.367\,VOLUME \\
& \qquad\qquad\qquad\quad (2.328) \qquad (5.733) \\
& +1{,}347{,}640\,BRANCH + 311{,}599\,MEETNG + 1{,}121{,}203\,TRNG/BD \\
& \quad (3.05) \qquad\quad (11.432) \qquad\quad (2.764) \\
& -84{,}319\,MNGR - 4{,}702{,}572\,PLAN - 3{,}214{,}547\,PRD/SVC \\
& \quad (-2.609) \qquad (-9.487) \qquad (-3.731) \\
& +1{,}266{,}460\,INVST + 1{,}595{,}393\,EQUTY - 377{,}125\,DSCUNT \\
& \quad (2.780) \qquad\quad (2.466) \qquad\quad (-4.654) \\
& -874{,}082\,LLR + 7{,}824{,}063\,LDT/MEQ + 9{,}003{,}350\,PR \\
& \quad (2.392) \qquad\quad (3.237) \qquad\quad (2.936) \\
& +3{,}635{,}988\,TS/TA \\
& \quad (9.381)
\end{aligned}
$$

$$R\text{-}SQUARE = 0.8957,\ F\text{-}VALUE = 56.66 \qquad (5.2a)$$

$$
\begin{aligned}
TSALES_1 = {} & 7{,}053{,}409 + 367{,}586\,MEETNG - 4{,}875493\,PLAN \\
& \qquad\qquad\quad (4.886) \qquad (-3.899) \\
& +3{,}637{,}718\,EQUTY - 19{,}309{,}044\,PSNL/EXP \\
& \quad (2.858) \qquad\quad (-1.749) \\
& +3{,}064{,}138\,TS/TA \\
& \quad (2.771)
\end{aligned}
$$

$$R\text{-}SQUARE = 0.7497\ F\text{-}VALUE = 10.18 \qquad (5.2b)$$

The number of member/customer meetings and a formal equity retirement plan have all positive associations with total sales for both time scenarios.

The volume of grain handled, branch operations, formal training of board members, investment in plants and facilities are all contributing positively to the level of total sales for the five year period only. These variables are not contained in the results of the 1993 data, which means that their functions in promoting business growth can not be seen in short-term period.

In contrast to its effect on net savings before taxes, long-term debt to members' equity had a positive relation with total sales. This could be explained by the possibility that cooperatives borrow more money for business trading in grain and agricultural input products.

A long-run strategic plan shows to be negatively related to total sales in both the long-term and one year data sets. This is probably because a cooperative that emphasizes business growth usually does not have a strategic plan for the long-term development of the cooperative. This assertion is enhanced by the fact that managers' knowledge in management, competition and critical issues was negatively related to total sales but related to the net savings before taxes.

Other negative factors which are significant in the five year period data are volume discount program, unprofitable products and services and local leverage ratio. A cooperative with less total sales is likely to provide a larger percentage volume discount for its customers to compete with other firms. A cooperative providing unprofitable products and services may emphasize membership services more than growth in trade. The negative relationship of total sales with local leverage ratio means that a cooperative with weak long-term financial strength will eventually threaten its business trade in the long-run period.

Personnel expenses to total expenditure is negatively related to total sales, as a cooperative with larger volume of business tends to have better personnel management efficiency

because of economies of size.

Return on assets

How return on assets is affected by the explanatory variables is shown by equations (5.3a) and (5.3b).

$$ROA_5 = -0.0463 + 0.0008\,MEMBR/A - 0.00000002\,VOLUME + 0.0001\,MEETNG$$
$$(3.306) \qquad (-2.807) \qquad (1.643)$$
$$-0.0086\,BOARD/D + 0.0024\,MNGR + 0.0139\,INVST - 0.0096\,CR$$
$$(-2.953) \qquad (4.749) \qquad (1.5) \qquad (-2.619)$$
$$+0.4402\,WRKCPT/S - 0.1188\,PR + 0.02\,TS/TA$$
$$(3.353) \qquad (-1.789) \qquad (2.098)$$

$$R\text{-}SQUARE = 0.4834, F\text{-}VALUE = 9.73 \qquad (5.3a)$$

$$ROA_1 = -0.0463 + 0.0008\,MEMBR/A - 0.00000002\,VOLUME - 0.0532\,BRANCH$$
$$(2.696) \qquad (-3.055) \qquad (-4.264)$$
$$-0.0143\,BOARD/D + 0.0028\,MNGR/D + 0.0463\,TS/TA$$
$$(-3.867) \qquad (4.129) \qquad (4.375)$$

$$R\text{-}SARE = 0.8103, F\text{-}VALUE = 11.39 \qquad (5.3b)$$

The percentage of active membership, mangers' knowledge in competition, management and critical issues and etc. had all positive relationships with return on assets for both time scenarios. Volume of grain handled had a negative effect on return on assets. This is probably because large volumes of grain handled is financed by borrowed money which reduces the return on assets.

