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Market Structure and Conduct of the North Dakota Livestock Marketing Industry

by
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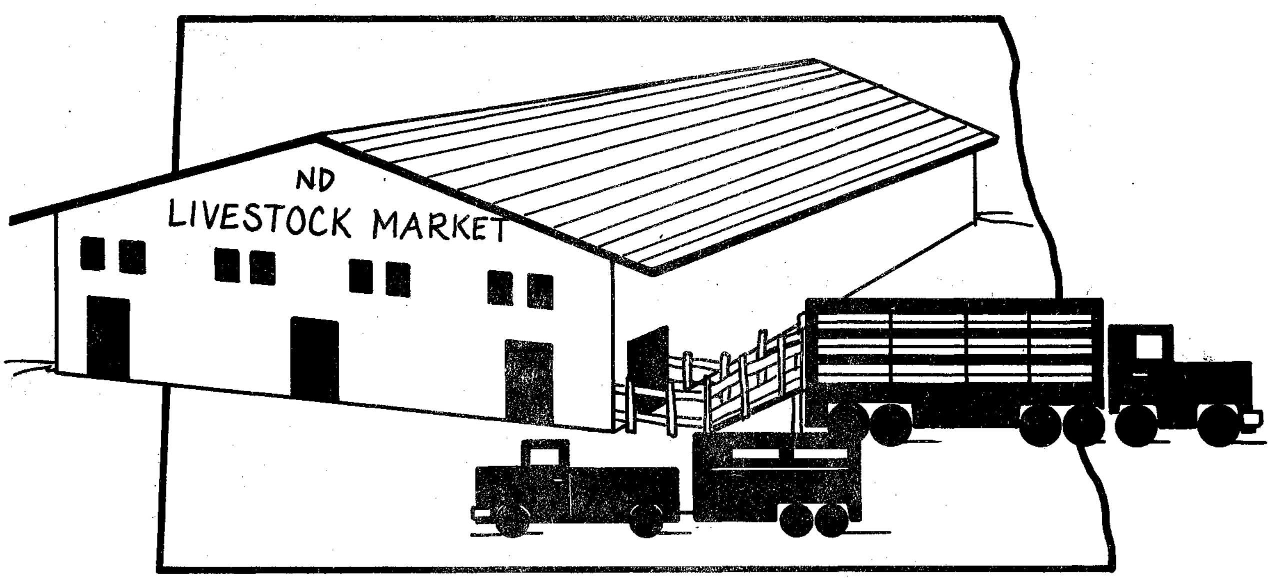

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PREFACE

This report represents a continuation in investigating factors that affect livestock marketing in North Dakota. Recent publications include Live Beef Cattle Basis Patterns in North Dakota and Related Hedge-Lifting Strategies, Feeder Cattle Basis Patterns in North Dakota, Feeder Cattle Hedge-Lifting Strategies in North Dakota, and Potential for Establishing a Feeder Cattle Futures Market Delivery Point in North Dakota. Copies are available from the Department of Agricultural Economics, P.O. Box 5636, North Dakota State University, Fargo, North Dakota 58105.

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Highlights

A mail survey of livestock auction market managers was conducted in 1982 to supplement secondary data concerning the market structure and conduct of the North Dakota livestock marketing industry. There were 21 livestock auction markets operating in North Dakota in 1980 compared to 29 in 1965. The volume of livestock sold through auctions increased from 771,863 head in 1965 to 806,000 head in 1980. Livestock marketed through the West Fargo terminal market totaled 569,000 head in 1980.

The principal market conduct topics discussed were promotion policies and costs, unfair trade practices, nature of competition, and buyer activity. Both large and small auctions indicated the the strongest competition for livestock came from other auction markets with the second strongest source being direct purchases by dealers and order buyers. Other sources of competition were buying stations, terminal markets, and meat packers. Advertising and reputation were major means of enhancing competitiveness of the market. Other ways to increase competitiveness included improving or adding new facilities, offering more services, and providing special sales.

Buying competition was rated by managers as best for the feeder cattle and butcher cows and bulls market classes. Methods used to increase buying competition were notifying buyer of sales, advertising, buying on auction account and increasing volume of livestock.

Since little physical differentiation of product exists and auctions must attract livestock buyers and consignments, promotional policies were important. Radio, daily newspapers, and personal solicitations were used most often for promotional purposes. Larger auctions utilized a wider range of promotional activities whereas smaller auctions emphasized more personal activities such as solicitations and telephone calling.

MARKET STRUCTURE AND CONDUCT OF THE NORTH DAKOTA LIVESTOCK MARKETING INDUSTRY

by

Timothy A. Petry and Phillip S. Feil*

Introduction

The marketing of livestock is an important source of farm income in North Dakota. Cash receipts from cattle, hog, and sheep marketings in 1982 amounted to $446,633,000 which was approximately one-fifth of the annual gross farm income in the state (7).

This study was conducted to identify characteristics of the North Dakota livestock marketing industry. Secondary data were obtained from the United States Department of Agriculture, Packers and Stockyards Administration in 1982 for the 1980 calendar year. A mail survey of 21 livestock auction managers was conducted in 1982 to supplement secondary data.

The structural characteristics of the North Dakota livestock marketing industry, with relation to location, size, and number of firms, were identified. Product differentiation, vertical integration, and ownership were additional dimensions examined. An understanding of industry structure is important, since it influences business decisions of both market agencies and livestock sellers. This importance is further emphasized by the large volume of livestock marketed through different outlets in North Dakota. Additionally, the existing structure influences overall industry performance.

Primary market outlets available to North Dakota livestock sellers included: auction markets, the West Fargo terminal market and direct sales to buyers, feedlots and packers. A seller's use of a market outlet will be influenced by the livestock species produced and regional location. Conversely, a market agency's location, size, charges, and service quality will influence livestock volume handled.

Number and Location of Marketing Agencies

Twenty-three registered[1] auction markets operated in North Dakota during 1980. Two of these firms were not included in this study since one did not hold auction sales and the other held only feeder pig sales. The

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[1]Registered with Packers and Stockyards Administration for operation in North Dakota.

remaining 21 firms formed the basis for auction market analysis. By 1984, four auctions had ceased operation while two new ones had started for a net number registered of 21 (12).

Auctions were located throughout the state but were heavily concentrated in the south central and southwestern counties. Their numbers have fluctuated since the first one was established in 1929 (3:7). The number of different auctions which operated at various times between 1943 and 1957 equaled 44 (3:7). There were 30 livestock auctions in the state during 1960 (6:1).

The state was arbitrarily divided into four areas to facilitate discussion on auction locations and changes which have occurred since 1957. These locations for 1957, 1965, 1980, and 1984 are illustrated in Figure 1. Auction numbers remained fairly constant in Regions I, II, and III. Region IV experienced the greatest change as indicated by a decrease of three firms from 1957 to 1980. Changes which have occurred in numbers and locations are summarized in Table 1. All regions experienced a decline in firm numbers since 1965.

TABLE 1. NUMBER AND LOCATION OF NORTH DAKOTA LIVESTOCK AUCTION MARKETS, 1957, 1965, 1980, AND 1984

Year	Region I	Region II	Region III	Region IV	Total
1957	4	3	8	11	26
1965	5	5	9	10	29
1980	4	4	7	8	23
1984	4	4	5	8	21

The only terminal livestock market in North Dakota in each study period was located at West Fargo. Operations at this facility began in 1935 (4:5). This market sold livestock through auction facilities and by private treaty.[2] During 1980, six commission firms were registered to buy and sell on a commission basis, but only five conducted business operations. There were also five buying agencies which bought on a commission basis and four dealers registered for operation at the stockyards (12).

The number of dealers and order buyers operating in the state has changed drastically since 1957. A 1959 study by Overboe indicated that 230 dealers were licensed in North Dakota during 1957 (8:21). The number of registered[3] dealers and order buyers decreased to 81 in 1980 and 71 in

[2]Private treaty selling permits contact between only one potential buyer and seller at any given time, so price is determined by private bargaining and the outcome is known only to the buyer and seller.

