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Attitudes of Cooperative Managers and Board Members Toward Value-Added Enterprises and New Generation Cooperative Structures

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Abstract

Cooperative managers and board members were surveyed regarding their interest in value-added enterprises, rationale for diversification, perceived riskiness, willingness to invest, impediments to diversification and attitudes toward alternative cooperative structures. Results indicated strong interest in value-added activities and highlighted important differences in managers' and board members' perceptions of value-added enterprises.

Introduction

Producers and producers' organizations have recognized several value-added opportunities and are actively considering more investments. During the last 10 years there has been rapid growth in cooperatively organized value-added businesses in Northern Plains states, such as North Dakota, South Dakota and Minnesota (Lund, 1997; Crop, 1997). Many of these businesses are organized as closed cooperatives with a substantially different structure relative to traditional marketing cooperatives (Cobia, 1997). Because of the success of closed cooperatives in the Northern Plains, both traditional cooperatives and producers in Oklahoma have expressed interest in value-added enterprises.

Currently, relatively little is known about the attitudes of cooperative managers and board members toward value-added activities, their perceived strategic roles in such activities and their attitudes toward "new generation" cooperatives. Additionally, little is known about their attitudes toward situations in which universities can facilitate the development of value-added agricultural enterprises. The research discussed in this paper was designed to address these informational needs.

Objectives

The overall purpose of this study was to gain a better understanding of the attitudes of the board members and managers of Oklahoma cooperatives toward value-added enterprises. Specific objectives were to:

1. Investigate attitudes and perceptions of board members and cooperative managers toward value-added activities, impediments to developing value-added projects and attitudes toward the "New Generation Cooperative" structure for agricultural cooperatives.
2. Identify similarities and differences between board members and managers of agricultural cooperatives toward value-added activities and the New Generation Cooperative structure.
3. Identify differences between board members and managers from cooperatives with more experience in value-added enterprises and those from cooperatives with less experience in such activities.

Scope of the Study

This study focused on board members and managers of the seven largest producer cooperatives in Oklahoma. This group was selected based upon the diversity of their current business operations and their financial stability, both of which put them in a better position to develop value-added enterprises. Larger cooperatives have more potential to provide the high initial investment required for these types of projects, as well as a constant supply of raw material for processing. It is also more likely for large cooperatives to have the management capacity and organization resources to investigate and successfully implement these types of projects.

Factors such as background information, previous experiences in value-added enterprises, motivation for initiating value-added activities and activities associated with value-added ventures were considered. In addition, the study included factors to consider when selecting value-added activities, general perceptions regarding the structure, level of interest in value-added activities, perception of risk associated with value-added activities and perceived limitations to starting value-added activities.

Background

The cooperative governance structure provides some challenges for cooperatives attempting to diversify into value-added enterprises. Cooperative managers and board members are often unfamiliar with market trends and the competitive environment of value-added products. When cooperatives consider activities that add value to their commodities, board members may be reluctant to view quality requirements from the end-user's viewpoint and instead focus on the commodity characteristics they currently produce. In contrast, managers could be interested in requesting a high-quality commodity to assure a better product from the processing activity.

A successful year for a cooperative's traditional business enterprise generates profits, which are allocated to the members. Because some of the distributions are made in the form of stock, profitable years may generate a source of cash. However, this structure also creates a cash flow drain in future years when equity is redeemed. Cooperative managers might be expected to prefer the NGC equity structure for a value-added business enterprise. In this structure equity is not constantly being repaid (revolved), shares are limited but may increase in value, and shares are marketable/tradable.

Procedures and Results

In the spring of 1997, managers of the seven selected cooperatives were contacted by phone providing a brief description of the study. These seven cooperatives were the largest cooperatives in the state, having either expressed an interest in or pursued some value-added "non-traditional" cooperative ventures. The same call was used to ask managers if they could help by distributing the survey to the board members during the next regular board meeting. All of the cooperatives offered participation. A complete package was sent to each participating cooperative with a survey for each member of the board and the manager. The package also included return envelopes and a cover letter explaining the purpose of the study. Surveys were filled and returned in less than three weeks with a 100 percent rate of return. Thus, the respondents consisted of 7 managers and 42 board members.