Investment, number of member/customer meetings, working capital to sales all had positive associations with return on assets for five year average data, while current ratio had a negative effect on return on assets, because keeping larger current assets to meet current liabilities tends to reduce

profitability. But an appropriate level of working capital to pay daily obligations is necessary and helpful for long-term profitability, as Equation (5.3a) shows.

The number of seminars attended by Board members had a negative relationship with return on assets for both time scenarios.

The productivity ratio is a negative factor in contributing to return on assets. This is consistent because the productivity ratio measures the expenses per each dollar of sales the cooperative may have. But this relationship is not significant in the one year period.

Return on Local Assets

Return on local assets are similarly explained by the explanatory variables as return on assets. Although there are some exceptions. The percentage of active membership is not significantly related to return on local assets. This is probably because return on local assets does not consider

$$ROLA_5 = \underset{}{-0.0381} + \underset{(2.832)}{0.0024}MEETNG - \underset{(-3.543)}{0.0145}BOARD/D - \underset{(-1.5)}{0.019}TRNG/BD + \underset{(5.098)}{0.0039}MNGR - \underset{(-2.534)}{0.0143}CR + \underset{(5.495)}{0.9106}WCPTL/S - \underset{(-2.352)}{0.2161}PR + \underset{(1.865)}{0.0244}TS/TA$$

$$R\text{-}SQUARE = 0.4181, F\text{-}VALUE = 10.44 \qquad (5.4a)$$

$$ROLA_1 = \underset{}{-0.0595} - \underset{(-4.709)}{0.092}BRANCH - \underset{(-3.788)}{0.0218}TRNG/BD + \underset{(2.857)}{0.0032}MNGR + \underset{(5.317)}{0.0913}TS/TA$$

$$R\text{-}SQUARE = 0.7327, F\text{-}VALUE = 12.34 \qquad (5.4b)$$

investment activities in regionals. Formal training of new Board members is negatively associated with return on local assets.

Comparison of Regression Analysis

Table XXXVI gives a comparative summary of the regression analysis relationships. Positive or negative signs and the R^2 values for each of the equations is presented.

The R^2 values for five year regression equations are generally higher than those for one year period, with the exception for return on local assets. Higher values of the R^2 may be accounted for by the larger population of observations. The R^2 values for return on assets are higher than those for return on local assets, which means that regression equations for return on assets give better estimation than the regression equations for return on local assets.

From Table XXXVI, we can see that total assets turnover ratio has positive contribution on all cooperative success measurement factors.

The other important positive factors are percentage of active membership, number of member/customer meetings held and investment. All three of these factors are associated together. Members' active involvement in cooperative activities are important for success measurements except return on local assets. Managers' knowledge in management, competition, critical issues and etc. from attending

TABLE XXXVI

COMPARATIVE SUMMARY OF REGRESSION ANALYSIS
RELATIONSHIPS: SIGNS AND R^2 VALUES

Explanatory Variables		Net Savings before Tax		Total Sales		Return on Assets		Return on Local Assets	
		Five Year	1993	Five Year	1993	Five Year	1993	Five Year	1993
MEMBR/A	Active Membership	+	+	+		+	+		
MEETNG	Member/Customer Meetings	+		+	+	+		+	
COMPTTR	Number of Competitors	-							
MNGR	Managerial Meetings and Seminars	+	+	-		+	+	+	+
INVST	Investment in Plants and Facilities	+		+		+			
N/MEMBR	Business with Non-members	+							
STRG	Free Grain Storage	-							
DSCUNT	Volume Discount	-		-					
CR	Current Ratio	-		-		-			
WCPTL/S	Working Capital to Sales	+				+		+	
LDT/MEQ	Long-term Debt to Members' Equity	-	-	+					
TS/TA	Total Sales to Total Assets	+	+	+	+	+	+	+	+
TRNG/BD	Formal Training for Board Members		-	+				-	
BOARD/D	Board Development Programs					-	-	-	
PLAN	Long-term Strategic Plan			-	-				
EQUTY/R	Formal Equity Retirement Plan			+	+				
PSNL/EXP	Personnel to Total Expenditure				-				
VOLUME	Volume of Grain Handled			+		-	-		
BRANCH	Branch Operations			+			-		-
PRD/SVC	Unprofitable Products and Services								
LLR	Local Leverage Ratio			-					
PR	Productivity Ratio			+					
R^2	R-Square Value	0.70	0.75	0.75	0.48	0.90	0.81	0.42	0.73

informational meetings and seminars is helpful for cooperative profitability, but its effect on total sales is negative for the long-term period and is not significant for the one year time period. Investment has a similar impact for all success measurement factors, except return on local assets, for only the five year period level. The impact of investment is very consistent with that of active membership, but the effect of investment takes years to be seen. With close relationship to active membership, number of member/customer meetings held contributes to all success measurement factors only for the five year period. This is because a cooperative with a high percentage of active membership would generally like to have more member/customer meetings.