[3]Registered with Packers and Stockyards Administration for operation in North Dakota.

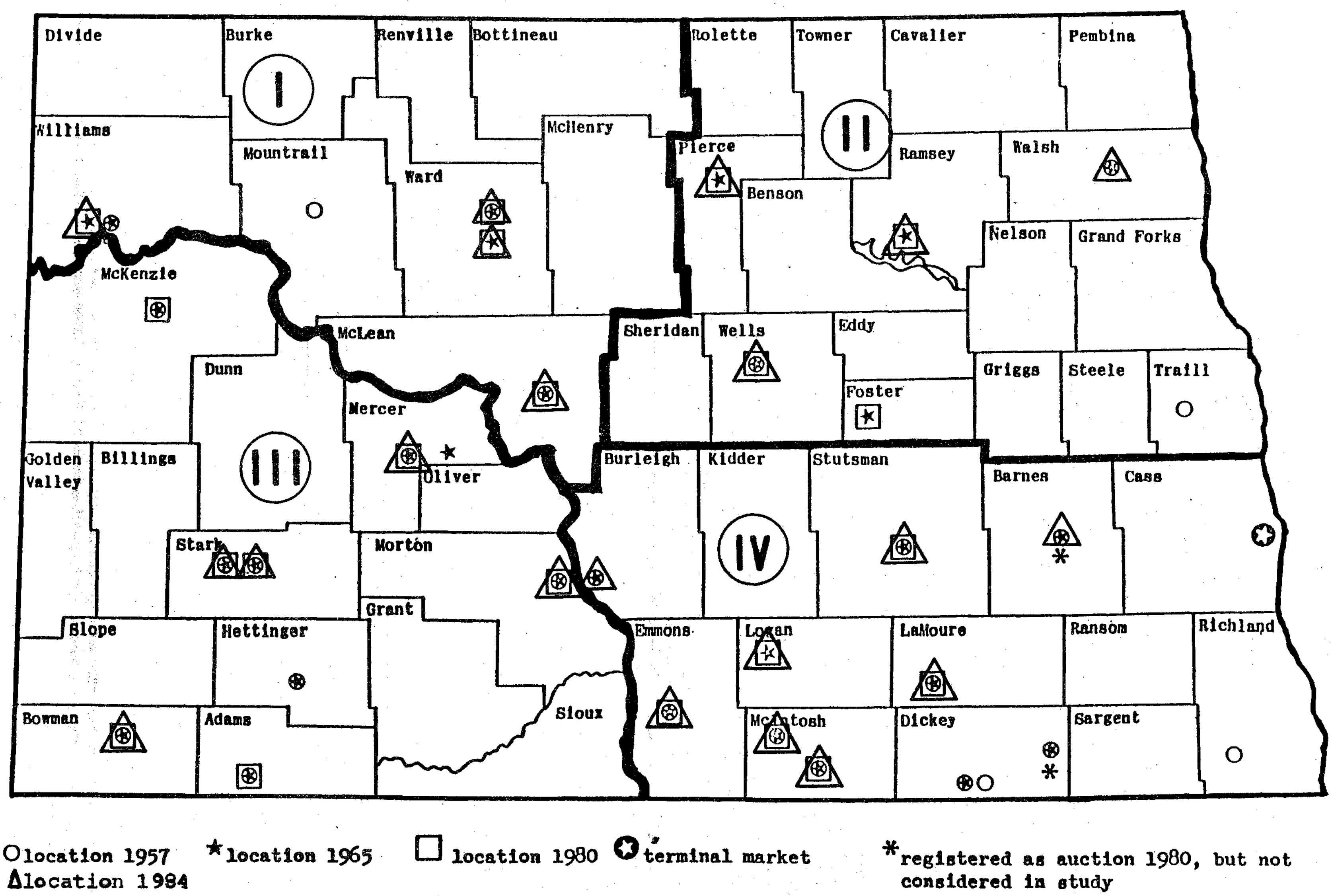

Figure 1. Auction Market Locations, 1957, 1965, 1980, and 1984

1984 (12). Dealers and order buyers were widely dispersed across the state with the heaviest concentration found in southwestern North Dakota (Figure 2).

The livestock auction markets and terminal market were the primary marketing outlets used by livestock sellers in the state. However, other outlets existed which provided alternatives in marketing livestock. These secondary market outlets included buying stations, weighing or association scales, National Farmers Organization or cooperative collection points, special auctions and grazing associations. Their locations across the state are shown in Figure 3.

Market outlets such as these generally have yard and weighing facilities but do not operate in the same manner as auction and terminal markets. They do, however, provide the possibility for marketing livestock, primarily cattle, and were a source of competition for auction markets and the terminal market.

Weighing or association scales were the most numerous in 1982, as 10 scales were located across the state (9, 10). The McLeod scale association had facilities for auction selling. However, regularly scheduled auction sales were not held. Buying stations were found in six locations (9, 10). There were three National Farmers Organization collection points; however, two utilized the same facilities as an association scale (9, 10). Another collection point was used by a slaughter lamb cooperative which had collection points in seven other states. Sales were conducted by teleauction means. If a certain collection point did not have a truckload, lambs were loaded at other collection points along the transportation route. Most lamb shipments were to eastern packers. An auction for selling feeder pigs was located in the southeastern part of the state. Finally, the grazing associations made use of scales across the state when marketing their livestock.

Auction and Terminal Market Volumes

Livestock marketings during 1980 in North Dakota totaled 1,791,000 head, of which 1,171,000 were cattle and calves, 510,000 were hogs and 110,000 were sheep and lambs (7:66-67). Marketings through the state's livestock auctions in 1980 were 806,000 head. This total included 585,000 cattle and calves, 121,000 hogs and 100,000 sheep and lambs. Auction market volumes for 1943, 1957, 1965, and 1980 are shown in Table 2.

Total auction marketings have increased since 1943. The major proportion of this growth was due to the large increase in cattle marketings. Cattle marketings increased by 471,056 head, while hog and sheep marketings increased by only 44,800 and 68,034 head, respectively, during the same time period.

Terminal marketings at West Fargo for all species have declined in the past seven years. Sheep marketings decreased over 57 percent from 150,000 head in 1974 to 64,000 in 1980 (11). Cattle marketings decreased 10 percent, moving from 326,000 in 1974 to 293,000 in 1980 (11). Hog marketings encountered a 26 percent drop to 212,000 head in 1980 from 288,000 in 1974 (11). It should be noted, however, that volumes at other midwestern terminal markets have experienced declines in volumes during the same time period.

