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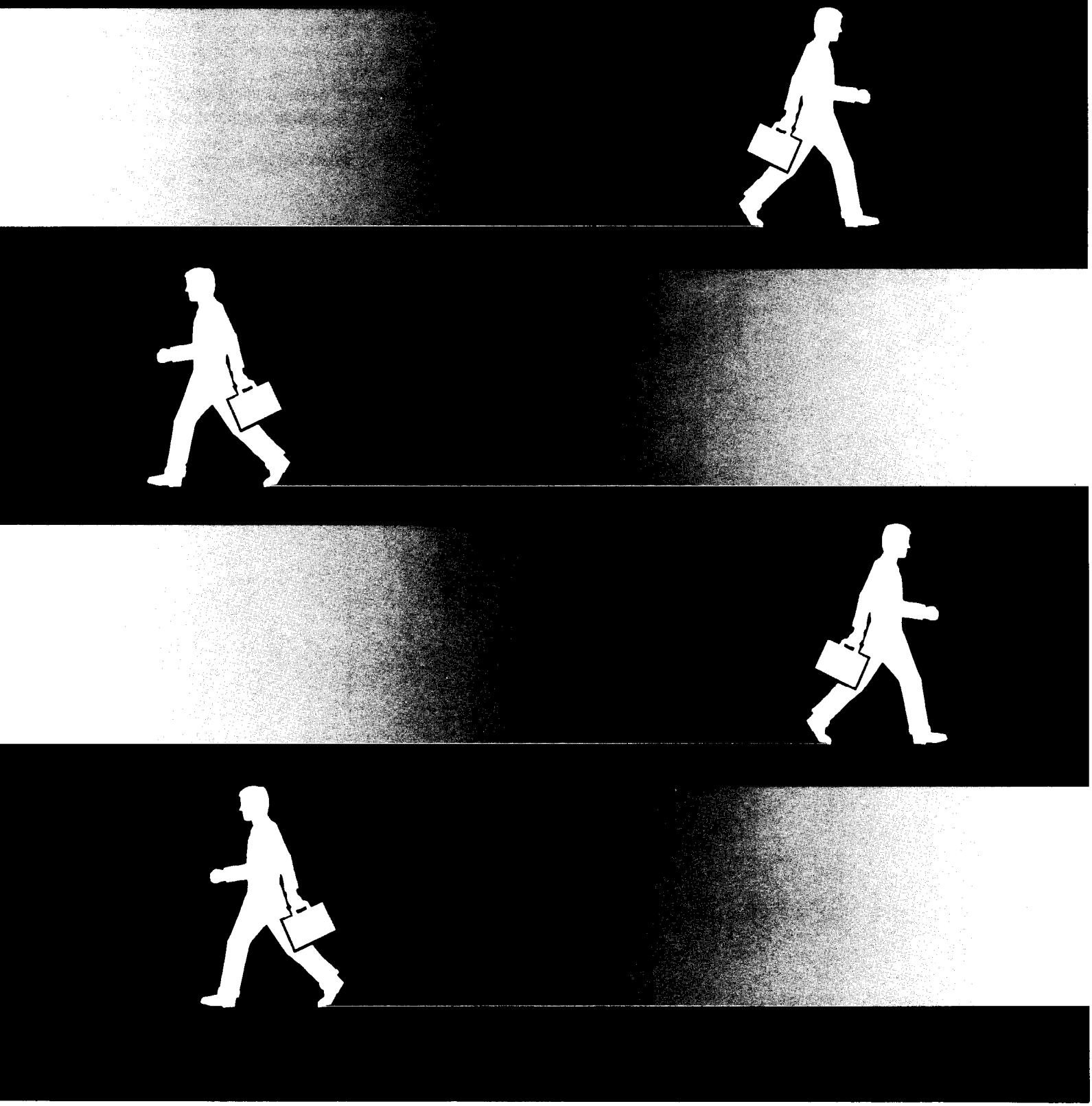
Implications for Cooperatives



Farmers' Buying and Selling Patterns
Implications for Cooperatives

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Abstract

This research analyzes farm characteristics and other factors that affect the buying and selling behavior of farmers. Information for 1986 was obtained by questionnaires from 2,537 farmers in the Midwest and Southeast. The major finding of this study is that the buying and selling behavior of farmers does not vary greatly by size and type of farm. Cooperatives are almost as successful in getting the business of large-farm operators as that of medium- and small-farm operators. There are, however, some differences in types and sizes of farms that provide the basis of better service to farmers and increased patronage. These differences relate to goals, time devoted to the farm business, sources of information used for farm decisions, types of services used, and opinions about commodity marketing and purchases of inputs. The business implications of these differences for cooperatives are described.

Key Words: Cooperatives, farmer, purchasing, sales behavior, farm supplies and services

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Preface

Changes in the structure of agriculture raise questions about how cooperatives should organize to serve an increasingly diverse group of farmers. information concerning the needs and preferences of operators of various types and sizes of farms is required before the question of redesign of cooperative organizations or their functions can be addressed. This research identifies factors that will help cooperatives better serve farmers by analyzing farm characteristics and practices that affect buying and selling behavior of farmers. Information regarding farm characteristics and practices, buying and selling behavior, and farmers' opinions about purchase and sales activities of firms was obtained by questionnaire from 2,537 farmers in the Midwest and Southeast. The findings in this report are based on analysis of data provided by these farmers, most of it for 1986.

Contents

Highlights

The most striking finding of this study was that differences in buying and selling behavior among operators of farms of various sizes and types were modest. If cooperatives can satisfy the preferences and needs of medium-sized farm operators, they should be able to meet the requirements of most large-farm operators. Cooperatives in the study area were almost as successful in getting the business of large-farm operators as that of small- and medium-farm operators.

Differences among various types and sizes of farms were identified that provide the basis for better serving the needs of farmers. They also suggest niches and business opportunities for cooperatives.

Some of the differences among farmers are listed below and their business implications were described.

- Farm characteristics of major and minor users of cooperatives were not greatly different, but farmers with more experience did have greater cooperative patronage.
- The most important goal of farmers was economic, to reach desired net income goals.
- The wife played an important role in all aspects of the farm business, but spent a relatively large portion of her time in the areas of buying, selling, managing, and planning.
- Farm magazines, family, and other farmers were important sources of information. Large-farm operators were more willing to pay for information and they used more sources.
- Both cooperative and noncooperative firms were used by the same farmer for information. These firms were sources of information primarily for purchase and sales decisions rather than management and planning.
- Use of other firms for financial and business services increased and use of production services decreased as farm size increased. Cooperatives appeared to have been more successful in selling production services.
- Farmers did not have a high degree of loyalty to a firm, whether cooperative or noncooperative. The average farmer had purchase/sale transactions with two cooperatives.
- Large differences were found in the percentage of business with cooperatives among commodities and inputs and among States.
- Farm characteristics, which cooperatives cannot control, did not explain much of the buying and selling behavior of farmers. Cooperatives can influence the price, quality, and service that affects their business volume.