Another important positive factor is working capital to sales which impacts profitability only for the five year time period. Keeping an appropriate level of working capital to sales for a cooperative's short-term financial health is important for profitability. Managers need to better control the quantity of working capital so that it is not too much (working capital could yield other returns) nor too little (must meet daily operation obligations).

The current ratio is negatively related to total savings before taxes, total sales and return on assets. All are significant for the five year period. This means that having a high level of current assets to meet current liabilities is not a desirable policy for cooperative profitability.

Long-term debt to members' equity plays an undesirable

role in making total net savings before taxes for both time scenarios. But long-term debt to members' equity does not have any impact on return on assets and return on local assets. Long-term debt to members' equity has a positive impact on total sales for the five year period.

Providing volume discounts reduces net savings before tax and total sales. These impacts are not seen in short term periods.

Other negative factors which impact cooperatives' profitability are volume of grain handled, branch location operation and free grain storage program. The volume of grain handled only influences return on assets, and the negative effect of branch location operations is not significant at five year time periods. Obviously, volume of grain handled and branch location operations are positively associated with total sales.

Board development programs are all negatively associated with return on assets and return on local assets, and formal training for Board members has a positive effect on total sales and negative impact on net savings before taxes. This may indicate that Board members place a greater emphasis on growth in trade than managers.

CHAPTER VI

SUMMARY, IMPLICATIONS, AND FUTURE RESEARCH

The general objective of this study is to analyze cooperative management practices, policies and competitive situations which are related to cooperative success measurements by surveying Oklahoma grain and supply cooperatives. Three specific objectives have been attained:

(1) Identify those descriptive aspects related to the survival and success of grain and supply cooperatives.

(2) Identify cooperative management practices, policies and competitive situations which, as perceived by responding Oklahoma grain and supply cooperative managers, were related to cooperative survival and success and then describe the financial performance of these cooperatives.

(3) Quantify the relationships of cooperative management practices, policies and competitive situations with cooperative financial strength and performance.

Specific objective one was accomplished by a literature review, on which the questionnaire survey was based. Chapter III contains the results of the questionnaire survey and the

analysis of the financial data for Oklahoma grain and supply cooperatives which satisfy objective two. The description of the aspects related to the survival and success of grain and supply cooperatives is detailed in the following areas: General Descriptive Information, Membership, Boards of Directors and Managers, Goals and Objectives, Management Practices and Policies, Competitive Situations, Financial Aspects and Critical Issues. All the tables in Chapter III summarize the results of the survey and analysis of financial data.

The managers were asked to rank the most important factors to measure the cooperatives' success. Net savings and service to membership were ranked as the most important factors. Other important factors were growth in trade and return on assets. There was very little difference in the ranking of success measurements across the size of the cooperatives. Net savings was ranked first which implied that the primary goal of a cooperative, as a business firm in modern society, was to make profit. Many cooperatives ranked service to membership as the first or second most important factor determining a cooperative's success. This is consistent with the philosophy of cooperatives. This explains the existence of unprofitable products and services and the free grain storage program provided by cooperatives for their members.

In a similar study more than a decade ago (Lowe, 1988) growth in trade was rarely ranked as an important factor, but

in this study, growth in trade was ranked as the third most important factor in determining a cooperative's success. This could be explained by the intensive competition facing cooperatives. As cooperatives experience loss or potential loss of large-scale farmer members, they must expand services to keep these large-scale members. The competition from privately owned firms makes this situation more critical.

In this challenging time for cooperative survival and development, active involvement of members in cooperative activities is very important. The survey showed the average percentage of active membership at 53 percent, with large cooperatives as high as 61 percent.

Managers indicated that the most frequently occurred comments and criticisms were: (1) input prices were not competitive (prices were too high) and (2) some services needed but not provided. Cooperative members demand services, which is consistent with the fact that service to membership was ranked as the second important factor for cooperative success.

About 90 percent of the cooperatives have added new young farmer members in the last two years, of which 60 percent requested specific needs from the cooperatives. These specific needs were concentrated in the fields of financing and marketing services.

The overall attitude toward merger opportunities was very restricted. Cooperative members kept the most conservative attitude toward merger, followed by Board members and then by

managers. The reasons cited were: (1) bad experiences in the past, and (2) "should concentrate on the current business field".