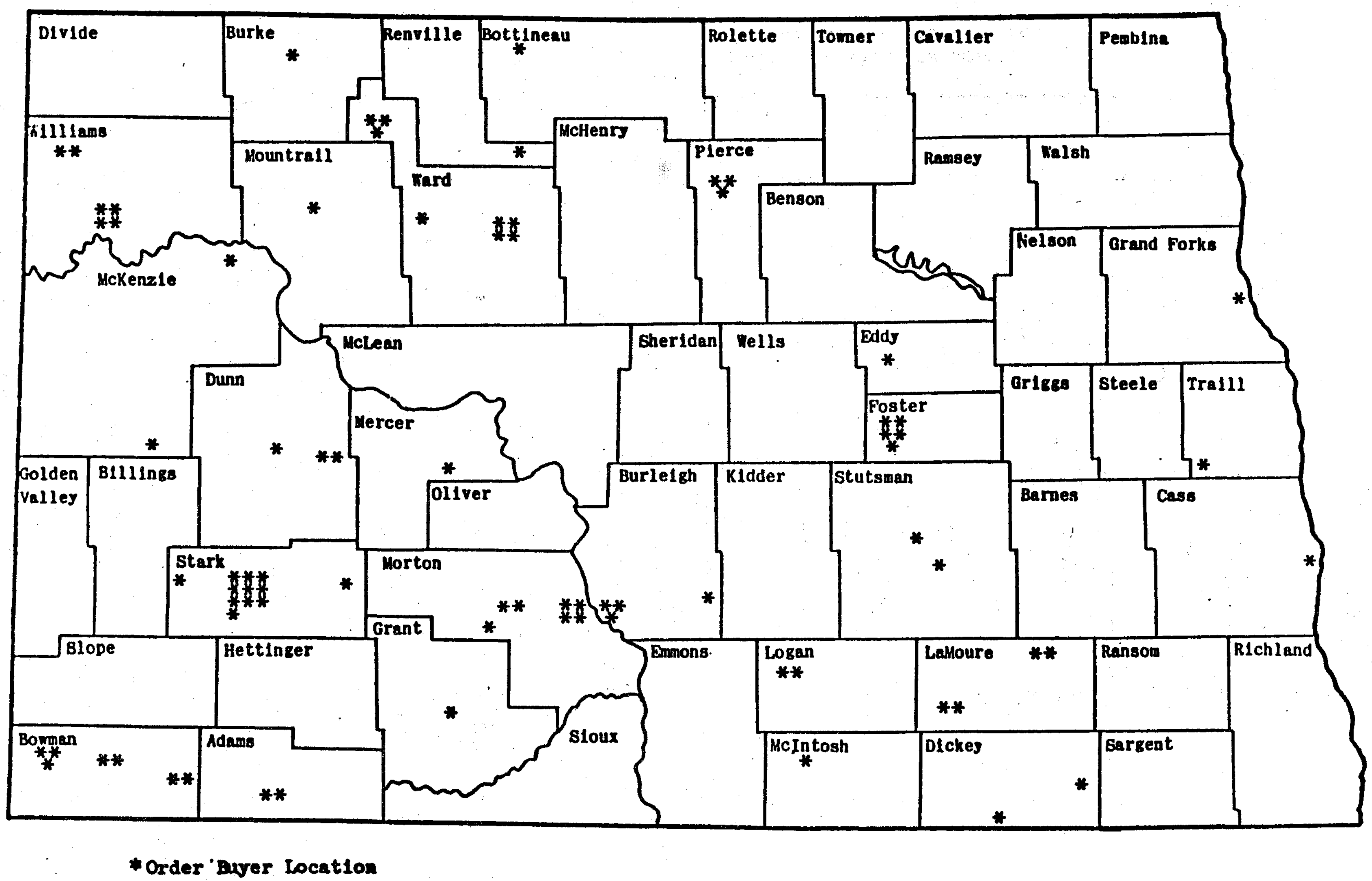

Figure 2. Location of Registered Order Buyers, 1980

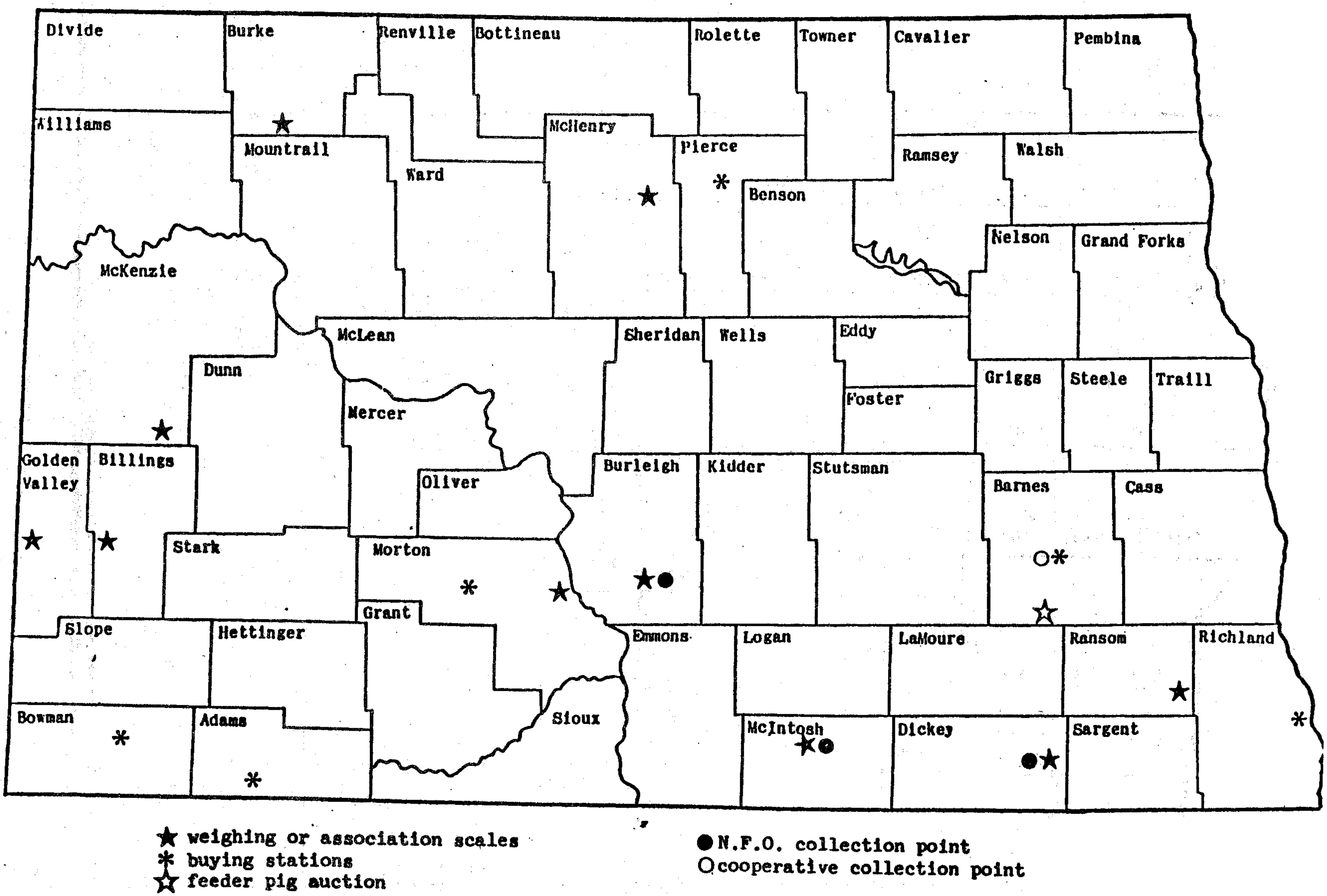

Figure 3. Location of Secondary Market Outlets, 1982

TABLE 2. AUCTION MARKET VOLUMES, NORTH DAKOTA, 1943, 1957, 1965, AND 1980

Year	Cattle	Hogs	Sheep	Total
	- - - - - -	number of head	- - - - -	
1943	113,944	76,200	31,966	222,110
1957	507,212	149,334	107,272	763,818
1965	528,475	182,000	106,853	771,863
1980	585,000	121,000	100,000	806,000

SOURCES: 1943 and 1957 (3), 1965 (5), 1980 (11).

Even though there has been a decline in marketings through the terminal market, it remains the largest single volume seller of all livestock species in the state. Its volume of 569,000 head is over 70 percent of the 806,000 head marketed through the state's 21 auctions.

Size of Firms

Firm size was examined to ascertain the extent of market volumes and changes that had occurred since 1957. Size was measured in terms of number of head of livestock marketed through a firm. Firms were then placed in different size categories based on volume.

The 21 auction markets which this study considered varied widely in size. There were five firms which had volumes in excess of 80,000 head, while seven firms had under 20,000 head marketed. Distribution of sales volume by firm size for 1980 is shown in Table 3.

TABLE 3. DISTRIBUTION OF SALES VOLUME BY AUCTION SIZE, NORTH DAKOTA, 1980

	Auctions		Volume of Sales		Cumulative Percentage	
Volume	No.	Percent of Total	Volume	Percent of Total	Auctions	Volume
		- percent -		- percent -	- - - percent - - -	
>80,000	5	23.8	452,972	56.2	23.8	56.2
60,000-79,999	0	0.0	- 0 -	0.0	23.8	56.2
40,000-59,999	3	14.3	136,214	16.9	38.1	73.1
20,000-39,999	6	28.6	137,826	17.1	66.7	90.2
<19,999	7	33.3	78,988	9.8	100.0	100.0

Firms in the largest three categories accounted for 38.1 percent of the total number of auctions and had 73.1 percent of the state's volume of auction marketings. Firms which fell into the smallest two categories made up 61.9 percent of auction numbers but accounted for only 26.9 percent of total auction marketings.