Farmers' Buying and Selling Patterns

Implications for Cooperatives

Emerson M. Babb[1]

OVERVIEW

Farm structure has changed slowly but dramatically over the past 30 years. In 1984, some 300,000 farms (13.5 percent of the total) grossed over $100,000, had average net income of about $40,000 and had average equity of about $500,000. These 300,000 farms produced 73 percent of the cash receipts from agriculture. In contrast, about 1.4 million farms had farm sales of less than $20,000. These farmers had income from off-farm sources that averaged $20,000. These 1.4 million farms produced less than 6 percent of the cash receipts. This degree of concentration was the product of many forces, such as technology, and evolved over a long time. The current financial crisis in agriculture will likely accelerate this concentration. Most of the 300,000 larger farmers[2] and the 1.4 million small farmers[2] think of their operations as family farms. A farm generating $100,000 cash receipts is not considered large. This level of receipts can be produced by 400 acres of crops, or 60 farrow-to-finish sows, or 50 dairy cows, or 150 fed cattle [6].* In fact, a farm generating $200,000 of cash receipts is probably needed to produce income for a modest level of living. About 122,000 farms have sales over $200,000 (5.4 percent of all farms) and they have about 54 percent of total cash receipts.

'Emerson M. Babb is a professor in the Food and Resource Economics Department, University of Florida. The research reported in this publication was supported through a cooperative research agreement between the Agricultural Cooperative Service, U.S. Department of Agriculture, and the University of Florida. Daniel Babione and Pongchat Chunkasut were responsible for the management and processing of data. Helpful comments on an earlier draft were provided by Thomas Gray, Charles Kraenzle, and Bruce Swanson. Those desiring more detailed results should contact the author at 1130 McCarty Hall, University of Florida, Gainesville, FL 32611.

*Numbers in brackets refer to publications cited in reference section.

[2]The phrases "large-farm operator, small-farm operator, etc." will be shortened to "large farmer, small farmer, etc."

Problem

The cooperative system in U.S. agriculture was designed to strengthen family farms. In past years, when farms were more homogeneous, there was less need to have diverse cooperative organizations. Different types of organizations and operations may now be needed to serve the greatly altered and more diverse farm structure. It may be possible to have cooperatives that focus on large and small farms (or other segments) without losing the advantages of size in buying and selling that is now performed by a single organization.

The design of cooperative organization and functions to be performed must start with knowledge of the needs and preferences of various types and sizes of farms. Are there differences among large and small farmers with regard to farm objectives, time that can be or is devoted to the farm business, managerial skills, analytical capacity, financial strength, and risk preferences that give rise to different needs for products and services? Is commonality among members important and, if so, what provides cohesiveness?

Information about differences in needs of farmers is necessary before the question of redesign of cooperative organization can be addressed. If important differences exist in farmer needs, cooperatives may lose important segments of farmers if they use an organization designed to serve all farmers. The cooperative system would be drastically changed if it lost a major portion of either small or large farmers.

Objectives and Procedures

Given the changes in the structure of agriculture, the overall objective of this research was to identify factors that will assist cooperatives in better serving their members. The research examined farm characteristics and other factors that might affect the buying and selling behavior of farmers. Purchases of inputs and services,

sources and use of information, and sales of commodities were analyzed to determine differences associated with size of farm, type of farm, extent of cooperative patronage, and location of farm. Opinions about purchase and sales activities of firms were analyzed.

A questionnaire was used to obtain data from 2,537 farmers in Indiana, Illinois, Iowa, and Georgia with parts of surrounding States (Appendix). While these farms were larger than average, they were representative in other respects. Data were obtained in January 1987, but most of the information provided was for 1986.

Characteristics of Respondents

About 60 percent of the farmers returning questionnaires had gross sales of over $100,000 (table 1). Livestock/dairy type of farmers, farmers with 11 to 30 years of farming, and farmers in the Southeast and Iowa had higher than average gross sales. There were 169 farmers with gross sales in excess of $500,000. These were not separated from the $200,000-and-over category because the number of observations was small when subdivided, particularly by type of farm or State. Further, there were usually only minor differences in the behavior of farmers with over $500,000 of gross sales and those with over $200,000. Where differences were found, they will be described for the very large farmer (gross sales over $500,000).

Cooperative patronage rather than membership was used to classify farmers' involvement with cooperatives. A major user of cooperatives was defined as a farm that used cooperatives for over 50 percent of its livestock sales, its grain sales, or its farm supply purchases. Using this classification, about 57 percent of the respondents were major users of cooperatives and 43 percent were minor users (table 2). Farm size made little difference between major and minor users of cooperatives. The percentage of major cooperative users in the over $500,000 sales class was 57 percent, exactly the same as for the overall sample. The proportion of major users was

Table I-Characteristics of farmers In sample

Characteristic	Gross sales of farm ($000)			
	1-39	40-99	100-199	Over 199
Type of farm	*Number of farmers'*			
Field crops	197	448	487	*453*
Livestock/dairy	94	163	240	284
Other	67	41	10	28
Cooperative user[2]				
Major	199	366	426	418
Minor	141	268	298	338
Years of farming				
1 to 10	30	79	75	77
11 to 20	59	109	153	207
21 to 30	57	135	192	198
31 to 40	122	200	236	203
Over 40	87	116	69	64
Region				
Indiana	129	172	139	127
Illinois	125	206	252	253
Iowa	68	211	273	261
Southeast	40	65	76	127

'Figures may not add to the same total for various categories because of incomplete responses to some questions.
[2]A major user of cooperatives was defined as a farm which used cooperatives for over 50 percent of its livestock sales, its grain sales, or its farm supply purchases.