All the survey responses were anonymous; however, the survey heading and question format indicated whether the returned survey came from a manager or board member. The

survey addressed information on age, education, position, level of involvement in value-added activities and perceptions as to reasons for initiating value-added activities. It also considered preference in potential value-added activities, location of possible business and criteria for choosing value-added activities. In addition, preferences between traditional cooperative and NGC structures, as well as perceived limitations to engaging in value-added activities, were considered.

Respondents' Background Characteristics

Over 70 percent of the respondents had college and post graduate degrees, and the average length of formal education was 15.4 years. Almost 43 percent of the respondents were between 40 to 49 years old. The average age of respondents was 47.7 years. Almost 64 percent of the leaders (board members and managers) have held their positions (on the board or as a manager) for nine years or less, and 8 percent have held their positions for 20 to 40 years. The average time in their current position was eight years.

Almost 42 percent of board members farm less than 1,000 acres, although the average board member farmed 1,827 acres. Finally, 77.6 percent of the board members routinely market between 50 percent to 100 percent of their crops to the local cooperative and 22.4 percent sell between 10 percent to 49 percent. The average percentage of their crops marketed through their local cooperative was 87.6 percent.

Respondents' Involvement in Value-Added Activities

Almost 43 percent of board members have individually investigated value-added possibilities for their farm businesses (Table 1). More than 75 percent of respondents (board members and managers) indicated that their cooperatives had investigated value-added activities, and more than 50 percent of respondents reported that their cooperatives have conducted feasibility studies on value-added projects. Surprisingly, slightly over 40 percent of respondents indicated that their cooperatives have initiated value-added activities, and almost 70 percent reported that they are aware of a group outside their cooperative that was investigating value-added agricultural projects in their communities.

An open-ended question was included to obtain information about what value-added activities cooperatives have considered and initiated. Among the considered activities, eight respondents

Table 1. Frequencies (in percentages) for questions related to level of involvement in value-added activities.

| Question | Yes (1) | No (0) |
|--|---------|--------|
| I have investigated adding value-added enterprises to my farm business. | 42.9 | 57.1 |
| Our cooperative has investigated value-added activities. | 75.5 | 24.5 |
| Our cooperative has conducted feasibility studies on value-added activities. | 53.1 | 46.9 |
| Our cooperative has initiated value-added activities. | 40.8 | 59.2 |
| I am aware of a local group outside of our coop that is developing value-added activities. | 69.4 | 30.6 |

mentioned frozen dough; eight, flour milling; four, extraction of oil from small grains; two, alfalfa dehydration; two, pasta; and others mentioned stores, soybean, milo, cotton and fuel businesses. Among activities in which their cooperatives were actually involved, eight mentioned flour milling; one, alfalfa dehydration; one, milo and soybeans; and three, part of a joint venture in a retail business. One respondent reported diversification of their grain handling to include milo and soybeans, an activity not generally regarded as value-added.

Reasons to Start Value-Added Activities

Roughly 95 percent of the respondents agreed or strongly agreed with the statement that cooperatives should initiate value-added activities to increase the price that farmers received for their crops, with more than 50 percent strongly agreeing with the statement (Table 2). Board members gave higher rankings to this rationale for value-added development than did cooperative managers. Approximately 90 percent of the respondents indicated that maintaining access to the market system and increasing market power were valid reasons for their cooperatives to develop value-added activities. Approximately three-fourths of the respondents indicated the potential for long-term return on investment as a rationale for value-added enterprise development.