Changes that have occurred in size distribution over the years are presented in Table 4.

TABLE 4. SIZE DISTRIBUTION OF NORTH DAKOTA LIVESTOCK AUCTIONS, 1957, 1965, AND 1980

Size	Year		
	1957	1965*	1980
no. of head	- -	no. of firms	- -
>80,000	1	1	5
60,000-79,999	3	3	0
40,000-59,999	3	3	3
20,000-39,999	5	9	6
<19,999	14	11	7

*Size not available for two firms.

Firms in the greater than 80,000 category have increased while firm numbers in all other ranges have decreased or remained the same. The most notable changes have occurred in the smallest and largest categories. This would indicate some firms in the smaller size categories are no longer operating, while firms in the larger categories have increased in size. The majority of the firms are in the smaller size ranges.

Knutson found a trend from 1957 to 1965, in which smaller firms increased in size from less than 19,999 to the 20,000-39,999 range. A reversal in this trend appears to have occurred since 1965.

There were five commission firms which sold livestock at the terminal market in 1980. These firms marketed 569,000 head of livestock. All had volumes in excess of 44,000 head. The average volume per firm was 113,800 head. Comparisons with 1974 show that six commission firms sold 764,000 livestock for an average of 127,333 head per firm (11).

Livestock Densities

The effect that livestock densities have on the state's auction markets is discussed in this section. It was theorized that livestock densities would influence auction location and volume of marketings. A major livestock producing area would be expected to have a large number of auctions and higher volumes per auction.

Livestock are produced in all North Dakota counties. In 1980, the heaviest densities were found in the southwestern and south central regions of the state. Livestock densities, region size, and market locations are compared in Table 5.

A majority of auctions were located in Regions III and IV (Figure 1). These areas had the most livestock and heaviest density of livestock as measured by the comparatively small number of square miles per auction. Regions III and IV also had the largest number of livestock per auction in the state.

Regions I and II were quite similar in all conditions. Auctions were not as heavily concentrated and also had fewer livestock on farms and per square mile than the other areas. Region I had the second highest average volume even though it had the lowest livestock density. Region III had the highest average volume although its livestock density was less than Regions IV's. An explanation for the lower average volumes of Regions II and IV may be the location of the terminal market. It was located in eastern North Dakota and would negatively influence volumes of auctions located in the eastern regions. It would also appear that the larger volume auctions were located in the western regions.

Auction Market Concentration

Concentration measures a firm's or group of firms' proportion of a total market. It considers both size and number of firms in an industry. The larger the proportion of output accounted for by a few firms, the more those firms' decisions will affect the entire industry. Market share was determined by dividing a firm's volume by total auction market volume in North Dakota. Total auction market volume may not be an economically defensible market definition for computing concentration ratios. However, it was used to measure relative "concentration" levels and "market shares" among North Dakota firms operating in the North Dakota market.

Concentration levels among the auction markets had increased relative to both 1965 and 1957 in spite of a decreasing trend up to 1965. Auction market concentrations for 1957, 1965, and 1980 are presented in Table 6.

TABLE 6. VOLUME AND PERCENTAGE HANDLED BY AUCTION MARKET GROUPINGS, NORTH DAKOTA, 1957, 1965, AND 1980

Group	1957#		1965*		1980#	
	Volume	Percent	Volume	Percent	Volume	Percent
Four Largest	325,069	42.6	154,557	38.1	374,790	46.5
Eight Largest	493,068	65.6	238,837	58.9	589,186	73.1
Twelve Largest	607,502	79.5	296,381	73.1	609,936	85.6
Remaining Firms	156,316	20.5	108,874	26.9	116,064	14.4
Total Volume	763,818	100.0	405,874	100.0	806,000	100.0

*Animal units.

#Number of head.

TABLE 5. NORTH DAKOTA LIVESTOCK DENSITIES AND AUCTION MARKET FEATURES BY REGION, 1980

Region	Size Sq. Mile	No. of Auctions	Sq. Miles Per Auction	Livestock on Farms	Livestock Per Sq. Mile	Livestock on Farm Per Auction	Average Volume Per Auction
I	15,249	4	3,812	281,300	18.4	70,325	45,247
II	17,886	4	4,472	330,000	18.5	82,500	17,164
III	19,417	7	2,774	847,000	43.6	121,000	47,138
IV	17,525	6	2,921	984,000	56.1	140,571	37,731
Total	70,077	21	3,337	2,442,300	34.9	116,310	38,381

SOURCE: (7) and (12).

Observations (Table 6) reveal that concentration levels in 1980 were higher relative to 1965, although comparison was difficult because data for 1965 were in animal units. Concentration for the four largest firms increased to 46.5 percent in 1980, up from 38.1 percent in 1965. The eight largest firm level experienced an even greater increase as it rose from 58.9 percent in 1965 to 73.1 percent in 1980. The 12 largest firms had a concentration ratio of 85.6 percent in 1980 as compared to 73.1 percent in 1965. The group of remaining firms experienced a decrease in proportion of total marketings since 1965.

Knutson determined that concentration in the auction market industry had decreased from 1957 to 1965 (5:28-29). It appears that this trend reversed after 1965 and that possibly the long term trend was toward increased concentration.

Auction marketings in 1980 by species category for each concentration group are listed in Table 7. The four largest firms were most concentrated in cattle marketings but also accounted for 29.9 and 31.8 percent of hog and sheep marketings, respectively. The 12-firm level was highly concentrated in all livestock categories as these firms accounted for approximately 86 percent of total marketings for each species. The remaining nine firms accounted for approximately 14 percent of marketings for each livestock category.

TABLE 7. PERCENTAGE OF VOLUME HANDLED BY LIVESTOCK SPECIES AND AUCTION MARKET GROUPINGS, NORTH DAKOTA, 1980

Group	Cattle (%)	Hogs (%)	Sheep (%)	Total (%)
Top Four	(50.8)	(29.9)	(31.8)	(46.5)
Top Eight	(76.0)	(55.2)	(73.3)	(73.1)
Top Twelve	(85.5)	(85.6)	(86.5)	(85.6)
Last Nine	(14.5)	(14.4)	(13.5)	(14.4)

Concentration levels by groupings of four firms are given in Table 8. The concentration level associated with each grouping indicates that group's share of marketings. This allows comparisons of volume distribution among the top three groups of four firms and remaining group of nine firms.

TABLE 8. PERCENTAGE OF VOLUME HANDLED BY LIVESTOCK SPECIES AND FOUR FIRM GROUPINGS, NORTH DAKOTA, 1980

Group	Cattle (%)	Hogs (%)	Sheep (%)	Total (%)
Top Four	(50.8)	(29.9)	(31.8)	(46.5)
Second Four	(25.2)	(25.3)	(41.5)	(26.6)
Third Four	(9.5)	(30.4)	(13.2)	(12.5)
Last Nine	(14.5)	(14.4)	(13.5)	(14.4)
Total	100	100	100	100

The top four firms had 50.8 percent of cattle marketings, which was double each of the remaining four firm groupings. Hog marketings were more evenly distributed among the firm groupings. The third group had the largest percentage of hog marketings with 30.4 percent of the total. The major proportion of sheep marketings was accounted for by the first two groups. The second group of four firms had the greatest share of total sheep marketings with 41.5 percent.

Type of Ownership

Ownership of firms fell into three categories: individual proprietorship, partnerships, or corporations. The majority of firms were corporate organizations. Auction market ownership consisted of 15 corporations, five individual proprietorships and one partnership.

Ownership arrangements for the state's auction markets have changed considerably since 1957, as indicated in Table 9. The dominant form of ownership in 1957 was individual proprietorship. There were 13 firms (50 percent of all firms) owned in this manner during 1957. Corporate ownership increased to 71 percent of all firms by 1980, while individual ownership declined to 24 percent of all firms.