Table 2—Characteristics of farmers In sample, by degree of cooperative use

Characteristic	Degree of cooperative use'	
	Major	Minor
Type of farm	*Number of farmers2*	
Field crops	907	639
Livestock/dairy	423	348
Other	79	57
Years of farming		
1 to 10	141	111
11 to 20	270	253
21 to 30	313	252
31 to 40	455	292
Over 40	202	122
Region		
Indiana	274	276
Illinois	469	341
Iowa	474	330
Southeast	200	102

[1]A major user of cooperatives was defined as a farm which used cooperatives for over 50 percent of its livestock sales, its grain sales, or its farm supply purchases.
[2]Figures may not add to the same total for various categories because of incomplete responses to some questions.

higher for field crop farmers than for livestock/dairy farmers and the proportion of major users increased with years of farming. This was consistent with results in an earlier study, which found that years of farming was related to favorable perceptions of cooperative performance [2, p.12]. The proportion of major cooperative users in Indiana was lower than for other States.

Characteristics of farmers in the Midwest samples have not changed greatly since 1980 [2]. Cooperative membership was about the same, and the percentage of farm supply purchases and commodity sales to cooperatives was similar. About 6 percent more farmers were classified as field crop farmers. The greatest change concerns sales volume. In 1980, 17 percent of the sample had sales over $200,000, compared with 27 percent in the same States for 1986. Of course, price changes account for some of these differences.

RESULTS

Differences in the buying and selling behavior of farmers will be reported primarily by size of farm, type of farm, degree of cooperative use, and region. Where differences are minor, data are shown for the size of farm classification only.

Goals

Farmers were asked to rank the importance of five goals they were trying to achieve (table 3). Virtually no differences surfaced in the ranking of goals by farmers in different gross sales categories. This was also true for different types of farmers, different degrees of cooperative use and different regions. Even the percentage distributions for these goals were about the same. Obtaining a desired income was the most important goal, and increasing the size of farm operation was the least important goal for all categories of farmers. These goal rankings were undoubtedly influenced by the financial stress in agriculture at the time the survey was made. Some farmers who had expanded farm operations were experiencing debt problems. Even though events may have conditioned goal ranking, the impact of these events appears to have been the same for all sizes and types of farms.

Table 3—Importance of goals, by size of farm

Goal	Gross sales of farm ($000)				
	1-39	40-99	100-199	Over 199	All
	Average rank of goal[1]				
Increase size of farm operation	4.4	4.3	4.4	4.3	4.3
Get desired net income	2.2	2.0	2.0	2.0	2.0
Enjoy rural living	2.4	2.6	2.6	2.7	2.6
Increase net worth	2.8	2.8	2.7	27	2.7
Leave successful farm to children	3.3	3.4	3.4	3.4	3.4

'Average rank computed on basis of 1 = most important and 5 = least important.

Resource Use

Both husband and wife worked at off-farm jobs. And, interestingly, both devoted about the same amount of time in management and planning.

The average husband spent 50 hours per week on farm work and 7 hours on off-farm work (table 4). The hours of farm work increased with size of farm, while off-farm work declined. The hours devoted to farm work by the wife did not vary with farm size, but off-farm work declined slightly as size of farm increased.

Livestock/dairy farmers spent more hours per week on farm work than did field crop farmers, but field crop farmers had more hours of off-farm work (table 4). Wives of livestock/dairy farmers also worked more hours on the farm. Both husbands and wives on the type of farm designated "other" had a lot of off-farm work. This

Table 4-Average hours per week devoted to farm and off-farm work

Characteristic	Husband		Wife	
	Farm	Off-farm	Farm	Off-farm
Gross sales of farm ($000)	Average *hours*			
1-39	35.6	17.1	14.1	13.9
40-99	45.9	10.0	14.9	12.5
100-199	51.9	5.2	14.7	11.8
Over 199	57.1	3.0	15.4	10.7
All	49.6	7.4	14.9	11.9
Type of farm				
Field crops	47.3	7.2	14.0	12.2
Livestock/dairy	57.2	4.7	17.2	10.6
Other	33.1	26.0	12.7	16.1

category included farmers who obtained most of their gross income from poultry, fruits and vegetables, custom farm work, and nonfarm work.

Only minor differences were found in the allocation of time for both husband and wife between major and minor users of cooperatives. Differences among regions were also small. Iowa and the Southeast had slightly higher hours of farm work, but this probably reflected somewhat higher proportions of livestock/dairy farms.

The percentage of time devoted to three classes of farm activities by husbands did not vary greatly with farm size (table 5). Farmers with sales over $500,000 did devote 6 percent more time to management and planning and 6 percent less to outside farm work than did the average husband. Based on articles in farm magazines, time devoted to buying inputs and selling outputs and to management and planning was expected to increase with farm size to a greater extent than was found.

Livestock/dairy farmers spent a greater proportion of their time on outside farm work and less time on management and planning than did field crop farmers (table 5). Regional differences and differences between major and minor users of cooperatives were small.

The wife spent about 27 hours a week on farm and off-farm work, in addition to work in the home. About half of her time for farm work was outside work, and she spent a substantially higher percent of her time in management and planning than did her husband (table 6). In fact, she spent almost as much time on this activity as the husband. For farms with gross income greater than $500,000, the wife spent 48 percent of her farm related time on management and planning, 20 percent on buying and selling and only 32 percent on outside work. The other major difference in time allocation was in the Southeast where wives spent 49 percent of their farm related time on management and planning and 38 percent on outside work.

The degree of specialization declined with farm size, although the differences were not large (table 7). For very large farms, 67 percent of their gross income came from their largest income-producing enterprise. A higher percent of field crop farmers received 100 percent of their income from one enterprise, but on average were no more specialized than livestock/dairy farmers. Farms in Iowa were slightly more diversified than those in other States.

Information

Information influences the decisions of farmers regarding purchases of inputs and services and the sale of commodities. It is critical to the achievement of goals set by farmers. Firms that are reliable in supplying the informational needs of farmers may have an advantage in obtaining their business.

Farm magazines, other farmers, and family members are the most important sources of information for farmers (table 8). Persons in cooperative and noncooperative firms were also important sources of information. Cooperatives

Table B-Average percentage of time devoted to farm activities by husband

Characteristic	Outside farm work	Buying and selling	Management and planning
		Percent	
Gross sales of farm ($000)			
1 - 39	68.7	14.1	17.2
40 - 99	89.4	14.3	16.3
100 - 199	71.5	13.8	14.7
Over 199	67.5	14.2	18.3
All	69.3	14.1	16.6
Type of farm			
Field crops	67.5	14.7	17.8
Livestock/dairy	74.7	12.2	13.1

Table B-Average percentage of time devoted to farm activities by wife

Characteristic	Outside farm work	Buying and selling	Management and planning
		Percent	
Gross sales of farm ($000)			
1 - 39	48.6	18.8	32.6
40 - 99	50.4	16.9	32.7
100 - 199	52.0	14.8	33.2
Over 199	40.5	16.6	42.9
All	47.5	16.4	36.1
Type of farm			
Field crops	47.2	16.4	36.4
Livestock/dairy	49.0	15.3	35.7

were used slightly more as sources of information. Paid sources of information such as commercial farm management services, brokers and commodity analysts, paid advisers and consultants, and computer data bases or networks were not widely used. In the face of the information revolution, it is surprising how little the importance of information sources has changed during the past 30 years. Sources of information reported in the Interstate Managerial Survey were ranked as follows: farm magazines, newspapers, neighbors and relatives, radio, persons in firms, county agent/vocational agricultural teacher/university specialists, university publications [7, p.31]. The use of information sources did not vary greatly with size of farm (table 9).