To evaluate the financial strength and performance of Oklahoma grain and supply cooperatives, 17 financial variables were analyzed under four financial categories: profitability, liquidity, solvency and efficiency. Medium size cooperatives had the largest return on assets for the five year average data, followed by small cooperatives then by large cooperatives. Return on local assets followed the same pattern. This indicated that large cooperatives were at the worst position in terms of profitability. For cooperatives' short-term financial strength and stability, small cooperatives had the largest current ratio, followed by medium and then by large cooperatives. This order of ranking also held for quick ratio and working capital to sales. In terms of solvency, large cooperatives had the largest local leverage ratio, followed by medium and then by small cooperatives. This indicated that cooperatives' long-term financial strength and stability increased with the size of the cooperatives. Figure 2 through 4 show the changing trends of return on local assets, current ratio and local leverage ratio, respectively, over the period of 1989-1993. For return on local assets, there was an overall increasing trend except in the year 1992. Overall there was a little improvement in the current ratio for the same period which was shown in Figure 3. Large cooperatives had a big improvement in local leverage ratio,

while the situation of local leverage ratio for medium and small cooperatives worsened in the five year period.

Managers indicated the most important critical issues facing cooperative survival and development as: environmental regulations, worker safety regulations, competition position and changing customer profile. They reported that their understanding levels in competition position and changing customer profile was not as high as it could be.

The third objective is to quantify the relationships of management practices, policies and competitive situations with cooperatives financial strength and performance. Chapter V contains the information of these relationships.

Summary of Statistical Analysis

Correlation analysis and regression analysis were used to estimate the relationships between pairs of criterion variables, between pairs of criterion variable and explanatory variable and between explanatory variables. Regression analysis was used to estimate each criterion variable by a set of explanatory variables. Stepwise regression technique was used to select the best set of explanatory variables.

The data set was constructed from two sources: a questionnaire survey and five year financial data from CoBank system. Four criterion variables used were net savings before taxes, total sales, return on assets and return on local assets. These are the quantifiable success measurement factors, which the cooperative managers had specified in the

survey, that they used in determining cooperatives success. Service to membership was not used as it is not quantifiable, though it is an important success measurement factor. Twenty-four explanatory variables were used in the statistical analysis (Table XXXII). These variables are related to the success measurement factors by previous research and the results of the questionnaire survey of this study. All of the criterion variables were analyzed under two time scenarios: one time scenario is for the five year average data and the other time scenario is for one year data in 1993. Correlation analysis results was shown in Table XXXIV. Only correlation coefficients whose absolute values were greater than or equal to 0.5 were listed.

Between pairs of criterion variables, return on assets and return on local assets had the largest correlation coefficient. Net savings before taxes had significant coefficients with both return on assets and return on local assets. All of the correlation existed at about same degree for both two time scenarios. Total sales had no significant relationship with any of the profitability variables.

Only four explanatory variables correlated to any of the criterion variables. Active membership related to net savings for 1993 data, branch location operation and member/customer meetings held were all positively correlated with total sales for both time scenarios.

Between explanatory variables, member/customer meetings held had a positive correlation with the length of time free

grain storage was provided. This indicates that a cooperative with more meetings was likely to put more emphasis on membership service such as free grain storage. Long-term debt to members' equity had a positive relation with local leverage ratio, as both of them are solvency ratios. These two relationships were significant for both five year average data and 1993 data.

Working capital to sales had a positive relationship with the current ratio for 1993 data only. It also related to the productivity ratio for the long-term data.

Formal equity retirement plan had negative correlations with both non-member business and long-term debt to members' equity for the five year average data.

A negative correlation also existed between productivity ratio and total sales to total assets. This means that asset management efficiency and operation costs were changing in opposite directions.

Table XXXV summarized the results of the regression analysis. Total sales to total assets had positive contributions on all the criterion variables for both time scenarios. Other important factors were active membership, managerial meetings on management, competition, critical issues, member/customer meetings held, and working capital to sales. The impacts of active membership and managerial meetings was for both long-term and short period. Member/customer meetings only had a relationship in the long-term data.

Investment was an important factor contributing to net saving before taxes, total sales and return on assets but not return on local assets. Formal equity retirement plan had a positive relation with total sales for both time scenarios.

The important negative factors were volume discount, current ratio, Board member training and Director development programs attended by Board members. Volume discounts decreased the net savings, as expected. A cooperative with big volume discounts did not yield big sales. This could mean that a cooperative with less business volume is likely to raise the percentage of discount to keep business. Both of the Board member training and Director development programs had negative relationships with profitability ratios.

Policy Implications

Table XXXVII summarizes policy implications from the results of this study. Total sales to total assets plays an important role for both profitability and business sales for both long-term and short periods. Total asset turnover assesses the firms' effectiveness in managing the amount of assets relative to the amount of sales. Board members and managers can improve asset management efficiency by better inventory management, account receivables management, credit policies, and fixed assets management.