TABLE 9. OWNERSHIP ARRANGEMENTS OF NORTH DAKOTA AUCTION MARKETS, 1957 AND 1980

Type	Number	
	1957	1980
Individual	13	5
Partnership	6	1
Corporation	6	15
Cooperative Assoc.	1	0

Integration

Integration was examined to determine if auctions have diversified their business operations. A firm may integrate into related business activities if it will enhance current operations. This will allow a firm to improve its competitive position and possibly increase volumes and revenues.

The extent of integration was determined by an auction market survey conducted by the authors in July and August 1982. Enterprises operated in addition to the auction market are shown in Table 10.

Farming, ranching, and livestock dealing were the most prevalent enterprises operated in addition to the auction market during 1980. Knutson found that these three were also important in 1965. Other activities which were present in 1980 included a feedlot operation, trucking, auctioneering, and a livestock supply store.

TABLE 10. ADDITIONAL BUSINESS ENTERPRISES OF NORTH DAKOTA AUCTIONS, 1965 AND 1980

Enterprise	Number of Auctions Engaged in Enterprise 1965	1980
Farming	12	6
Ranching	6	6
Livestock Dealer	4	6
Feedlot Operation	5	1
Auctioneering	4	1
Trucking	2	2
Feed Store	1	1
Number of Firms Responding	26	12

Product Differentiation

An auction market's product is the selling service it provides a livestock producer. A firm obtains revenue by selling livestock to buyers and receiving a commission from the seller. This selling service does not have a great degree of physical product differentiation. Therefore, auction markets may attempt to differentiate their selling service from a competitor's to maintain or increase their market share.

Product differentiation refers to how customers view products of competing sellers in a market. Buyers may form preferences for a certain product due to differences in style, services, sale terms, or other factors. Auction markets across the state provided a wide variety of auxiliary services in addition to their selling service. This was viewed as an effort to make their selling service more attractive to livestock producers and buyers. Significant product differentiation may also influence sales promotion policy.

Auxiliary services provided to customers by auction markets included: trucking, assistance in finding trucking, market information, advance consignment information, advertising customer livestock, livestock care, livestock appraisal, special sales, and eating facilities. All firms responding provided these auxiliary services, with the exception of trucking, to enhance their selling service. Only six of the auctions offered trucking services; however, all provided assistance in finding trucking.

Knutson determined that auctions used the same sort of practices in 1965 to differentiate service from that of other firms in the industry. The only significant difference between 1965 and 1980 seemed to be that firms offered even more services in 1980. It appeared that since all firms offered nearly identical services, the quality of those services would influence how well the selling service was differentiated.

Summary of Market Structure

Structural characteristics of auction markets were examined. Changes had occurred with respect to auction market numbers, size, and volumes. There were 29 auction markets in 1965, while only 21 were in operation in 1984. After 1965, the volume of livestock moving through auctions increased from 771,863 head to 806,000 head in 1980. The major portion of this increase was due to the rise in cattle marketings.

Livestock marketings through the terminal market totaled 569,000 head in 1980. The terminal market experienced a decline in marketings, as had other midwestern terminal markets, from 764,000 in 1974 to 569,000 head in 1980. Even though terminal market volume declined, it remained the largest single volume seller of all livestock species in the state.

Wide variations existed in auction size. There were five firms which had volumes greater than 80,000 head, while six had between 20,000-40,000 head and seven had less than 20,000 head volume in 1980. The number of auctions in the greater than 80,000 size category increased, while firm numbers in all other categories decreased or remained the same. Indications were that larger firms had increased in size and some smaller firms had ceased operations.

Concentration levels among the state's auction markets were higher in 1980 relative to 1965. The four-firm concentration ratio was 38.1 percent in 1965 as compared to 46.5 percent in 1980. The 12 largest firms accounted for 85.6 percent of auction marketings in 1980. The same group had 73.1 percent of auction marketings in 1965. It appears that the long term trend has been towards increased concentration. Concentration levels associated with the auction markets would classify them an an oligopoly (2:11).

A large increase occurred in the number of incorporated auctions. The number of corporate owned auctions increased from six in 1957 to 15 in 1980. Individually owned firms decreased from 13 in 1957 to five in 1980.

The extent of integration by auction markets was determined through a survey. The most prevalent enterprises operated in addition to the auction market were farming, ranching, and livestock dealing. These same enterprises were common in 1965 also.

Various services were provided by auction markets across the state. This was viewed as an attempt by auction markets to differentiate their product (selling service) from that of competitors. Since all firms offered similar services, the quality of those services influenced the effectiveness of differentiation. It appeared that firms offered even more auxiliary services in 1980 than in 1965.

Market Conduct of North Dakota Livestock Auction Markets

Market conduct considers firms' behavior patterns as they compete in the market. This behavior includes internal actions and also interfirm actions. Since oligopolies characterize mutual interdependence among a smaller number of firms, they will be more involved in different forms of market conduct than a monopolist or purely competitive firm.

Livestock auction markets are considered sellers of a product, their marketing service. Conduct would consist of pricing policies, promotion policies, and policies of action against competitors. The primary conduct-related dimensions addressed were promotion policies and unfair trade practices. The nature and magnitude of these dimensions were identified and compared to those important in 1965. Additional factors considered included the nature of auction market competition and buyer activity.

Market conduct data were based on a mail survey of North Dakota livestock auction market managers conducted in July and August 1982. Twenty-one questionnaires were sent, and 12 responses were received. The survey responses, in some instances, reflect managers' attitudes and opinions concerning how they perceived their operations and competition. This type of qualitative data provided a general overview of current conduct-related dimensions.

Nature of Auction Market Competition

Competition faced by livestock auction markets takes two forms. An auction must attract sufficient volumes from livestock sellers to attain revenue, while at the same time solicit enough buyers to insure competitive bidding. Auction markets compete with each other as well as other market channels in selling services to both buyers and sellers. Low volume and poor buyer competition would be detrimental to an auction market's competitive position whereas large volumes and competitive bidding would complement each other and benefit auctions.

Livestock consignments must be attracted from sellers for an auction to begin operations. A livestock seller has different concerns when marketing livestock. Auction managers were asked to identify what factors sellers consider important when marketing livestock (Table 11).

TABLE 11. AUCTION MANAGERS' OPINIONS AS TO WHAT FACTORS SELLERS CONSIDER IMPORTANT WHEN SELLING LIVESTOCK, 1982

Seller Consideration	Ranking of Consideration		
	Six Largest	Six Smallest	All Twelve
Price Received	1	1	1
Services Offered	2	2	2
Marketing Charges	3	5	3
Assurance of Payment	4	4	4
Distance to Market	6	6	6
Net Returns	5	3	5
Accurate Weights	7	7	7

The managers indicated that the most important consideration of sellers was price received for livestock, followed closely by services offered. Both large and small auctions ranked these as the number one and two factors that sellers consider important. The larger six auctions felt marketing charges were the third most important consideration whereas smaller auctions ranked net returns as third. Other factors that managers felt sellers considered included assurance of payment, distance to market and accurate weights.

These responses indicated that managers believed sellers were most responsive to prices and services offered by an auction. Therefore, auctions must maintain good buyer activity, which may result in better prices. Service quality would also be an important factor for auction markets to consider. The six larger auctions, with higher rankings on marketing charges, indicated more strongly than the smaller six that producers consider marketing charges important.

Auction managers indicated that competition for livestock came from several sources. These sources included other auction markets, direct purchases by dealers and order buyers, buying stations, the terminal market, and meat packers.

Both the large and small auctions felt that most competition came from other auction markets. Direct purchases by dealers and order buyers were ranked second by both. The groups differed on the third ranking. The six largest rated buying stations third, while the six smallest indicated that the terminal market was the third strongest source of competition. The larger auctions also indicated that meat packers and the terminal market were sources of competition.