Table 7-Percentage of gross farm income from largest income producing enterprise, by farm characteristic

Characteristic	Percent of gross farm income					Average percentage
	1-25	26-50	51-75	76-99	100	
Size of farm ($000)	Percent *of* farmers					
1 - 39	2	19	40	23	16	71
40 - *99*	1	21	42	23	13	70
100 - 199	1	21	43	25	10	69
Over 199	1	24	42	25	9	68
All	1	22	42	24	11	69
Type of farm						
Field crops	1	22	41	23	14	69
Livestock/dairy	1	21	45	28	5	69

Table 8-Percentage of farmers using various sources of information

Source of information	Much use	Some use	No use
	Percent		
Banker/financial institution	17.3	60.7	22.0
Commercial farm management services	4.2	25.2	70.6
County extension person	14.5	73.3	12.2
Farm magazine	36.8	60.3	2.9
Brokers/commodity analysts	5.5	37.2	57.4
Persons at universities	4.9	58.0	37.2
USDA news services	7.1	70.7	22.2
Commercial newsletters/advisory	15.6	54.6	29.8
Persons in noncooperative firms	12.0	56.3	31.7
Persons in cooperative firms	14.6	63.3	22.1
University/USDA publications	10.7	73.8	15.5
Paid advisers/consultants	4.8	21.1	74.1
Other farmers	21.2	72.9	5.9
Family members/friends'	22.7	69.5	7.8
Computer data base/network	3.0	22.1	74.9

Table 9—Use of information sources, by size of farm

Source of information	Gross sales of farm ($000)				
	1-39	40-99	100-199	Over 199	All
	Average *importance*[1]				
Banker/financial institution	2.2	2.1	*2.0*	*2.0*	*2.0*
Commercial farm management service	2.8	2.7	2.7	2.6	2.7
County extension person	2.0	2.0	2.0	1.9	2.0
Farm magazine	1.7	1.7	1.6	1.7	1.7
Brokers/commodity analysts	2.7	2.6	2.5	2.3	2.5
Persons at universities	2.5	2.4	2.3	2.2	2.3
USDA news services	2.2	2.1	2.2	2.2	2.2
Commercial newsletter/advisory	2.4	2.2	2.2	2.0	2.1
Persons in noncooperative firm	2.3	2.2	2.2	2.1	2.2
Persons in cooperative firms	2.2	2.1	2.0	2.1	2.1
University/USDA publication	2.2	2.0	2.0	2.0	2.0
Paid advisers/consultants	2.9	2.8	2.7	2.5	2.7
Other farmers	1.8	1.8	1.9	1.9	1.8
Family members/friends	1.8	1.8	1.9	1.9	1.8
Computer data base/network	2.8	2.8	2.7	2.6	2.7

'Average importance computed on the basis of 1 = much use, 2 = some use, and 3 = no use.

Larger farmers did make greater use of paid sources such as brokers and commodity analysts, commercial newsletters or advisory services, and paid advisers and consultants. They made less use of other farmers and family members. The USC of information sources showed almost no variation among farmers in different regions, types of farm or degree of cooperative use. Major users of cooperatives did use cooperatives as a source of information slightly more than noncooperative firms. A great deal of overlap existed in farmer use of cooperative and noncooperative firms for information. Major users of cooperatives made extensive use of noncooperative firms and minor users of cooperatives made extensive use of cooperatives for information. Both cooperative and noncooperative firms had a great deal of access to farmers as customers by virtue of their informational contacts.

Table 10—Average number of information sources used by farmers according to degrees of use

Gross sales of farm ($000)	Degree of use: Much use	Some use	No use
	Number		
1- 39	1.6	6 9	5.9
40" 99	1.9	7.7	5.1
100 - 199	1.8	8.2	4.7
Over 199	2.2	8.7	3.9
All	2.0	8.1	4.7

While the degree of use of various sources of information did not vary greatly with farm size, larger farmers used more different sources of information (table 10). Larger farmers spend much more time on farm related work and have greater incentive to expand the search for information. Their return on investment for information from commercial sources may be higher. No differences showed up in the number of information sources used by different types of farmers, farmers in different regions, or major and minor users of cooperatives.

As was found in the Interstate Managerial Survey 30 years ago [7], farmers were discriminating in their use of information sources (table 11). Farmers used cooperative and noncooperative firms extensively as their most important source of information for decisions about buying and selling. Cooperatives were more heavily used

Table II-Percentage of farmers indicating various sources of information were most important for nine farm decisions

Source of Information'	Farm decision[1]: Sell grain	Sell live-stock	Buy feed	Buy ferti-lizer	Buy chemi-cals	Crops to plant	Bid on conser. reserve	Farm invest-ment	Use of credit
					Percent				
Banks	4	4	1	1	1	2	5	43	82
Farm managers	2	1	2	2	2	2	2	2	1
County ext.	1	1	2	2	4	10	23	2	0
Farm magazine	5	4	?	3	4	7	6	3	1
Brokers	12	7	2	0	0	1	1	2	0
Univ. person	0	0	1	1	1	2	2	1	0
USDA news	5	8	1	0	0	5	11	1	0
Comm. newsletter	15	11	5	2	2	4	5	2	0
Noncoop. firm	15	24	31	28	28	11	3	5	2
Coop. firm	18	8	32	40	37	6	2	1	2
Univ. publication	1	1	1	2	2	8	10	1	0
Paid adviser	4	4	2	2	2	2	2	3	1
Other farmers	5	10	7	5	6	12	10	4	1
Family/friends	9	12	9	6	6	22	12	28	8
Computer network	1	1	0	0	0	1	1	1	1

[1]See table 8 for more complete description of sources of information and farm decisions. Percentages for decisions may add to less than 100 because some panel members did not record a primary source of information.

for these decisions except for selling livestock where they played a more minor role. The advice of extension agents, other farmers, and family members was more heavily sought for decisions involving crops to plant and responses to farm policy. Banks, financial institutions, and family members were important sources of information for farm investments and use of credit.

