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An Evaluation of the Farm Machinery Market in Utah

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AN EVALUATION OF THE FARM MACHINERY MARKET IN UTAH

by

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Paul James Stuart

Paul James Stuart

TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES (Continued)

ABSTRACT

An Evaluation of the Farm

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by

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The purpose of this thesis was to evaluate the farm machinery distribution system in Utah using market structure analysis. Questionnaires to farm machinery firms as well as to farmers were used to gather data on market structure and conduct. The traditional market structure theory was used as an analytical framework. Examining the efficiency of factor markets revealed possible avenues for savings to farmers.

(70 pages)

INTRODUCTION

The agricultural industry consists of two markets--product markets and factor markets. Product marketing involves elements of production, which are added to and converted into usuable products for the consumer. In agriculture this is food and fiber. Factor markets deal with inputs to production. This may be seed, fertilizer, machinery, etc. Some inputs are produced by the farmer but most must come from other sources.

Since 1910 there has been a trend among farmers to purchase more of the inputs they use rather than producing them on the farm. This is evidenced by the fact that in 1910 the majority of farm inputs were produced on the farm but by 1969 most of the inputs were purchased, Table 1. The index of non-purchased inputs (1957-59 = 100) declined from 167 in the 1910 period to 75 in 1969 while purchased inputs rose from 47 in 1910 to 133 in 1969.

Table 1. Index numbers of total farm inputs in major subgroups, United States, selected years, 1910-1969 (1957-59 = 100) (16)

Year	Non-purchased	Purchased
1910	167	47
1930	165	58
1950	119	91
1959	100	103
1969[1]	75	133

[1]Most recent date available in long term index numbers.

This means that farmers are depending more upon purchased inputs than ever before. Today farmers spend 75 percent of their cash receipts for inputs to production. The possibility of saving in per unit input costs due to a more efficient input distribution system offers as much immediate promise of increasing per unit returns to farmers as improvements in production efficiency or product prices.

Farmers are caught in a cost-price squeeze due to the differences between the input and product markets. Since there are many sellers in the agricultural product market, farmers individually have little control over the prices of their products or their level of production. As agricultural production increases due to new technology and increased efficiency, there is pressure toward over supply and lower prices.

Producers of farm inputs are relatively few in comparison to the number of agricultural producers. The less competitive position of the factor market has raised the prices of most inputs. Thus the welfare of the farmer is highly dependent upon an efficient input market. Improvements in the cost-price dilemma extend beyond the agricultural industry to affect consumers as well. As farmers are successful in their production, an adequate supply of food is made available at a reasonable price.

One of the inputs that has become increasingly important and costly is that of farm machinery. Some of the more difficult research problems in farm management arise in connection with farm machinery (4). Two such problems are least cost combinations of machinery and most efficient methods of procurement.

Table 2 lists the major items of farm inputs and changes in their index since 1950. Farm machinery numbers have grown from an index (1967 = 100) of 79 to 103. Machinery has been an important factor over the years

Table 2. Indexes of total farm inputs and major input groups, United States, 1950-1970[1]

Year	Total inputs			Farm Labor	Farm real estate	Mechanical power and machinery	Fertilizer and liming materials	Feed, seed and livestock purchases[4]	Taxes and interest	Miscellaneous
	All	Non-purchased[2]	Purchased[3]							
	(1967 = 100)									
1950	96	135	68	199	95	79	32	64	64	63
1952	99	136	73	191	95	89	39	70	66	67
1954	98	133	73	176	97	90	43	72	69	64
1956	96	126	75	160	95	91	44	76	74	70
1958	94	117	77	143	94	91	48	80	75	74
1960	94	110	83	134	93	91	54	84	81	80
1962	94	107	86	123	94	91	62	89	86	86
1964	96	104	91	115	98	93	76	90	91	93
1966	98	101	96	101	99	100	90	97	96	97
1967	100	100	100	100	100	100	100	100	100	100
1968	102	100	103	96	100	102	107	101	105	109
1969	102	100	104	94	101	103	110	104	108	101
1970[5]	103	99	106	92	102	103	113	109	113	100

[1]This series has been extensively revised and is not fully comparable with earlier published data. The revisions will be documented in a publication in the near future.