Active membership and member/customer meetings are associated with each other, both contributing to profitability and total sales. Board members and managers should work on

TABLE XXXVII

POLICY IMPLICATIONS

Implications
Total asset turnover plays a positive role for all profitability variables and total sales, for both long-term and short period.
Active membership and member/customer meetings relate positively to profitability and total sales. The effect of member/customer meetings is not immediate. The long-term member involvement and loyalty need to be emphasized.
Managers' knowledge in management, competition situation, policy and critical issues are important factors in contributing to cooperative profitability. Their ability to interact with the outside business society helps cooperatives attain their goals.
Total sales does not associate with profitability, even though though it is selected as one of the most important success factors. Board members and managers should determine if total sales is a correct goal to seek according to the specific conditions of their cooperatives.
The impact of working capital to sales is critical. High levels of it help cooperatives increase profitability in the long-term period. But a big current ratio decreases net savings and total sales.

how to encourage their members to actively participate in cooperative activities like investment and management control. This implication is enhanced by the effect of investment on profitability and total sales, even though the effect of investment is not immediate. Cooperatives need to respond timely with large scale farmer members to increase their

involvement and loyalty. The impact of active membership is both long-term and short periods. Member/customer meetings take several years to take effect.

Informational meetings on management, competition, critical issues and etc. attended by managers have long-term and short period impacts on profitability variables, but total sales. As the business environmental conditions complicate the role of managers, success is getting more important than ever. Managers' ability to interact with the business environment will help their cooperatives attain their goals.

Total sales had no correlation with any of the profitability variables. It does not help increase cooperatives' profitability levels. But it was selected by many cooperatives as the important success factor. This means that growth in trade becomes more important as the competition environment increases. Board members and managers should determine if growth in trade is a correct goal for their cooperative according to the specific conditions of their cooperative.

Working capital to sales has a positive long-term relationship on all profitability variables, while current ratio has negative impact on net savings before taxes and total sales. This information advises Board members and managers that an appropriate level of working capital to sales is critical for profitability. A high level of working capital to sales helps increase profitability, but too high of a level of working capital tends to increase current ratio

which, in turn, decreases the net savings and total sales. Managers should compare their working capital level both with their previous levels, and with successful cooperatives who have high profitability levels, then determine the best level of working capital for their cooperative.

Limitations

The implications in this study can be tested as hypotheses which need to be tested in a broader population either geographically or across industry.

The results of this study were mainly based on managers' assessment of management practices, competition situation, policies and critical issues facing cooperatives. In addition, most of the explanatory variables in these fields were evaluated at one point in time. Further research might be able to evaluate these observations over a several year period.

The roles of Board members training and Director development programs had negative effects on return on assets and return on local assets. This result can not be explained reasonably. So another survey administered to Board members and cooperative members may be beneficial.

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APPENDIXES

APPENDIX A

COOPERATIVE SURVEY

COOPERATIVE SURVEY

Name of Cooperative _____

Name of Manager _____

Phone Number (___) _____

1. What is the total number of members that belong to your cooperative? ___.

2. What percentage of your total membership are active members in your cooperative? ___.

3. Please specify the number of employees in your cooperative. Full-time ___; Part-time ___.

4. What percentage of your grain originates within the following distances of your:

	Main Location:	**Branch Locations:**
5 mile radius area	_____	_____
10 mile radius area	_____	_____
15 mile radius area	_____	_____

5. How many competitors for grain do you have within the following distances of your:

	Main location:	**Branch locations:**
5 mile radius area	_____	_____
10 mile radius area	_____	_____
15 mile radius area	_____	_____

6. The average volume of grain handled by your cooperative over the last 5 years was _____bushels.

7. Does your cooperative operate any branch locations? Yes ___; No ___.
   If yes, how many are open year around? _____;
   how many are open seasonally? _____.

8. Please indicate the primary business areas in which your cooperative was involved in 1993.
   - ___ grain handling and storage
   - ___ fertilizers and chemical sales
   - ___ fuel and/or tires
   - ___ fertilizer and chemical application service
   - ___ feed and livestock supplies
   - ___ other (Please specify.) _____

9. Which statement best describes your cooperative's relationship with large grain producers in your trade area:
   - ___ Our cooperative is attracting and maintaining large scale producer members.
   - ___ Our cooperative is losing large scale producer members to competing firms in our trade area.
   - ___ Large producers are bypassing both our local cooperative and local independent firms and hauling directly to regional terminals or port facilities.

10. In the past year, how many member/customer meetings did your cooperative hold? (e.g., annual meeting, informational meetings on feed, fertilizer, etc.) ___ Meetings

11. As a manager, how do you perceive the membership commitment to your cooperative?
    ___ Very strong; ___ Strong; ___ Weak; ___ Very weak.

12. In my cooperative the manager's responsibilities and the board's responsibilities are well defined and understood. ___ Strongly agree; ___ Agree; ___ Disagree; ___ Strongly disagree.

13. In my cooperative, the Board of Directors sets reachable goals, allows manager flexibility, and provides

resources needed to achieve those goals.
___ All of the time; ___ Most of the time; ___ Some of the time; ___ Never.

14. In my cooperative, formulating and implementing strategies depend on the team work between the board and the manager. ___ All of the time; ___ Most of the time; ___ Some of the time; ___ Never.