Respondents indicated other sources of information used for the nine decisions in table 11. While farm magazines were seldom the most important source of information, they were among the main secondary sources of information for all decisions. This accounts for their high rating as a source of information (table 9). Other farmers, family members, cooperative and noncooperative firms, county extension agents, and university publications were other heavily used secondary sources of information.

Characteristics of farmers making the greatest use of different information sources are summarized in table 12. Smaller farmers made greater use of county extension agents, farm magazines, and other farmers for information, while larger farmers made greater use of commercial sources. Livestock farmers used farm magazines and noncooperative firms more for information, and crop farmers used commercial sources and other farmers more. Major users of cooperatives made greater use of public sources of information and minor users relied more heavily on private sources. Farmers in the Midwest made greater use of commercial sources of information. Farmers in the Southeast made substantially more use of county extension agents for information than did those in the Midwest.

Table 12—Characteristics of farmers making the greatest use of various sources of Information

Source of information[1]	Farm characteristic*			
	Size of farms	Type of farm[4]	Degree of cooperative uses	Regions
Banks				IO, SE
Farm managers				IL
County ext.	S		C	SE
Farm magazine	S	L	P	IN
Brokers	L	C	P	SE
Univ. person			C	SE
USDA news				IO
Comm. newsletter	L	C		IN, IL
Noncooperative firm	L	L	P	IN, IL
Cooperative firm			C	IO, SE
Univ. publication			C	
Paid adviser	L			IL, IO
Other farmers	S	C	P	IN, SE
Family/friends		C	P	IN
Computer network	L			

[1]See table 8 for more complete description of sources of information.
*Blank spaces indicate no major difference in use of information source by farmers who vary with respect to a characteristic.
[3]Greater use of information source by larger (L) or smaller (S) farmer.
"Greater use of information source by livestock (L) or crop (C) farmer.
[5]Greater use of information source by major (C) or minor (P) user of cooperative.
[6]Greater use of information source by farmer in Iowa (IO), Illinois (IL), Indiana (IN) or Southeast (SE).

Services

Services are an important component of the sales of agribusiness firms and are often interrelated with input sales and commodity purchases. Sales of services have been and are likely to continue to be a major source of growth. Substantial differences existed in the use of other firms to perform farm activities and these varied by size of farm (table 13). Use of other firms for financial and business services increased, and use for production-related services such as mixing feed, harvesting crops, and applying chemicals decreased as farm size increased. Spreading fertilizer was the most frequently used production service and it was not related to farm size.

Major users of cooperatives hired other firms for performance of farm activities more than did minor users

Table 13—Percentage of farm activities performed by other firms, by size of farm

Farm activity	Gross sales of farm ($000)				
	1-39	40-99	100-199	Over 199	All
	Percent				
Spread fertilizer	36.3	42.2	40.1	41.7	40.6
Mix feed	33.3	24.1	15.4	18.0	20.3
Farm planning	4.0	4.6	4.2	5.5	4.7
Harvest crops	21.2	11.0	3.6	4.0	7.9
Apply chemicals	39.8	32.7	26.4	19.1	27.4
Buy animals/poultry	5.2	5.8	10.1	11.5	9.0
Store grain	16.6	15.3	12.7	11.4	13.4
Sell animals/poultry	10.4	9.6	10.8	12.1	10.9
Prepare tax	57.6	59.5	60.8	68.9	62.4
Farm records	2.5	4.8	6.1	10.4	6.7
Estate planning	32.8	39.0	41.4	46.4	41.6
Market analysis	23.0	21.6	26.6	30.6	26.6

of cooperatives, especially to spread fertilizer, mix feed, and store grain. Field crop farmers made greater use of other firms for spreading fertilizer, mixing feed, and storing grain than did livestock/dairy farmers. The use of outside firms to perform services was relatively constant among regions except Southeastern farmers who purchased substantially higher fertilizer spreading services, Indiana farmers who had more feed mixed, and Illinois farmers who made greater use of chemical application and grain storage services.

Cooperative involvement in providing services was measured by the percentage of farmers using cooperatives or both cooperative and noncooperative firms for services. This percentage overstates the "cooperative share" of the service market and is used to show only the relative involvement of cooperatives among different services. The percentage of farmers using cooperatives or both cooperative and noncooperative firms to perform farm activities did not vary greatly with farm size (table 14). The use of cooperatives to spread fertilizer and store grain did tend to increase slightly with farm size, but was often highest for the mid-size farms (gross sales of $40,000 to $199,999). As would be expected, major users of cooperatives relied much more heavily on cooperatives for all services, but they also purchased a large amount of services from noncooperative firms (table 15). Likewise, minor users of cooperatives purchased substantial volumes of services from cooperatives. This suggests that something other than type of organization determined the choice among suppliers of service. Both cooperative and noncooperative firms had access to a common pool of farmers. Differences in cooperative involvement with services among types of farms were minor as were most differences among regions.

Cooperatives in the Southeast applied relatively more fertilizer and provided more farm planning, and those in Iowa stored more grain and mixed more feed.

Some specialized services were highly related to farm size (table 16). The use of futures markets, purchase and sales

Table 14—Cooperative involvement in farm activities, by size of farm

Farm activity	Gross sales of farm ($000)				
	1-39	40-99	100-199	Over 199	All
	Cooperative as a percentage of all firms[1]				
Spread fertilizer	58	60	65	65	63
Mix feed	53	52	59	58	56
Farm planning	48	53	56	48	52
Harvest crops	10	10	9	11	10
Apply chemicals	50	50	60	50	53
Buy animals/poultry	0	21	21	18	19
Store grain	47	60	65	64	62
Sell animals/poultry	44	30	33	29	32

'Number of farmers using cooperative or both cooperative and noncooperative firms as a percentage of farmers using all types of other firms to perform a specific farm activity.

Table 15—Cooperative Involvement in farm activities, by degree of cooperative use

Farm activity	Degree of cooperative use[1]	
	Major	Minor
	Cooperative as a percentage of all firms[2]	
Spread fertilizer	79	42
Mix feed	74	32
Farm planning	60	43
Harvest crops	11	9
Apply chemicals	70	30
Buy animals/poultry	27	8
Store grain	79	34
Sell animals/poultry	41	16

[1]A major user of cooperatives was defined as a farm which used cooperatives for over 50 percent of its livestock sales, its grain sales, or its farm supply purchases.
[2]Number of farmers using cooperatives or number of farmers using both cooperative and noncooperative firms as a percentage of farmers using all types of outside firms to perform a specific farm activity.