While approximately 70 percent of the respondents indicated that value-added projects could reduce the variation in farmer income, more than 10 percent disagreed with this rationale. The rationale for developing value-added activities with the least support from the respondents was the potential to take advantage of available facilities. Managers and board members differed in their perception of this factor, with the majority of managers agreeing or strongly agreeing and the majority of board members disagreeing or indicating they were neutral.

Opinions about Cooperative Activities

The survey also asked respondents to indicate which activities they considered appropriate for the involvement of their

cooperatives (Table 3). Slightly more than 70 percent of respondents indicated that their cooperatives should focus on agriculture-related enterprises, with more than 60 percent indicating that their cooperatives should concentrate on projects relating to crops currently handled. However, two-thirds (65 percent) indicated that it was appropriate for their cooperative to develop a value-added project in any profitable area.

Less than half of the respondents indicated it was appropriate for their cooperative to develop projects outside of their current trade territory. More than three-fourths of the respondents indicated it was appropriate for their cooperative to develop joint ventures with other cooperatives. However, less than 40 percent indicated it was appropriate to form joint ventures with food industry firms to vertically integrate.

Factors as Criteria to Select Value-Added Activities

Another question in the survey focused on factors which cooperatives should use as criteria to select value-added activities. Approximately 88 percent of the respondents considered the long-run return on investment of value-added activities as a very important factor. This factor was followed by the riskiness of the venture, which was considered very important by roughly 87 percent of the respondents. The relationship of a value-added activity to existing crops was considered very important by 54 percent of the respondents. Finally, the factor perceived as least critical was the location of the production facility. Only 30 percent considered the location of facilities to be very important.

Attitudes Toward New Generation Cooperatives

To obtain perceptions toward new generation cooperatives, board members and managers were asked about their preference for three new generation characteristics: (1) high initial investment and rapid repayment of equity, (2) delivery commitments and (3) closed membership. Approximately 40 percent of respondents considered rapid equity repayment and delivery commitments preferable. Forty-five percent of respondents were

Table 2. Frequencies (in percentages) for reasons that motivate board members and managers to initiate value-added activities.

| | Percentage of respondents | | | | Mean |
|--|---------------------------|---------|-------|----------------|------|
| | Disagree | Neutral | Agree | Strongly agree | |
| Increase price farmers receive for crops | 2.1 | 2.1 | 43.8 | 52.1 | 4.45 |
| Maintain access to the market system | 2.1 | 12.8 | 55.3 | 29.8 | 4.04 |
| Increase marketing power | 4.2 | 6.3 | 54.2 | 35.4 | 4.20 |
| Reduce variation in farmers' income | 10.9 | 19.6 | 45.7 | 23.9 | 3.82 |
| Generate long-run return on investment | 2.1 | 21.3 | 57.4 | 19.1 | 3.85 |
| Take advantage of available facilities. | 2.1 | 36.2 | 48.9 | 12.8 | 2.72 |

* Scale: 1)strongly disagree 2) disagree 3) neutral 4) agree 5) strongly agree

neutral about rapid equity repayment, and approximately 30 percent of respondents were neutral about closed membership. In addition, more than 40 percent of respondents perceived closed membership not preferable, and slightly more than 10 percent of respondents perceived rapid equity repayment as not preferable.

It is clear that closed membership was the least appealing characteristic. Only 10 percent of respondents found all three characteristics preferable. The remaining had a combination of preferences among the three new generation characteristics. A higher proportion of cooperative managers preferred the new generation cooperative characteristics than did board members.

Perceived Limitations to Start Value-Added Activities

Another survey question investigated factors perceived as

limitations to starting value-added activities. Difficulty in identifying possible enterprises, market access, technical knowledge and initial investment were considered an important limiting factor by approximately 65 percent of respondents. Market expertise was considered important by more than 60 percent. The scale of operation needed for a new venture was considered a limitation by 50 percent of the respondents. Assessing feasibility for new value-added ventures was a less important factor, chosen by slightly more than 41 percent of the respondents.