15. How is the relationship between the Board of Directors and the manager? (Check one.)
___ Always supportive; ___ Sometimes supportive;
___ Sometimes conflicting; ___ Always conflicting.

16. Of the _____ members of my cooperative's Board of Directors, _____ of those Board Members have attended a Director Development Training program within the last 5 years.

17. Has your Board of Directors participated in other training activities within the last five years?
___ Yes; ___ No.

18. Does your cooperative have a term limit for board members?
___ Yes; ___ No. If yes, how many consecutive terms?___ Each term is ___ years long.

19. a. Are there formal training or orientation programs for new board members? ___ Yes; ___ No.
b. Does your cooperative have associate board members who attend board meetings but are not permitted to vote? ___ Yes; ___ No.

20. As a manager, how many days during the past year did you spend at informational meetings, seminars, etc.? ___ Days.

21. My level of salary and compensation in relationship with my counterparts in other firms of similar size is:
___ High; ___ About the same; ___ Low; ___ Don't know.

22. My level of salary and compensation is competitive with that of my counterparts in other cooperatives.
___ Strongly agree; ___ Agree; ___ Disagree; ___ Strongly disagree.

23. Does your cooperative have a long-run strategic plan? ___ Yes; ___ No.
If yes, for how long? ___ 2-3 years; ___ 4-5 years; ___ more than 5 years.

24. Does your cooperative have written job descriptions? ___ Yes; ___ No.

25. Does your cooperative have an annual formal job appraisal of the manager? ___ Yes; ___ No.

26. What percentage of your cooperative's net margin is generated by each of the following:
___ Large Scale Producers; ___ Medium Scale Producers;
___ Small Scale Producers; ___ Part-Time Producers.

27. Please rank in order of importance the following factors you use in measuring your cooperative's success. (Please give those of equal importance the same number in ranking.)
___ growth in trade
___ net savings
___ patronage refund cash reimbursement
___ return on assets
___ return on equity
___ service to membership
___ other (Please specify) _____

28. a. Does your cooperative provide products and services which lose money? ___ Yes; ___ No.
b. If yes, please list major services which lose money. (Please rank by the extent of loss, with the greatest loss ranked first.)
_____
_____
_____

c. Do you feel that these services should be discontinued? ___ Yes; ___ No.
If no, please check the reason(s) which apply.
___ complement profitable services
___ not available locally
___ minor part of total operations
___ temporally unprofitable
___ in order to serve the membership
___ other (Please specify) _____

29. Please rank by frequency (1 being most frequent) the type of comments and criticisms customers offer.
___ cooperative input prices not competitive (prices are too high)
___ other services needed but not provided
___ poor employee service
___ poor advice
___ wheat offers not competitive (prices are too low)
___ others (Please specify) _____

30. During the last five years, has your cooperative made any major investments in facilities, i.e., either plant or equipment? __ Yes; __ No.
If yes, for what reason(s)
___ increase member services
___ diversification
___ reduce labor cost
___ increase volume in same business areas
___ update obsolete equipment
___ others (Please specify) _____

31. Has your cooperative formally considered diversifying into non-traditional or non-agricultural enterprises in the past 5 years? ___ Yes; ___ No. If yes, please specify enterprises. _____
_____
_____

32. What percentage of your cooperative's business is with non-members? ___%.

33. Does your cooperative have a formal equity retirement plan?
___ Yes; ___ No. If yes, it is based on:
___ percentage of all equities
___ age of stock (revolving fund)
___ age of patron
___ special situations (retirements, left farming, estates)
___ others (Please specify) _____

34. What kind(s) of financial management control(s) do you use in your cooperative? (Check as many as applicable)
___ actual costs compared to budget
___ analyze financial ratios on a regular basis
___ analyze volume and cost trends
___ monitor average collection period
___ age accounts receivable
___ others (Please specify) _____.

35. Does your cooperative provide free storage of grain?
___ Yes; ___ No. If yes, for how long is free storage available? Up to ___ days

36. Check all the grain marketing alternatives you use in your cooperative.
___ back to back
___ storage hedge
___ minimum price contract
___ deferred price
___ forward contract-wheat purchase

___ forward contract-wheat sold
___ unprotected
___ other (Please specify) _____

37. When purchasing crops from your members, your cooperative's primary pricing strategy is: (Check one)
___ set the price for the competition
___ set the price equal to the competition
___ set the price above the competition
___ follow the competitions' pricing
___ maintains a constant basis in relation to the Texas Gulf price
___ is not a consistent price leader or follower

38. When pricing agricultural inputs, your cooperative's primary pricing strategy is (Check one.)
___ set the price for the competition
___ set the price equal to the competition
___ set the price below the competition
___ follow the competition's pricing
___ pricing above cost
___ other (Please specify) _____
___ does not apply

39. Do you agree that the failure to vary prices across locations and/or use volume discounts places cooperatives at a disadvantage with respect to investor owned competitors? ___ Yes; ___ No.