Table 16—Percentage of farmers using selected services, by size of farm

Service used	Gross sales of farm ($000)				
	1-39	40-99	100-199	Over 199	All
	Percent				
Futures market	10	21	20	33	23
Purchase/sale contract	29	45	55	61	51
Lawyer	17	29	32	49	34
Supplier credit	40	44	48	49	46
Computer (own)	6	6	10	24	12

contracts, and legal services increased sharply with farm size. Use of supplier credit increased with farm size to a lesser extent. The percentage of farmers owning a computer for use in the farm business increased greatly with farm size. Except for use of supplier credit, these percentages increased further for the very large farmer. Field crop farmers made greater use of futures markets and contracts than did livestock/dairy farmers. Contracts were used slightly more by major cooperative users, but other specialized services were the same as for minor users of cooperatives. The only regional difference was greater use of legal services in Iowa.

Patronage

Farmers had many patronage choices. While some farmers used only one firm, most used two or more (table 17). Farmers patronizing cooperatives used an average of 1.8 cooperatives during 1986 and this number did not vary greatly for size and type of farm or region. The use of more than one cooperative is fairly common for U.S. farmers [11]. The number of firms (all types) used by farmers for the sales of livestock/dairy/poultry and grain/soybeans was about the same for farms of different size and in different regions. Farmers purchased farm supplies from almost twice as many firms (4.5 on average) as they used for the sale of commodities, and the number of firms used did increase with farm size. The buying and selling behavior of farmers indicated that they do not have strong ties to a single firm, either cooperative or noncooperative. They may shift among firms because of more favorable prices or other terms of trade at the time a transaction is considered, or they may use one firm as the only source of a particular service and another as the sole outlet for a commodity. For whatever reasons, farmers did exercise their options and used a variety of firms.

Cooperatives in the study area were much more heavily involved with grain/soybean marketing and sales of farm supplies than with livestock/dairy/poultry marketing (table 18).

While the percentage of business with cooperatives declined only slightly as farm size increased, even small differences have important consequences for business volume. An earlier study found that favorable perceptions of cooperatives declined with farm size [2, p. 12]. For the very large farmer, (gross sales over $500,000), the percentage of livestock/dairy/poultry business with cooperatives dropped to 12.0 percent, but the grain/soybean percentage was 4 1.9 and the percentage of

Table 17-Average number of firms used during 1986 by farmers for sales of farm commodities and purchase of farm supplies, by farm characteristic

Characteristics	Cooperative firms[1]	Livestock/ dairy/ poultry[2]	Grain/ soybeans[2]	Farm supplies[2]
	Average			
Size of farm				
1 - 39	2.2	1.9	1.7	3.7
40 - 99	1.6	2.7	1.9	4.0
100 - 199	1.8	2.8	2.2	4.8
Over 199	1.8	2.6	2.2	5.1
All	1.8	2.6	2.0	4.5
Type of farm				
Field crops	1.7	2.2	2.1	4.1
Livestock/dairy	1.9	3.1	1.8	5.4
Region				
Indiana	1.8	2.8	2.3	4.5
Illinois	2.0	2.3	1.9	4.6
Iowa	1.9	2.7	2.0	4.6
Southeast	1.6	2.6	2.0	4.4
Cooperative user[3]				
Major	2.0	2.3	1.9	3.9
Minor	1.5	3.1	2.2	5.4

'Average computed on the basis of the number of farmers reporting the use of one or more cooperatives.
*Average computed on the basis of the number of farmers reporting the use of one or more firms of any type.
[3]A major user of cooperatives was defined as a farm which used cooperatives for 50 percent of its livestock sales, its grain sales, or its supply purchases.

Table 18—Percentage of business with cooperatives, by size of farm

Sales or purchases of	Gross sales of farm ($000)				
	1-39	40-99	100-199	Over 199	All
	Percent				
Livestock/dairy/poultry	19.1	15.9	18.7	14.8	16.8
Grain/soybeans	44.8	44.6	46.1	41.2	44.0
Farm supplies	48.1	48.9	49.2	46.5	48.1

farm supply business was 48.0, the same as the average for all farmers. A study of Texas cotton farmers reported lower use of cooperatives by very large farmers [9]. Crop farmers marketed a larger percent of their grain/soybean production (46.2 percent) with cooperatives than did livestock/dairy farmers (39.3 percent). Livestock/dairy farmers sold more of their production to cooperatives (19.2 percent) than did crop farmers who sold livestock/dairy/poultry production (14.2 percent). Both types of farmers purchased the same percent of their farm supplies from cooperatives (48 percent).

Regional differences showed up in cooperative shares of business (table 19). The percentages of business with cooperatives were higher than those that have been reported for the U.S. [3, 8, 12], but they were lower than reported for 1986 in a sample of Indiana, and Illinois counties [4, 5]. The percentage of farm supplies farmers purchased from cooperatives in the Indiana counties was 55 and they sold 44 percent of their grain to cooperatives. The percentage of farm supplies purchased from cooperatives in the Illinois counties was 50 and farmers sold 67 percent of their grain to cooperatives. Given the range in cooperative shares of different commodities handled in different regions, the shares reported here should not be generalized.

Table 1 Q-Percentage of business with cooperatives, by State and region

Sales or purchases of	Indiana	Illinois	Iowa	S.E.	All
			Percent		
Livestock/dairy/poultry	23.5	17.9	11.5	17.1	16.6
Grain/soybeans	38.7	42.3	51.5	37.0	44.0
Farm supplies	41.6	46.1	50.2	59.9	48.1

Table 20—Distribution of farmers by percentages of business with cooperatives

Sales or purchase of	Percentage of business with cooperatives					
	0	1-25	26-50	51-75	76-99	100
			Percent			
Livestock/dairy/poultry	74.5	6.0	4.9	1.1	3.9	9.6
Grain/soybeans	36.6	9.3	12.7	4.8	7.1	27.5
Farm supplies	14.6	22.7	21.7	11.5	14.5	15.0

The distribution of percentages of business with cooperatives revealed wide differences in the buying and selling behavior of farmers (table 20). Almost 75 percent of farmers sold no livestock, dairy or poultry production to cooperatives while only 15 percent purchased no farm supplies from cooperatives. A much larger percent of farmers sold all of their grain/soybeans to cooperatives (27.5 percent) than was the case for sellers of livestock/dairy/poultry (9.6 percent) or buyers of farm supplies (15.0 percent).