Maximum Amount Willing to Invest in a Hypothetical Project

One question in the survey asked how much money per bushel of (raw commodity) throughput the respondents were willing to invest in a hypothetical project with an expected annual

Table 3. Frequencies (in percentages) of the agreement of board members and managers about activities considered appropriate for their cooperatives.

| | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|--|-------------------|----------|---------|-------|----------------|
| Our cooperative should work on enterprises relating to agriculture. | 2.1 | 16.7 | 10.4 | 58.3 | 12.5 |
| Our cooperative should develop value-added products based on current crops. | 2.0 | 12.2 | 24.5 | 53.1 | 8.2 |
| Our cooperative should develop market outlets for alternative crops. | 2.0 | 2.0 | 2.0 | 30.6 | 46.9 |
| Our cooperative should develop value-added business in any profitable area. | 2.0 | 6.1 | 24.5 | 46.9 | 20.4 |
| Our cooperative should try and diversify outside of its current geographic area. | 4.1 | 14.3 | 36.7 | 34.7 | 10.2 |
| Our cooperative should form joint ventures with other cooperatives. | 2.0 | 4.1 | 14.3 | 55.1 | 24.5 |
| Our cooperatives should form joint ventures with a food industry firm. | 2.0 | 4.1 | 53.1 | 24.5 | 16.3 |
| Our cooperative should vertically integrate. | 2.1 | 10.6 | 44.7 | 27.7 | 14.9 |

Table 4. Maximum amount of money each respondent was willing to provide as initial investment in a hypothetical project that returns \$0.25/bushel each year.

Frequencies in percentages

| | |
|-----|--|
| 29% | willing to invest less than \$1. |
| 32% | willing to invest between \$1 and \$10. |
| 6% | willing to invest between \$11 and \$20. |
| 33% | did not answer the question. |

return on investment of \$0.25 per bushel (Table 4). This question was designed to provide insight into the cooperative leaders' perceptions of an appropriate return on investment and into their attitude toward an investment system linked to delivery rights. More than 32 percent of respondents were willing to provide between \$1 and \$10 dollars, and approximately 29 percent were willing to provide less than \$1. The overall mean response to this question was \$4.75, which translates into a return on investment of only slightly over 5 percent. The relatively wide variation in responses suggests that many board members may be unfamiliar with equity investment-based delivery rights systems (which are a characteristic of NGCs).

Managers and board members varied significantly in their responses regarding appropriate per bushel investment. The average investment amount for board members was \$5.46 (reflecting a 4.6 percent rate of return) while the average for managers was slightly over \$2.48 (a rate of return of 10 percent). This may indicate that cooperative managers are much more familiar with evaluating projects based on anticipated returns than are board members. It should also be noted that roughly 33 percent of the board members did not provide an estimate, indicating that they needed more information.

Differences Between Managers and Board Members

The previous discussion highlighted several differences between attitudes of managers and board members toward value-added activities and new generation cooperatives. However, both groups of cooperative leaders had similar attitudes toward most of the issues discussed in the survey. A formal comparison of means was conducted for all questions, which were common to both the manager and board member survey (Table 5). Tukey's tests at the $\alpha=0.05$ level were used to identify statistically

significant differences.

The means comparison indicated five issues for which the attitudes of board members differed from those of cooperative managers. As mentioned previously, managers were more likely to prefer the new generation equity structure (high initial investment and rapid equity redemption) than were board members. A higher proportion of managers preferred all three new generation features to that of traditional cooperative structures. Still, less than half of the cooperative managers preferred the new generation structure.

Cooperative managers were more likely to view the use of available facilities as an appropriate criterion for selecting value-added activities than were board members. The board members had a stronger level of agreement with increasing prices farmers receive for their crops as a rationale for establishing value-added activities. However, both groups were in basic agreement with that premise.