[2]Includes operator and unpaid family labor, and operator-owned real estate and other capital inputs.

[3]Includes all inputs other than non-purchased inputs.

[4]Non-farm portion of feed, seed, and livstock purchases.

[5]Preliminary.

in reducing the labor input. Farm machinery manufacturing and distribution has grown to meet increased demand and has thus developed into a major industry, Table 3. In 1971 there were 72 farm machinery dealers in Utah. Although there were no manufacturing companies, farm machinery distribution was a 20 million dollar industry. The purpose of this thesis was to examine the farm machinery distribution industry in Utah to see where improvements could be made that would provide a savings to farmers.

Objectives

The objectives were threefold:

(1) To describe the structure of the farm machinery industry in Utah and recent developments that have taken place.

(2) To examine market conduct of the farm machinery industry from the buyers point of view.

(3) To appraise the performance of the industry using market structure theory and suggest some alternatives for improvement.

Table 3 Number on farms of specified kinds and tractor horsepower, United States, 1950-71 1/

Year	Tractors (exclusive) of steam and garden)		Motor-trucks 2/	Auto-mobiles 2/	Grain combines	Corn-pickers and picker-shellers	Farms with milking machines	Pickup balers	Field forage harvesters
	Number 2/	Horsepower							
	Thous.	Mil.	Thous.	Thous.	Thous.	Thous.	Thous.	Thous.	Thous.
1950	3/3,394	93	3/2,207	4,100	3/714	3/456	3/636	3/196	81
1951	3,678	101	2,325	---	810	522	655	240	102
1952	3,907	108	2,430	---	887	588	675	298	124
1953	4,100	115	2,535	---	930	630	690	345	148
1954	4,243	121	2,610	---	965	660	705	395	175
1955	3/4,345	126	2,675	4,140	3/980	3/688	3/712	3/448	3/202
1956	4,480	134	2,707	---	1,005	715	---	505	220
1957	4,570	139	2,745	---	1,015	740	---	560	240
1958	4,620	144	2,775	---	1,030	755	---	600	258
1959	4,673	150	2,800	---	1,045	775	---	645	270
1960	3/4,685	154	3/2,825	3/3,629	3/1,042	3/792	3/666	3/680	3/291
1961	4,695	155	2,850	---	980	740	---	685	291
1962	4,710	158	2,885	---	960	730	---	703	300
1963	4,730	162	2,925	---	940	720	---	718	307
1964	4,755	169	2,970	---	920	705	---	734	312
1965	3/4,783	175	3/3,023	3/3,587	3/910	3/690	3/500	3/751	3/316
1966	4,800	182	3,060	---	895	675	---	765	320
1967	4,815	189	3,100	---	880	655	---	775	322
1968	4,822	197	3,130	---	870	640	---	785	325
1969	4,810	203	3,160	---	860	630	---	790	328
1970	4,790	208	3,185	---	850	620	---	795	331
1971 4/	4,770	212	3,195	---	845	615	---	797	335

1/ Current Industrial Reports of the Bureau of the Census (formerly Facts for Industry), annual registrations of motor vehicles, and results of enumerative and mailed questionnaire surveys along with changes in gross farm income were used in developing estimates for years and machines not covered by census reports. Data as of January 1.

REVIEW OF LITERATURE

Market research

Economic theory places markets on a continuum ranging from perfect competition to monopoly. Perfect competition is characterized by a sufficiently large number of sellers such that no single seller can influence price by his production policies. Monopoly, on the other end of the scale, controls price and quantity produced. The greatest majority of markets lie somewhere in between these two extremes. Market organization, a field somewhat separate from economic theory, concentrates on markets whose degree of competition lie somewhere between perfect competition and monopoly.

Market or industrial organization theory was first formulated in terms of structure, conduct, and performance by J. S. Bain (1). Clodius and Mueller have discussed Bain's aspects of industrial organization and their relationships to each other. They agree that there is a causal relationship from structure through conduct to performance. However, Clodius and Mueller have also found a close interrelationship among the three elements of market organization (6).