The percentages of livestock/dairy/poultry, grain/soybean, and farm supply business done with cooperatives were related to farm size, type of farm, region, years of farming, degree of specialization, time allocations, goals of the farmer, and number of firms patronized by using statistical methods. The results were consistent with these shown in tables, but few of the relationships were significant. The relationships for farms with over $200,000 gross sales were usually negative, but none were significant. Farmers that patronized more firms did a smaller percent of business with cooperatives and this relationship was significant in all cases. For some farmers, this result may reflect a limited number of cooperatives with which they can do business. The percentage of business with cooperatives increased as the degree of specialization increased (percentage of gross income from the largest income producing enterprise), but the relationship was significant for only half of the cases. Less than 20 percent of the variation in cooperative patronage (percent of business with cooperatives) was associated with variables used in the analysis. This means that cooperatives attract farmers with favorable price, quality, service, and terms of trade. Farm characteristics and other factors over which they have no control have little influence on cooperative patronage.

Opinions

Farmers expressed their opinions about commodity marketing, purchases of inputs, and importance of services (table 21). While opinions varied considerably about the 18 statements posed, the variation among farmers of different size was modest. Larger farmers more strongly believed that they would buy more customized products, that on-farm computers were needed, that volume discounts influenced their purchase decisions, that government programs had an important effect on their income, that they would be willing to purchase information, that they were more knowledgeable about marketing, that concentrating purchases and sales at one place would not be a good idea, and that agribusiness

Table 21—Opinions of farmers about their business, by size of farm.

Statement		Gross sales of farm ($000)				
		1-39	40-99	100-199	Over 199	All
		Average agreements				
1	Brand names influence my purchase decisions.	2.4	2.4	2.4	2.4	2.4
2.	I will buy more products direct from the manufacturer.	2.8	2.8	2.8	2.6	2.7
3.	More farmers should use the futures market.	2.9	2.9	2.9	2.8	2.8
4.	More of the inputs I buy will be customized to fit my needs.	2.4	2.4	2.3	2.2	2.3
5.	I expect suppliers to advise me on production practices.	2.1	2.0	2.1	2.1	2.1
6.	On-farm computers will be needed for successful farming.	3.4	3.2	3.1	3.0	3.1
7.	I do not need local agribusiness firms.	3.8	4.1	4.2	4.3	4.1
8.	Discounts on volume purchases is an important factor in my choice of suppliers.	2.4	2.5	2.3	2.1	2.3
9.	Visits by fieldmen to my farm affect my purchase decisions.	2.9	2.7	2.7	2.7	2.7
10.	I check my judgment with several persons whose opinions I respect.	2.2	2.2	2.2	2.2	2.2
11.	Gov't agriculture policies will have little effect on my income.	3.4	4.0	4.0	4.2	4.0
12.	It is wise to find a good buyer of my products and stick with him.	2.2	2.3	2.2	2.4	2.3
13.	I prefer to purchase information and advice from independent sources rather than from firms I patronize.	3.4	3.4	3.3	3.2	3.3
14.	I know more about marketing farm commodities I produce than most buyers in my area.	3.5	3.4	3.3	3.2	3.4
15.	I expect to remain in agriculture even if farm prices decline further.	2.4	2.4	2.4	2.2	2.3
16.	I can afford to spend time shopping around for the beat prices of products I use on my farm.	2.2	2.2	2.2	2.1	2.2
17.	The supermarket approach, doing all buying and selling at one place, would be good for me.	3.4	3.5	3.6	3.6	3.5
18.	I wish agribusiness firms were open evenings and on weekends.	2.8	2.9	2.9	3.0	2.9

'Average agreement with statements is based on a five point scale where 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree and 5 = strongly disagree.

firms did not need to be open evenings and on weekends.

The greatest differences between major and minor users of cooperatives were that major users more highly valued the supermarket approach of concentrating business at one place and were less concerned with firms being open evenings and on weekends. Field crop farmers more strongly believed that farmers should use futures market, that government programs influenced their income, and that the supermarket approach to buying and selling was good. Farmers in the Southeast more strongly believed that they would buy more customized inputs, that on-farm computers were needed, that volume discounts were important, that they were more likely to quit farming if prices declined further, and that the supermarket approach was good. Opinions of farmers in the Midwest were quite similar, although Iowa farmers expressed less interest in using futures markets and Indiana farmers thought that volume discounts were more important and that agricultural programs had a greater impact on their income.

Farmers were provided an opportunity at the end of the questionnaire to make comments on subjects of their choice and about 500 did so. Most comments related to the performance of firms and their opinions were favorable by about a 2 to 1 margin. About 35 farmers made comments to the effect that quality and service were more important than price. Comments relating to economic conditions in agriculture were pessimistic by a wide margin. Over 40 farmers expressed concern about the future of small farms and rural towns.

IMPLICATIONS

Many stories have been written about the large, high-tech farmer who is a breed apart from the family farmer. While there are some new species of farmers, the prevalence of space age farmers is greatly exaggerated, at least in the States covered by this research. The relatively modest differences among farmers of various sizes and types were the most striking finding of this study. Most large farmers are just ordinary family farmers who have grown to be larger than most [10]. Their purchase and sales behavior is not greatly different than that of other farmers. If cooperatives can successfully satisfy the preferences and needs of medium-sized farmers they should be able to meet the requirements of most large farmers.

At present, cooperatives are almost as successful in getting the business of large farmers as that of medium and small farmers (table 18). But, getting 1 percent less of the business of large farmers (sales over $200,000) is 4 times more serious than getting 1 percent less of the business of small farmers (sales less than $40,000). A loss of 1 percent of the large farmers as patrons is also 4 times more serious than the loss of 1 percent of the small farmers. In terms of business volume, the loss of one large farmer is equivalent to the loss of over 50 small farmers. Given the importance of sales and purchases of large farmers, cooperatives need to continue offering prices, terms of trade, and voice in the organization that are attractive to large farmers. It is also important to recognize the differences among the various types and sizes of farmers to serve their needs better. Cooperatives may find business niches among the wide variety of farmers, including large corporate farmers, organic farmers, farmers involved with alternative agricultural crops, professional farm management services, and the like. Business implications of differences among farmers are discussed below.