As previously discussed, board members reported a higher per-bushel investment in a project with a specified annual return than did managers. Assuming that both groups were familiar with analyzing projected returns, this would indicate that board members would be willing to accept a lower rate of return on investment than cooperative managers. Managers also perceived value-added projects as being more risky than did board members. Both groups perceived the projects as being more risky than their cooperatives' current activities.

Differences Between Leaders by Experience Level

A similar means comparison was conducted to identify differences among board members and managers from cooperatives with more experience in value-added enterprises than those from cooperatives with less experience. Two working definitions of experience in value-added activities were used. First a comparison was conducted between cooperatives that had conducted

Table 5. Differences in perceptions toward value-added activities between board members and managers.

| Variable | Board members (mean) | Managers (mean) |
|--|----------------------|-----------------|
| New generation members. * | 0.04 | 0.42 |
| Increase prices farmers receive for crops as a reason to start value-added activities.** | 4.53 | 4.00 |
| Location of facilities as criterion when selecting value-added activities.*** | 1.97 | 2.71 |
| High initial investment and fast repayment of equities preferred to low initial investment and slow repayment of equities.**** | 1.82 | 1.14 |
| Perceived riskiness of value-added projects | 2.25 | 1.57 |
| Maximum per bushel investment in project with projected annual returns of \$.25/bushel | \$5.26 | \$2.48 |

*Member who prefer NGC structure (1), members who prefer traditional structure (0)

**Strongly disagree (1) to strongly agree (5)

*** Very important (1), to (4) not important

**** Preferred (1), neutral (2), not preferred (3).

***** (1) much more risky to 5 (much less risky)

feasibility studies for value-added ventures and those that had not. A second means comparison examined differences between cooperatives that reported they had initiated value-added projects and those that had not.

Respondents from cooperatives which had conducted feasibility assessments had a higher willingness to initiate value-added activities in any profitable area (as opposed to strictly agriculture-related), a higher willingness to form joint ventures with food industry firms and were more likely to list increasing the price a farmer receives as an appropriate rationale for a value-added project (Table 6). These respondents also were less likely to list technical knowledge as a limitation to developing value-added enterprises. This suggests that cooperative leaders with a broader strategic view of appropriate activities are more likely to pursue value-added projects and/or that the process of feasibility assessment broadens the manager’s and board member’s perceptions.

Board members from cooperatives that had completed value-added project feasibility studies reported a lower percentage of products sold through the local cooperative. As would be expected, respondents from cooperatives completing feasibility studies were more likely to have initiated value-added projects.

Respondents from cooperatives that had initiated value-added activities also were more willing to develop a business in any profitable area (as opposed to only agriculture-related projects) and to form joint ventures with food industry firms than those who had not initiated value-added activities (Table 7). In addition, increasing the price farmers receive for their crops and increasing the marketing power were considered more important for respondents whose cooperatives have initiated value-added activities. These findings may represent a more proactive behavior among cooperatives that have initiated value-added activities.

Summary and Implications

The survey results indicated an unexpectedly high level of interest and activity in value-added activities by Oklahoma cooperatives. Three-fourths of the respondents indicated that their cooperatives had investigated value-added activities with 50 percent conducting formal feasibility studies and 40 percent indicating that they had actually initiated what they termed a value-added project. More than 70 percent were aware of groups outside of their cooperatives investigating value-added projects in their communities.

Respondents appeared to associate multiple goals with value-added projects, including increasing the price that farmers receive for agricultural commodities, increasing market power, gaining market access and generating a long-term return on investment. The majority of the respondents agreed that a value-added project could reduce farmers’ income variability, although approximately 10 percent disagreed.

Despite these high expectations, the cooperative leaders surveyed had a fairly restrictive view of appropriate value-added projects. More than 70 percent of the respondents indicated that value-added projects should be agriculturally related and more than 60 percent indicated they should relate to crops currently handled by their cooperatives. Fewer than half of the respondents thought that their cooperatives should be involved in projects outside of their trade territories and less than 40 percent thought it appropriate to joint venture with food industry firms.