40. Do you agree that your members are willing to make sufficient equity investment through retained patronage refunds and other methods to keep your cooperative a viable entity in the long-run period?
___ Strongly agree; ___ Agree; ___ Disagree; ___ Strongly disagree.

41. How many members make up 80 percent of your cooperative's sales volume?
___ 25 or less, ___ 26 to 50, ___ 51 to 75, ___ 76 to 100, ___ over 100.

42. Would you and your Board of Directors be receptive to merger opportunities with neighboring cooperatives?
___ Yes; ___ No. If no, explain. _____

_____.

43. Are your members receptive to merger opportunities with neighboring cooperatives?
___ Yes; ___ No. If no, explain. _____

_____.

44. In my cooperative, the members' attitude toward mergers is that (Specify one of the following):
a. ___ we should actively pursue opportunities for merger,
b. ___ we should consider favorable merger opportunities which are presented to us,
c. ___ we should concentrate on existing operations and existing trade territory.

45. In my cooperative, the Board members' attitude toward mergers is that (Specify one of the following):
a. ___ we should actively pursue opportunities for merger,
b. ___ we should consider favorable merger opportunities which are presented to us,
c. ___ we should concentrate on existing operations and existing trade territory.

46. In my cooperative, the manager's attitude toward mergers is that (Specify one of the following):
a. ___ we should actively pursue opportunities for merger,
b. ___ we should consider favorable merger opportunities which are presented to us,
c. ___ we should concentrate on existing operations and existing trade territory.

47. a. What means do you use to stay in touch with member needs?
Check as many as you use.
___ customer suggestion box

___ customer survey
___ farm visit
___ by emphasizing employees' customer service skill
___ others (Please specify)_____.

b. Has your cooperative added any new young farmer members in the past two years?
___ Yes; ___ No. If yes, do those new young farmer members have specific needs different from, or greater than for older members? ___ Yes; ___ No.
If yes, what are these specific needs of your new young farmer members? (Check all that apply)

___ credit terms
___ product line
___ application and rental services
___ marketing services
___ better prices
___ cash patronage refunds
___ other (Please specify) _____

48. Please rank the three most important critical issue areas your cooperative is facing (1 to be the most important issue), and also rank your level of understanding of these three most important issue areas (1 to be the greatest level of understanding and 3 to be the least level of understanding).

	Importance	Understanding
environmental regulation	_____	_____
worker safety regulations	_____	_____
employee productivity	_____	_____
employee compensation	_____	_____
employee training and development	_____	_____
competitive position	_____	_____
plant and equipment condition	_____	_____
changing customer profile	_____	_____
production and distribution	_____	_____
changing commodity programs	_____	_____
transportation	_____	_____
equity management	_____	_____
grain management	_____	_____
mergers	_____	_____
joint ventures	_____	_____
_____ (other)	_____	_____

49. Does your Board have a policy against offering volume discounts for farm supply purchases? ___ Yes; ___ No.
If no, are volume discounts for farm supplies offered to your members? ___ Yes; ___ No.
If volume discounts are offered to your members, how much of a discount is available?
Up to ___ percent.

FINANCIAL DATA

One of the major purposes of this study is to determine whether there is a relationship between particular management practices, cooperative policies, and competitive situations with cooperative financial strength and performance. In order to conserve your time we are asking for you to authorize CoBank to provide OSU with the financial data (taken from your audit reports) for your cooperative. Individual financial data will be kept confidential. Only summaries of group responses will be released.

Please complete your choice of either item (1) or (2) below.

1. I authorize CoBank to release our cooperatives previous five year financial data (income statement, balance sheet and sources and uses of funds information taken from our audit reports) to OSU.

   Signed _____ Manager of

   _____ Cooperative

2. I have enclosed income statement, balance sheet and sources and uses of funds information for the last five (5) years and understand that it will be kept confidential and that only group summary information will be released.

   Signed _____ Manager of

   _____ Cooperative

APPENDIX B

THE COMPARISON OF KEY CHARACTERISTICS OF THE COOPERATIVES IN THIS STUDY AND ALL OKLAHOMA GRAIN AND SUPPLY COOPERATIVES

TABLE XXXVIII

THE COMPARISON OF KEY CHARACTERISTICS OF THE COOPERATIVES IN THIS STUDY THIS STUDY AND ALL OKLAHOMA GRAIN AND SUPPLY COOPERATIVES[1]

	Average of	
	Cooperatives in this study	All Oklahoma Grain and Supply Cooperatives
Number of Cooperatives	31	84
Membership[2]	997	720
Total Sales ($ Million)	6.7	5.4
Total Assets ($ Million)	3.0	2.3
Current Ratio	2.3	1.8
Return on Assets (Percent)	2.8	3.2
Debt/Equity Ratio (Percent)	12	37

[1]. 1991 Data.

[2]. 1993 Data.