An auction market can improve its competitive position by various means. The managers relied primarily on advertising and reputation as ways to meet competition. Two firms had improved and added new facilities in hopes of being more competitive. Auctions can also enhance competitiveness by providing more services, increasing quality of services and providing special sales. If an auction can provide a unique or better service it may gain a competitive edge over a rival. It appeared that all auctions offered nearly identical services, so increasing quality of services would be important in strengthening a firm's competitive position.

All 12 auctions which responded to the survey reported that special auction sales were held, including special sales for feeder livestock, breeding livestock, registered livestock, horses and sheep. The most common sales were for registered and breeding livestock and horse sales. These special sales should enhance an auction market's receipts.

The larger auction markets were found to have bigger trade areas. The average trade area for all 12 auctions was a radius of 107 miles. The six largest auctions average trade area was 121 miles as compared to 90 miles for the six smallest, which would indicate that larger auctions competed for livestock at further distances. This would be expected since the larger auctions had more resources with which to solicit livestock buyers and sellers.

The average number of sale days per year for all auctions was 52. Sale days per year declined as firm size decreased. The four largest auctions had the highest average number of sales per year at 65. The average for the eight largest was 58 while the 12 largest averaged 57. The remaining nine firms averaged 45 sales per year.

Buyer Activity

Providing good buyer competition is an important factor in an auction's ability to attract consignments. Price competition is enhanced if there are a relatively large number of buyers present. Responding auction market managers rated buyer competition for different market classes of livestock. These ratings are given in Table 12.

TABLE 12. AUCTION MANAGERS' RATINGS OF BUYER COMPETITION AT THEIR MARKET, 1982

Market Class	Auction Size Group	Percent of Managers Rating Competition			
		Excellent	Good	Fair	Poor
		- - - - - - -	percent	- - - - - - -	
Fat Cattle	six largest	0	50	17	33
	six smallest	33	17	17	33
	all twelve	17	33	17	33
Butcher Cows and Bulls	six largest	67	33	0	0
	six smallest	67	33	0	0
	all twelve	67	33	0	0
Feeder Cattle	six largest	83	17	0	0
	six smallest	100	0	0	0
	all twelve	92	8	0	0
Hogs	six largest	0	50	17	33
	six smallest	66	17	0	17
	all twelve	33	33	8	25
Sheep	six largest	17	50	33	0
	six smallest	34	17	34	17
	all twelve	25	33	33	8

Large and small auctions indicated that buyer competition was best in the feeder cattle and butcher cows and bulls market classes. Buyer competition in the fat cattle market class was rated fair or better by 67 percent of the auctions in both size categories. The smaller six rated hog buying competition somewhat better that the largest six. Buyer activity for sheep was rated fair or better by all of the larger auctions and five of the smaller six. There were reports by some managers of poor buying activity for fat cattle, hogs, and sheep.

To enhance buyer activity, auctions should maintain established buyers and attempt to attract new buyers. The most common means used by the auctions surveyed to increase buyer activity was to notify buyers of sales. Additional methods used to enhance buying activity were advertising, buying on auction account and attempting to increase volume. Responses from the larger six auctions indicated they relied more on advertising to increase buyer activity than did the smaller six.

Promotional Policies

The marketing service provided by auction markets is a highly substitutable product. Little physical differentiation of the product exists, even though attempts are made at differentiation by providing extra services. This may induce auctions to pursue active promotional programs characterized by high promotion expenditures. Promotion has been given many definitions. It is generally regarded as persuasive communication designed by firms, with the primary objective of informing and persuading a selected audience on that firm's views, products or services (1:501). A firm has four activities it can pursue when planning promotion: 1) personal selling, 2) advertising, 3) sales promotion, and 4) publicity.

Personal selling entails direct contact between a seller and buyer for the purpose of making a sale. Advertising is a paid, nonpersonal form of commercial promotion designed to present and promote ideas, products, and services of a firm.

Sales promotion includes marketing activities other than personal celling, advertising, and publicity which are used to supplement other forms of promotion. Examples of this would be displays, samples, demonstrations, direct mailings, and show exhibits. Publicity is not paid for nor controlled by a firm. It is considered a nonpersonal form of promotion which is published in media form and presents a favorable picture of the firm.

A business firm organizes its promotional program by selecting a mix of these four activities plus selecting a target audience, choosing a message to communicate, determining media channels and setting expenditure levels. Several survey questions measured how North Dakota auction markets organize their promotional programs.

Knutson found auction markets used different forms of advertising, personal selling, sales promotion, and publicity in their promotional activities during 1966 (5:53). The same type of promotion and advertising programs were also utilized by auctions in 1982. Media used for advertising purposes in 1966 and 1982 are shown in Table 13.

Radio and newspapers were used widely in both 1966 and 1982. Television appears to have diminished some in importance since 1966. Farm magazines are still used to some extent. All communication channels utilized for promotional purposes in 1982 are listed in Table 14.

TABLE 13. MEDIA USED FOR PROMOTION BY SURVEYED LIVESTOCK AUCTION MARKETS, 1966 AND 1982

Media	1966		1982	
	No.	%	No.	%
Radio	20	95.0	12	100.0
Television	11	52.0	3	25.0
Newspapers	19	90.0	12	100.0
Farm Magazines	4	19.0	3	25.0
Number of Firms Responding	21		12	

TABLE 14. MEDIA CHANNELS UTILIZED BY NORTH DAKOTA LIVESTOCK AUCTIONS FOR PROMOTION, 1982

Media	Number of Firms	Percent
Radio	12	100.0
Weekly Newspaper	12	100.0
Personal Soliciations	12	100.0
Telephone	9	75.0
Daily Newspapers	5	42.0
Television	3	25.0
Farm, Trade Magazines	3	25.0
Direct Mailings	2	17.0
Yellow Pages	2	17.0
Number of Firms Responding	12	

All of the auctions used radio, weekly newspapers and personal solicitations for promotional purposes. Telephone was the second most widely used communication channel. Those used to lesser degree included daily newspapers, television, farm and trade magazines, direct mailings, and the yellow pages.

Managers were asked what channel was used most often in their promotional program. Radio was identified by managers of both large and small auctions as being used most often. The major reasons given for ranking radio first were: 1) it reaches more customers, 2) easy to change the message, and 3) better results. Some managers ranked personal solicitations first because they felt producers appreciated this type of contact.

Responses from the six largest auctions indicated that personal solicitations, telephone, daily newspapers, and television together ranked behind radio as a most often used source. These four were followed in order by weekly newspapers, farm magazines, and direct mailings.

The six smallest auctions rated personal solicitations higher than the larger auctions did. They also ranked weekly newspapers ahead of daily newspapers. Farm magazines, direct mailings, and TV were rated as the least used sources of promotional communication.

These responses indicated that smaller auctions emphasized more personal forms of communication as reflected in lower ratings for television and daily newspapers and the higher ratings for telephone and personal visits. The larger firms utilized a wider range of promotional activities. This would be expected since they have more resources to devote to promotional activities.

The managers were also asked to indicate at what group promotional efforts were directed, in order to determine the target audience. Promotional efforts of the 12 responding firms were mainly devoted to producers. Nine managers concentrated primarily on producers when it came to promotional activities. The other three firms gave equal consideration to both buyers and producers in promotional efforts.

Promotional Expenditures

A livestock auction market can alter the magnitude of its promotional program by changing promotional expenditures. This raises an important question of how much should a firm spend on promotion. The optimum amount a firm should spend on promotion would be where resulting marginal revenue from sales just equals the marginal cost of gaining those sales. Theoretically, this level would yield maximum return on promotional expenditures. However, measuring this precise level of expenditures is difficult and so does not provide a simple solution. It can be assumed that up to a certain point funds spent for promotion benefit the firm by increasing sales.

Total promotional expenditures during 1980 for the 21 auctions were $584,321 or an average of $27,825 per firm (12). The 27 auction markets spent a total of $213,881 or $7,930 per firm in 1965. If the 1980 expenditures are adjusted (deflated) to a 1965 basis using the GNP implicit price deflator,[4] they would total $244,983 for an average of $11,666 per firm. This indicates total and average expenditures increased in 1980 relative to 1965 in both absolute and real terms.