While the vast majority of the respondents agreed that the potential for long-term return on investment was an appropriate criterion for a value-added project, their responses to a hypothetical investment opportunity were difficult to interpret. While both managers and board members indicated that value-added projects were riskier than their current activities, both groups provided

Table 6. Comparison of perceptions about value-added activities between respondents whose cooperatives have conducted feasibility studies and those whose cooperative has not conducted feasibility studies.

| | Have conducted studies (mean) | Have not conducted studies (mean) |
|--|-------------------------------|-----------------------------------|
| My cooperative has investigated value-added activities ** | 0.96 | 0.52 |
| My cooperative has initiated value-added activities** | 0.65 | 0.13 |
| My cooperative should develop value-added business in any profitable area* | 4.15 | 3.34 |
| Our cooperative should form joint ventures with a food industry firm* | 3.76 | 3.17 |
| Percentage of production sold to local coop | 80.12 | 97.66 |
| Increase prices farmers receive for crops as reason to initiate value-added activities * | 4.69 | 4.18 |
| Technical knowledge as limitation to start value-added activities ** | 0.50 | 0.81 |

*Strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5)

**Yes (1), No (0)

answers that reflected extremely low (5 percent to 10 percent) required rates of return. The wide variation in answers and the large number of non-responses indicates that this survey question was poorly understood.

The survey results also uncovered some important differences between the attitudes of cooperative managers and board members. How a value-added project related to existing facilities was more important to cooperative managers while board members placed a higher emphasis on a project's potential to increase agricultural product prices. Cooperative managers also perceived value-added projects as being riskier than did board members and, from the hypothetical investment question, appeared to require a higher rate of return.

The survey also revealed differences between cooperatives with more and less experience in the value-added arena. In general, cooperatives which had more intensely examined or initiated value-added projects placed less restrictions on what types of projects are appropriate for cooperatives and had a higher interest in forming joint ventures with outside firms. They also appeared to have higher goals for value-added projects. Not surprisingly, perceptions of marketing and technical knowledge as limitations to value-added projects decreased as cooperatives gained experience with value-added projects.

Despite the high level of interest in value-added activities, the respondents had fairly negative or ambivalent attitudes toward the "new generation" cooperative structure, which has been successfully used for cooperatively owned value-added projects in the Northern Plains. Both managers and board members tended to prefer the traditional cooperative structure to the new generation structure described in the survey. More detailed questions on this topic might have uncovered additional insights or highlighted how well the survey recipients understood the concepts described.

The survey results highlight the need for additional research and extension efforts in the areas of value-added ventures, closed membership structures, and returns on investments as viewed by traditional marketing cooperatives. The survey results demonstrated a clear need by cooperative leaders for technical assistance in areas relating to value-added projects. The survey responses suggest that limitations to developing value-added projects could be overcome with educational efforts and technical assistance from university resources. The results also indicate that many cooperative leaders have relatively unfocused goals for value-added projects and may be over-restrictive in their selection of appropriate activities. This suggests a need for assistance with strategic planning and in developing understanding of the value-added product marketplace.