APPENDIX C

CORRELATION COEFFICIENTS BETWEEN PAIRS OF CRITERION AND EXPLANATORY VARIABLES

TABLE XXXIX

CORRELATION COEFFICIENTS BETWEEN TOTAL NET SAVINGS BEFORE TAX AND EXPLANATORY VARIABLES

Total Net Savings before Tax	5 Yr. Ave.	1993
MEMBR/T	0.01	-0.07
MEMBR/A	0.34*	0.51*
COMPTTR	0.05	0.06
VOLUME	-0.12	0.04
BRANCH	0.03	-0.09
MEETNG	0.17*	0.10
BOARD/D	-0.24*	-0.34
TRNG/BD	-0.08	-0.21
MNGR	0.08	0.05
PLAN	0.01	0.10
APRSL	0.03	-0.11
PRD/SVC	-0.10	0.07
INVST	0.18*	-0.16
N/MEMBR	0.02	0.15
EQUTY	0.13	-0.21
STRG	-0.04	0.41
DSCUNT	-0.11	0.00
CR	0.05	-0.04
WCPTL/S	0.09	-0.19
LLR	-0.25*	0.47
LDT/MEQ	-0.29*	0.49
PR	-0.01	-0.17
PSNL/EXP	0.07	-0.07
TS/TA	0.05	0.09

* Values are statistically significant at the 0.05 level.

TABLE XXXX

CORRELATION COEFFICIENTS BETWEEN TOTAL SALES AND EXPLANATORY VARIABLES

Total Sales	5 Yr. Ave.	1993
MEMBR/T	0.56*	0.56*
MEMBR/A	0.29*	0.38*
COMPTTR	0.20*	0.22
VOLUME	0.45*	0.47*
BRANCH	0.50*	0.50*
MEETNG	0.63*	0.64
BOARD/D	0.06	0.07
TRNG/BD	0.17	0.08
MNGR	-0.09*	-0.05
PLAN	-0.21*	-0.15*
APRSL	-0.03	-0.01
PRD/SVC	0.27*	0.28
INVST	-0.10	-0.05
N/MEMBR	0.02	0.04
EQUTY	0.04	0.05
STRG	0.19*	0.21
DSCUNT	-0.07	-0.11
CR	-0.30*	-0.29
WCPTL/S	-0.25*	-0.45*
LLR	0.10	0.06
LDT/MEQ	0.23*	0.18
PR	-0.26*	-0.27
PSNL/EXP	-0.10	-0.05
TS/TA	0.41*	0.37*

* Values are statistically significant at the 0.05 level.

TABLE XXXXI

CORRELATION COEFFICIENTS BETWEEN RETURN ON ASSETS AND EXPLANATORY VARIABLES

Return on Assets 1993	5 Yr. Ave.	
MEMBR/T	-0.13	0.31
MEMBR/A	0.20*	0.33
COMPTTR	0.08	0.07
VOLUME	-0.25*	-0.16
BRANCH	-0.08	-0.31
MEETNG	-0.04	-0.21
BOARD/D	-0.23*	-0.37
TRNG/BD	-0.13	-0.21
MNGR	0.11	0.09
PLAN	0.07	0.26
APRSL	0.09	0.35
PRD/SVC	-0.14	-0.07
INVST	0.23*	0.30
N/MEMBR	-0.06	-0.25
EQUTY	0.12	0.30
STRG	-0.05	-0.09
DSCUNT	-0.16*	-0.14
CR	0.09	0.01
WCPTL/S	0.12	0.25
LLR	-0.23*	-0.41*
LDT/MEQ	-0.29*	-0.49*
PR	0.03	-0.05
PSNL/EXP	0.21*	0.22
TS/TA	0.01	0.22

* Values are statistically significant at the 0.05 level.

TABLE XXXXII

CORRELATION COEFFICIENTS BETWEEN RETURN ON LOCAL ASSETS AND EXPLANATORY VARIABLES

Return on Assets	5 Yr. Ave.	1993
MEMBR/T	-0.12	-0.31
MEMBR/A	0.13*	0.33
COMPTTR	0.11	0.11
VOLUME	-0.17*	-0.07
BRANCH	0.00	-0.27
MEETNG	-0.02	-0.16
BOARD/D	-0.18*	-0.32
TRNG/BD	-0.10	-0.16
MNGR	0.17	0.00
PLAN	0.11	0.21
APRSL	0.13	0.37*
PRD/SVC	-0.10	0.02
INVST	0.20*	0.21
N/MEMBR	-0.05	-0.18
EQUTY	0.05	0.17
STRG	-0.01	-0.08
DSCUNT	-0.18*	-0.10
CR	0.03	-0.05
WCPTL/S	0.12	0.13
LLR	-0.21*	-0.39*
LDT/MEQ	-0.26*	-0.43*
PR	-0.02	-0.30
PSNL/EXP	0.22*	0.34
TS/TA	0.05	0.36*

* Values are statistically significant at the 0.05 level.

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