The analysis of characteristics of major and minor users of cooperatives did not reveal any special group to target as a source of increased business. But, the greater cooperative patronage by farmers with more years' experience (table 2) could be a problem in the future. The efforts of cooperatives to attract younger farmers seem justified.

The most important goal of farmers was economic, to reach desired net income goals (table 3). Cooperatives will better serve farmers by helping them achieve their goals. Quality, service, and advice as well as prices are important in achieving the income goal.

The wife played an important role in all aspects of the farm business, but spent a larger portion of her time than did her husband in the areas of buying and selling, managing, and planning (tables 4, 5, and 6). Cooperatives may be able to provide greater assistance to the wife in the performance of her responsibilities. She is a patron of the cooperative.

Farm magazines were an important source of information for farmers (table 8) and may thus be a good place to communicate with current and prospective patrons. Family and other farmers were also important information sources and may have a positive effect on volume if their experiences with the cooperative are favorable.

Larger farmers were more willing to pay for information (tables 9, 21). Cooperatives may be more attractive to

these farmers if they have greater involvement with private information services, commercial newsletters, and the like. They may provide economies for farmers in obtaining information.

Farmers relied heavily on both cooperative and noncooperative firms for information (tables 8, 11). Both types of firm had access to a common pool of patrons as a result of information seeking by farmers. Quality of information may be used to differentiate a firm and thereby attract patrons.

Cooperatives and noncooperative firms were primarily sources of information for purchase and sales decisions rather than management and planning decisions (table 11). Cooperatives may improve their attractiveness by providing information over a broader range of decision areas.

Large farmers used more different sources of information (table 10) and were thus in a position to evaluate the quality of information. To be a source of information for this group, it is important to be identified as reliable and accurate.

Use of other firms for financial and business services increased and use of production services decreased as farm size increased (table 13). Cooperatives appeared to emphasize production related services and they were successful in marketing these services. Major cooperative users purchased more production services. Cooperatives may need to strengthen the business and financial services they offer. This may attract patronage of larger farmers and there may be some spillover effects through purchases of other services and farm supplies and for sale of commodities.

Larger farmers make distinctly more use of some specialized services such as futures markets, legal services, and computers (table 16). Cooperatives may need to expand their services in these areas.

There was not a high degree of loyalty to a firm, whether cooperative or noncooperative (table 17). This study did not reveal the reasons farmers use numerous firms, but it was apparent that farmers were exercising their option to use a variety of firms.

Some of the regional differences in the share of business for cooperatives were large (table 19). Cooperatives may be able to learn from each other as there are reasons for such wide differences.

Large differences existed in the percentages of business with cooperatives among commodities and inputs (table 20). Cooperatives need to examine whether it would be more effective to attract farmers who do no business with them or to increase the proportion of business done with farmers who use several firms.

Substantial differences of opinion were reported about commodity marketing, purchase of supplies, and importance of services (table 21) that can be used to target activities to specific groups of farmers and to improve the attractiveness of the cooperative to farmers. For example, volume discounts were important, especially to larger farmers while the supermarket approach to buying and selling was not highly valued.

The farm characteristics analyzed in this study did not explain much of the buying and selling behavior of farmers. These are factors over which the cooperative does not exercise control. The good news is that cooperatives can influence the buying and selling behavior of farmers. They do have control over price, quality, service, and terms of trade.

A great deal of interest has been expressed over whether changes in cooperative organization are needed to serve an increasingly heterogeneous farm sector. Based on responses of Midwest and Southeast farmers, the answer could easily be “no” on the grounds that (1) differences in the needs of various types and sizes of farmers were modest, and (2) cooperative shares of business were about the same for different types and sizes of farms. There are three problems with this answer. First, it is not known whether there have been changes in the percent of business with cooperatives by different sizes and types of farmers. Large farmers may now be doing a smaller percent of their business with cooperatives than earlier. Second, large farmers may have shifted from cooperatives so that the share of large farmers doing business with cooperatives may have declined. The loss of large farmers as patrons could be serious for cooperatives. Third, it is not known whether cooperative shares of the business of large farmers would be greater if cooperatives were organized in a different manner. For example, would a cooperative for large farmers attract more such farmers because mutual interests are more easily recognized? Such a cooperative may be more cohesive and problems related to equal treatment of members would be diminished. It would be useful to experiment with several types of cocperative organization to determine their effectiveness.

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Appendix: Procedure

A questionnaire was developed to obtain data from farmers regarding farm characteristics and farm purchases and sales. The questionnaire was reviewed by farm management specialists and field tested. The revised questionnaire was sent to members of a privately managed panel in Indiana, Illinois, and Iowa. Panelists received a reward for completion of the questionnaire (points earned toward gifts). No demographic or farm organization questions were included in the questionnaire as these data were maintained by the panel operator. While not randomly chosen, the panel members have been found to match population parameters (age, education, farm type) of farmers in the three states [1, 2]. The main difference is that panel members are larger than the average farmer and projections to the population should be based on weighing responses of panel members in various size categories by the census proportions. Especially when interpreting averages, the effects of having a higher proportion of large farmers in the sample must be considered. The demographic and farm organization data were obtained by the panel operator in January 1986.

The questionnaire was also sent to a group of farmers associated with a Southeastern cooperative. These farmers were located in Georgia and parts of surrounding States. Their association with a cooperative was not deemed a source of bias since 85 percent of farmers in the midwest panel were members of one or more cooperatives. As previously indicated, analysis of cooperative involvement was based on patronage rather than membership. Three questions regarding farm size, type of 'farm, and years of farming were added to the questionnaire for the Southeast sample, since this information was not available for this group.

All questionnaires were mailed to farmers on January 12, 1987, and most of the information provided was for the 1986 calendar year. Midwestern farmers returned their questionnaires to the panel operator by the end of January. A second mailing was made to farmers in the Southeast who had not responded by the end of January.

The response rates (usable returns as a percentage of number mailed) were 84 percent for Iowa, 93 percent for Illinois, 90 percent for Indiana and 39 percent for the Southeast. A total of 2,537 usable questionnaires were returned.

Data from questionnaires were entered in a data base using a microcomputer, and entries were verified. Checks were made for internal consistency. Data entry accuracy was further checked by random sampling from the data base and comparison with the original questionnaires. Commercial software was used for analysis of data.

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Agricultural Cooperative Service (ACS) provides research, management, and educational assistance to cooperatives to strengthen the economic position of farmers and other rural residents. It works directly with cooperative leaders and Federal and State agencies to improve organization, leadership, and operation of cooperatives and to give guidance to further development.

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