Distribution of promotional expenditures were compared to detect changes in the relative position of firms' promotional expenditures from 1965 to 1980 (see Table 15).

Promotional expenditures were more evenly distributed in 1980, whereas in 1965 they were concentrated in the lower expenditure levels. Adjusting the 1980 expenditures to a 1965 basis resulted in a different distribution. There were eight auctions which spent $10,000 or more in

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[4]A statistical measure composed of a weighted average of component price indexes which reveals changes in the price level over a period of years according to constant values.

TABLE 15. PROMOTIONAL EXPENDITURE DISTRIBUTION FOR NORTH DAKOTA LIVESTOCK AUCTION MARKETS, 1965 AND 1980

Expenditure	Number of Firms 1965	1980	1980*
Over $20,000	3	9	5
15,000-19,999	1	4	--
10,000-14,999	4	3	4
Under 10,000	19	5	12
Total Auctions	27	21	12

*1980 promotional expenditure distribution on a 1965 basis.

1965 while the deflated 1980 figures revealed that nine auctions spent $10,000 or more. However, those nine auctions in 1980 represented 43 percent of all auctions while in 1965 the eight auctions composed 30 percent of all auctions. There were 12 auctions (50 percent of the total) that spent under $10,000 (1965 basis) in 1980 as compared to 19 (70 percent of the total) in 1965.

Promotional expenditures by concentration groupings for 1965 and 1980 are given in Table 16. The four largest auctions spent an average of $62,547 for promotion purposes in 1980 as compared to $50,404 and $41,192 for the eight and 12 largest auctions, respectively. These groups'

TABLE 16. AUCTION MARKET PROMOTIONAL EXPENDITURES BY CONCENTRATION GROUPS, 1965 AND 1980

Group	Total Promotional Expenditures	Expenditure Per Firm	Percent of Total Promotional Expenses
			- - - percent - - -
1965			
Four Largest	$ 90,982	$22,745	42.5
Eight Largest	129,828	16,228	60.6
Twelve Largest	158,590	13,215	74.1
Remaining Fifteen	55,514	3,700	25.8
Total	$214,104		
1980			
Four Largest	$240,189	$62,547	42.8
Eight Largest	403,230	50,404	69.0
Twelve Largest	493,698	41,142	84.5
Remaining Nine	90,623	10,069	15.5
Total	$584,321		

expenditures were $30,000 or more than the remaining nine auctions which spent a combined total of $90,623 or $10,069 per firm for promotion. The difference in expenditure levels between the larger auctions and remaining auctions was greater in 1980 than in 1965.

Comparing 1965 and 1980 on the basis of a group's percentage of total promotional expenditures revealed that the four largest auctions accounted for 42.5 percent of the total in 1965 and 42.8 percent in 1980. The percentage for the eight largest increased from 60.6 percent in 1965 to 69.0 percent in 1980. The 12 largest firms accounted for a larger share of total promotional expenditures in 1980, as they increased from 74.1 percent in 1965 to 84.5 percent. The remaining auctions' percentage of total promo-tional expenditures declined from 25.9 percent to 15.5 percent. Promotional expenditures were compared by four firm groupings along with the remaining nine in Table 17.

TABLE 17. AUCTION MARKET PROMOTIONAL EXPENDITURES BY FOUR FIRM GROUPINGS, 1965 AND 1980

Group	Total Promotional Expenditures	Expenditure Per Firm	Percent of Total Promotional Expenses
			- - - percent - - -
1965			
First Four	$ 90,982	$22,746	42.5
Second Four	38,846	9,712	18.1
Third Four	28,762	7,191	13.4
Remaining Fifteen	55,514	3,701	25.9
Total	$214,104		
1980			
First Four	$250,189	$62,547	42.8
Second Four	153,041	38,260	26.2
Third Four	90,468	22,617	15.5
Remaining Nine	90,623	10,069	15.5
Total	$584,321		

Sizable differences existed in average firm expenditures between the four largest and other categories in 1980. The first group's expenditures were $24,287 more than the second group, $39,930 more than the third group and $52,478 more than the remaining nine.

Comparing each group's proportion of total promotional expenditures indicated that the second and third groups have increased their share since 1965. The second four in 1965 accounted for 18.1 percent of total promotional expenditures, while in 1980 they had 26.2 percent of the total. The third group increased slightly from 13.4 percent in 1965 to 15.5 percent in 1980.

The relationship of promotional costs to total costs was examined in order to determine if any changes had occurred in the magnitude of promotion since 1965. The relationship of auction market promotional costs to total costs in 1965 and 1980 is shown in Table 18.

TABLE 18. RELATIONSHIP OF AUCTION MARKET PROMOTIONAL COSTS TO TOTAL COSTS, 1965 AND 1980

Year	Number of Firms	Total Reported Costs	Promotional Costs	Percent of Promotion to Total
				- - percent - -
1965	27	$2,268,969	$214,104	9.43
1980	21	$6,162,385	$584,321	9.48

The percentage spent on promotion as compared to total costs has remained at the same level since 1965 for all firms. During 1965, promotional outlays were 9.43 percent of total outlays and in 1980 they were 9.48 percent.

Promotional expenditures as a percentage of total expenditures decreased for the four largest and nine smallest firms from 1965 to 1980 (Table 19). The four largest firms' promotional expenditures declined from 9.99 percent to 7.42 percent while the group of smallest firms dropped from 9.45 percent to 8.35 percent. The percentage spent on promotion for the eight and 12 largest auctions has remained at approximately the same level.

TABLE 19. RELATIONSHIP OF TOTAL EXPENDITURES TO PROMOTIONAL EXPENDITURES BY CONCENTRATION GROUPINGS, 1965 AND 1980

Group	Total Reported Expenditures	Promotional Expenditures	Percent Spent on Promotion
			- percent -
1965			
Four Largest	$ 910,647	$ 90,982	9.99
Eight Largest	1,404,819	129,828	9.24
Twelve Largest	1,681,814	158,590	9.42
Remaining Fifteen	587,155	55,514	9.45
1980			
Four Largest	$3,372,767	$250,189	7.42
Eight Largest	4,442,191	403,230	9.08
Twelve Largest	5,077,077	493,698	9.72
Remaining Nine	1,085,308	90,623	8.35

Examining percentages spent on promotion by four firm groupings showed the changes even more clearly. These comparisons are given in Table 20. The second group of four firms increased the percentage of total costs spent on promotion from 7.86 percent in 1965 to 14.31 percent in 1980. This figure also increased from 10.38 percent in 1965 to 14.25 percent in 1980 for the third group of four.

TABLE 20. RELATIONSHIP OF TOTAL EXPENDITURES TO PROMOTIONAL EXPENDITURES BY FOUR FIRM GROUPINGS, 1965 AND 1980

Group	Total Reported Expenditures	Promotional Expenditures	Percent Spent on Promotion
			- percent -
1965			
First Four	$ 910,647	$ 90,982	9.99
Second Four	494,172	38,846	7.86
Third Four	276,995	28,762	10.38
Remaining Fifteen	587,155	55,514	9.45
Total	$2,268,969	$214,104	9.43
1980			
First Four	$3,372,767	$250,189	7.42
Second Four	1,069,424	153,189	14.31
Third Four	634,886	90,041	14.25
Remaining Nine	1,085,308	90,623	8.35
Total	$6,162,385	$584,321	9.48

The percentage of total costs spent on promotion remained at the same level as 1965 when all firms are considered. The four largest and nine remaining firms decreased the percentage of total costs allocated to promotion while the second and third groups of four auctions increased expenditure levels. It appeared that auctions in these categories allocated more resources to promotion in order to increase volume.

It should be noted that while the four largest firms decreased the percentage of total costs spent on promotion, they still have much higher average expenditures per firm and also total promotional outlays than the other groups. Knutson determined that smaller firms in 1965 were increasing expenditure levels on promotion more than the larger auctions. This was not true in 1980. The second and third group of four auctions increased their expenditures on promotion more than the other two groups.