References

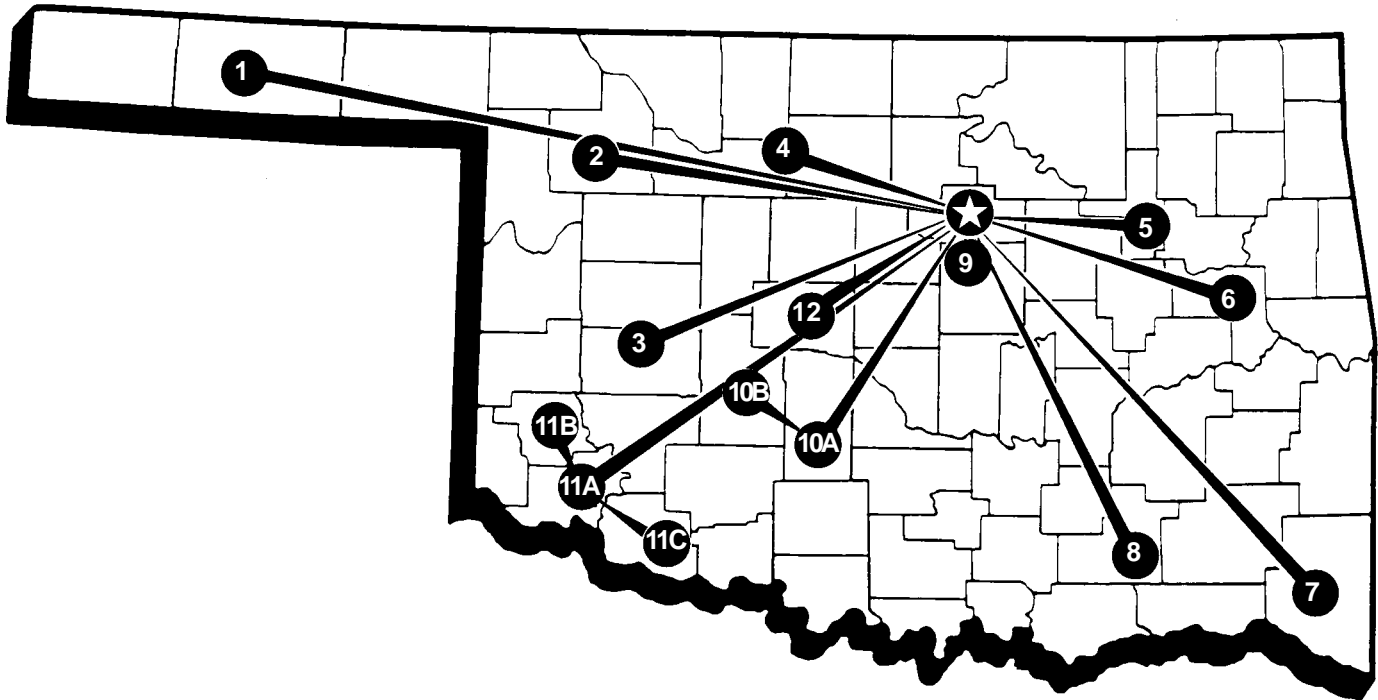
- Cobia, D. "New Generation Cooperatives External Environment and Investor Characteristics" Paper presented at Food and Agricultural Marketing Consortium, Las Vegas, NV. 16-17 July 1997.
- Crop, B. "Change Drive Cooperatives to Add Value" *Journal of Agricultural Cooperation* 12(1997):215-16.
- Kenkel P., and C. Lyford. "The potential for New Wave Cooperatives in Oklahoma" *Oklahoma Current Farm Economics* 70(1997)39-45.
- Kenkel P., L. Satterlee, M. Tilley, and A. Barkema. "Value-Added Agricultural Business and New-Generation Cooperatives in Oklahoma" Stillwater Oklahoma: Oklahoma State University. 1998.
- Lund, M. "Cooperative Enterprises Share Success through Northcountry Cooperative Development Fund" <http://www.mncoop.org/publicationes-enterprises.htm> Northcountry Cooperative Development Fund, 1997.

Table 7. Comparison of means between respondents whose cooperatives have initiated value-added activities and those whose cooperatives have not initiated value-added activities.

| | Have initiated value-added activities. (mean) | Have not initiated value-added activities. (mean) |
|--|---|---|
| Our cooperative should develop value-added businesses in any profitable area. * | 4.20 | 3.48 |
| Our cooperative should form joint ventures with a food industry. * | 3.90 | 3.20 |
| Increase prices farmers receive for crops as reason to start value-added activities. * | 4.70 | 4.28 |
| Increase marketing power.* | 4.60 | 3.92 |

Scale: * Strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5)

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