Economic questions being raised by many people frequently relate to the industrial organization and performance of the economy. The questions are formulated in various ways depending upon background and interests of persons involved. In agriculture there is a common concern as to consequences of developments originating within the marketing sector. Changes in the organization and operation of processing and distributing firms extend beyond the industries in which these firms function and

affect both farmers and consumers. Questions encompass such topics as integration, bargaining power, farm income, technological process, industrial efficiency, and directions of future change in market structure (8).

Contemporary theories

Sosnick (15) divides market performance into 11 dimensions: (1) efficiency of production, (2) level of use, (3) profits, (4) quantity and quality of sales promotion, (5) progressiveness, (6) product suitability, (7) conservation of natural resources, (8) price flexibility, (9) efficiency of exchange, (10) external effects, and (11) labor relations.

Moore (11) says that market improvement should be dynamic and that three questions should be kept in mind:

(1) What are conditions of the market?

(2) What are present policies being followed?

(3) What are the results of present policies?

Reeder (13) believes that marketing has traditionally been an underemphasized aspect of the business enterprise. He suggests that marketing should dictate what product is to be produced instead of creating a product and then trying to sell it.

Levitt (10) urges that marketing be done with the idea of satisfying the needs of the customer by means of the product and the "whole cluster" of things associated with creating, delivering, and finally consuming the product.

Clodius (7) suggests that a managerial approach be taken to marketing. His theory is four-fold: (1) relevance--analysis of marketing should be relevant to the goals of the firm, (2) theory--marketing problems should be looked at by closely following theoretical

models, (3) unified--effects should be unified throughout all phases of marketing, (4) useful--most of all an appraoch to solving marketing problems should be practical.

Bressler (2) advises that traditional market research be reversed. This would be to study market performance and then as required move into the detailed studies of the institutional factors which might properly be called structure. He adds that while performance is more difficult to study than descriptive structure, nevertheless at least two major dimensions could be researched effectively in agricultural markets, these two dimensions being: (1) productive efficiency, and (2) pricing efficiency.

Broom and Longenecker (3) point out the importance of a good marketing program to the small business. He states that each firm must consider product line, pricing, sales promotion and personal selling.

Phillips (12) gives some advice on firm conduct. His theory is that customer relations is important to the success of the small firm. His list of behavioral traits that create good customer relations includes the following:

(1) honest service,

(2) presentable plant and courteous employees,

(3) keeping abreast of new developments,

(4) using periodicals effectively,

(5) taking advantage of meetings,

(6) cooperation with local agencies,

(7) favorable news publicity,

(8) participation in community affairs,

(9) gifts and handouts to customers, and

(10) institutional advertising.

The model

A substantial amount of data and empirical evidence has been gathered to establish the theoretical model underlying market structure analysis. However, the theorectical model is still sequential in that new data are used to test and improve its deterministic character. Key concepts are those of market structure, conduct, and performance. The direction of causation is assumed to run from structure through conduct to performance.

Market structure has become more precisely defined in recent years. It has come to mean the " . . . organizational characteristics which determine the relation of sellers in the market to each other, of buyers in the market to each other, of sellers to the buyers, and of sellers established in the market to other actual or potential suppliers of goods, including potential new firms which might enter the market." (1, p. 7) Market structure, then, means those characteristics of the organization of a market which seem to influence strategically the nature of competition and pricing within the market.

The characteristics of market structure are:

(1) The degree of seller concentration, described by the number and size distribution of sellers in the market.

(2) The degree of buyer concentration defined similarly.

(3) The degree of product differentiation, as among the outputs of the various sellers--that is the extent to which their products are viewed as non-identical by buyers.

(4) The condition of entry to the market, referring to the relative ease or difficulty with which new sellers may enter the market, as determined generally by the advantages which established sellers have over potential entrants (11).

Market conduct refers to the pattern of behavior that enterprises follow in adapting or adjusting to the markets in which they sell (or buy). Market conduct variables include the methods employed by groups of firms in determining price and output, sales promotion policy, product variation policy, and the incidence of preditory and exclusionary tactics. It refers to the price and non-price competition.

Market performance is the end result of market structure and conduct patterns. These end results may be in the dimensions of price, output, production and selling cost, product design, etc. Of sellers these results measure the character of firms adjustments to the effective demands for their outputs--for buyers they measure the quality of adjustments made by firms to the supply conditions of the goods they purchase.