Overall, promotional expenditures increased for the state's auction markets. This indicates that since physical differentiation of product is difficult, concentrated promotion policies existed which generated high promotion costs. Knutson found this was also true in 1965.

Unfair Trade

Knutson suggested that the nature of an auction market's service may expose it to different unethical or unfair trade practices (5:55). Unfair trade practices reflect the attempts of firms to change their business environment by eliminating or weakening present competitors and keeping out entrant firms. The overall objective would be to increase market share. Unfair trade practices which can occur among auction markets include: price guaranteeing, false advertising, discounted or free trucking to livestock sellers, allowing slow payment by buyers, collusion among buyers and producers not entering promised consignments. All or some of these practices may occur, but proving them is difficult.

Managers who responded to the survey were of the opinion that certain unfair trade practices did exist. These practices were compared to those present during 1965 in Table 21.

TABLE 21. UNFAIR BUSINESS PRACTICES IDENTIFIED BY NORTH DAKOTA AUCTION MARKETS, 1965 AND 1982

Practice	Number of Firms Identifying Practice	
	1965	1982
Price Guaranteeing	10	9
False Advertising	3	7
Discounted, Free Trucking	--	7
Producers Not Entering Promised Consignments	7	4
Buyer Collusion	3	4
Allowing Slow Payment by Large Buyers	1	8
Reducing Marketing Charges	--	2
Number of Firms Responding	21	12

Price guaranteeing was the most common unfair trade practice identified by firms in both 1965 and 1982. Other practices identified by auctions in 1965 that also existed in 1982 were: 1) false advertising, 2) producers not entering promised consignments, 3) buyer collusion, and 4) allowing slow payment by large buyers. There was a higher percentage of firms in 1982 indicating that false advertising and slow payment were occurring more often. Two practices identified in 1982 that were not reported in 1965 included discounted or free trucking and reducing charges. There were no differences among responses by the largest and smallest six auctions.

The managers were also asked if they were satisfied with present regulation of livestock marketing activities. Seven managers were satisfied with present regulation while five were not. Two managers suggested that health laws should be more uniform or standardized throughout the U.S. One manager indicated that the Packers and Stockyards Administration should shorten the 72-hour payment regulation and require buyers to obtain larger bonds. However, another manager felt bonding requirements should be abolished since they provide little protection. One manager thought an improvement in brand regulation by the regulatory agency would result in better customer relations. These changes or improvements are the opinion of a sample of firms and may not be typical of all auction markets.

Summary of Market Conduct

Auction managers ranked prices received for livestock first and services offered second as factors livestock sellers consider most important when marketing livestock. Since auctions perceived sellers to be most responsive to these, they must maintain buyer activity.

Both large and small auctions indicated that the strongest competition for livestock came from other auction markets with the second strongest source being direct purchases by dealers and order buyers. Other sources of competition were buying stations, terminal market and meat packers. Advertising and reputation were given as major means of enhancing competitiveness of the market. Other ways to increase competitiveness included improving or adding new facilities, offering more services, and providing special sales.

Buying competition was rated by managers as best for the feeder cattle and butcher cows and bulls market classes. Methods used to increase buying competition were notifying buyers of sales, advertising, buying on auction account and increasing volume of livestock.

Since little physical differentiation of product exists and auctions must attract livestock buyers and consignments, promotional policies were important. Radio, daily newspapers, and personal solicitations were used most often for promotional purposes. Larger auctions utilized a wider range of promotional activities whereas smaller auctions emphasized more personal activities such as solicitations and telephone calling.

The magnitude of promotion as measured by promotional expenditures increased in 1980 relative to 1965. Total expenditures for promotion during 1980 by the 21 auctions were $584,321, compared to expenditures of $213,881 by 27 auctions in 1965. Average promotional expenditures for the 12 largest auctions in 1980 were $41,142 which compared to $10,069 for the remaining nine auctions.

Promotional costs for all firms were 9.43 percent of total costs in 1965 and 9.48 percent in 1980. A comparison of these percentages by firm groupings of four revealed the four largest auctions allocated 7.42 percent of total costs to promotion in 1980 as compared to 9.99 percent in 1965. The second group of four auctions increased from 7.86 percent in 1965 to 14.31 percent in 1980 as did the third group of four auctions which went from 10.38 percent to 14.25 percent in 1980. Promotional costs were 8.35 percent of total costs for the nine remaining auctions. Managers who responded to the survey felt that unfair trade practices did exist. The most common practices listed were price guaranteeing, false advertising, discounted or free trucking, and allowing slow payment by buyers.

Conclusions

The structure of the North Dakota livestock marketing industry changed between 1965 and 1980. Auction market numbers declined while firm sizes increased. Even though auction numbers declined, livestock auction markets in North Dakota continued to be an important market outlet for livestock. Since 1965, livestock volume through auctions increased by almost 5 percent. Some of this increase may be due to diversions from the terminal market to the auction markets. Even though the terminal market was the largest single volume seller of all livestock species in the state, it had experienced recent declines in volume. This was most evident in sheep marketings which decreased by 57 percent from 1974 to 1980.

Concentration levels have risen among auction markets since 1965. The 12 largest auctions accounted for 85.6 percent of total auction marketings in 1980 as compared to 73.1 percent in 1965. The auction markets were most concentrated in cattle marketings as the eight largest accounted for 76 percent of total cattle marketings during 1980. The structure was characterized by fewer auction markets of which the larger possess a substantial share of the market. Smaller firms decreased in size and had reduced market shares.

These findings are different than those reported by Knutson in 1965 (5:121-123). He reported that firms were increasing in both number and size and that smaller firms had grown in size the most. He also found concentration levels among the auction markets were decreasing. It appears however, that the long term trend has been towards increased concentration. Another major development appears to be the importance placed on nonprice competitive factors. The selling service of the auction markets does not have a great deal of product differentiation associated with it. The need to differentiate the selling service from a competitor's has caused firms to pursue active promotion and product policies. The auction markets provided a wide variety of auxiliary services as one method of differentiating their selling service from a competitor's. Since all firms offered nearly identical services, quality of those services would influence how successful the auxiliary services were at differentiating a firm's selling service.

Areas where larger firms appeared to have an advantage is trade area and number of sales per year. Larger firms had bigger trade areas and also a greater number of sales which should positively influence their volumes. Since more volume moved through larger auctions, buyer competition may be better there, which may enhance their competitiveness.

Active sales promotion programs existed among auction markets, which further indicated firms were attempting to differentiate their selling service. Knutson felt that in 1965, sales promotion was the most important factor causing auction market volumes to increase. He also suggested that increases in the size of smaller firms were attributable to their aggressive sales promotion programs as these firms had spent increasing percentages on promotion in 1965.

Smaller auctions did not employ active promotional programs during 1980 as indicated by a decline in total costs allocated to promotion.

Since the smaller auctions utilized a limited range of promotional activities, their promotional expenditures were expected to be lower. The type of promotional activities smaller auctions emphasized (personal and telephone solicitations) would indicate they considered their local trade area the most important. These factors may contribute to their reduced market share.

The four largest auctions also allocated a lower percentage of total costs to promotion in 1980. However, these firms still had the highest average promotional expenditures of all firms. It appeared these firms no longer needed to devote as many resources to promotion, which allowed more resources to be allocated to operations, facilities, and services.

The fifth through twelfth largest auctions appeared to be the most aggressive in sales promotion. These firms increased percentages spent on promotion relative to 1965. It appeared they devoted more of their resources to promotional activities to increase volume. To increase volume, these firms must attract volumes from other market outlets and possibly at further distances. This would necessitate increased promotional expenditures.

Since concentrated sales promotional programs were present among auction markets, a firm must spend its promotional dollars effectively. This means firms must consider factors important to sellers, when forming promotional messages. An auction market should emphasize the variety and quality of services provided to sellers. A producer will be concerned with the net returns received from marketing livestock. Therefore, a firm should stress through promotion that a seller will realize higher net returns from them as compared to competitors.

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