The principal aspects or dimensions of the market performance of an industry include:

(1) technical efficiency of production as influenced by scale or size of plants and excess capacity,

(2) height of selling price relative to the long-run marginal and average costs of production and the profit margin,

(3) size of sales promotion costs relative to the costs of production,

(4) character of product including design, level of quality, and variety,

(5) rate of progressiveness of the industry in developing products and techniques (11).

Economic theory thus provides us with analyses of firm operations under a variety of market settings, ranging from competition at one extreme to monopoly at the other. Each of these situations is characterized by descriptions of the institutional setting within which the

firm operates--descriptions in terms of number and size of firms, etc. Such theoretical developments have been utilized by students of market structure to construct the familiar classification system--competition, monopolistic competition, dominant firm, dominant oligopoly, oligopoly, duopoly, bilateral monopoly, monopoly.

Given various market characteristics the industry can be assigned to its appropriate place in this classification system.

Present outlook

There are no published reports which analyze the pricing of products and services within the context of the multi-product and multi-service input firm. Increasingly, input firms are viewing themselves as "sellers of profit programming" and as consultants for farmers' problems rather than sellers of particular products. At the present time Utah is joining other western states in a regional study of factor markets. A study was recently completed in Utah concerning the structure--performance relationship of the fertilizer industry. There has been no study of this type on a market structure analysis of the Utah farm machinery industry.

METHODS OF PROCEDURE

A questionnaire was developed to measure structural changes that have taken place among farm machinery dealers in the state of Utah between the years 1965-1970.

Initially a cover letter was sent (Appendix A) to dealers throughout the state requesting their cooperation in a brief interview. Each firm was visited with the exception of three firms in the southeast corner of the State who were sent copies of the questionnaire instead. Responses to the interviews were good with the exception of three firms who were not willing to cooperate. There were no responses to the mailed questionnaires but 66 schedules were completed by personal contact.

The areas of inquiry (Appendix B) were: (1) number of employees, (2) legal status, (3) sales, (4) product diversification, (5) types of buyers, (6) product lines sold, (7) market area, (8) expenditures for advertising, (9) credit procedures, (10) price discounts, and (11) services offered.

The second objective of the thesis was to examine market conduct of the industry from the buyers point of view. A sample of 50 farmers was selected from Box Elder County and 50 from Sevier. An additional questionnaire was developed to be used with a personal interview to farmers. Producers of the two areas were not contacted completely at random but a representative cross section was surveyed.

The areas of inquiry were: (Appendix C) (1) farm size and type, (2) machinery expense, (3) shopping areas for large and small equipment purchases, (4) firm behavior preference for large and small equipment

purchases, (5) details of last large equipment purchase, and (6) details of last small equipment purchase.

In meeting the third objective, the data obtained in objectives one and two were analyzed and evaluated using market structure theory. Also some suggestions were discussed as possible improvements in the farm machinery markets.

PRESENTATION OF FARM MACHINERY DEALER SURVEY

The major objective of this study was to describe the organization and structure of the farm machinery distribution system in Utah. In 1971 there were approximately 72 farm machinery dealers in Utah. Information was obtained from 66 of the dealers using the schedule in Appendix B.

Year of establishment

Of the 66 firms, 36 percent began operations in the decade of the 60's and 9.1 percent were established prior to 1940 (Table 4).

Table 4. Number and proportion of farm machinery and implement dealers in Utah by year of establishment

Year Established	Number of Firms	Percent of Firms
Prior to 1930	2	3.0
1930-1939	4	6.1
1940-1949	16	24.2
1950-1959	18	27.3
1960-1969	24	36.4
1970-1971	2	3.0
	66	100.0

Seven firms were established in 1955, almost double the number in any other single year. There has been a number of recent turnovers in the business. In 1970, there were 10 establishments that changed hands or terminated.

Employees

In 1965, there was an average of 8 employees working in each firm during peak sales and service (June). The largest number of firms had 1-5 employees; only 6 firms had 20 or more employees. For all firms combined, in the peak month of 1970, 60 percent of the personnel were working in service, 20 percent in sales and 10 percent each in clerical and management. Employee numbers dropped to 6 during the low month (January). By 1970 these figures for June and January had risen. There was an average of 10 employees in the peak month and 7 during the low month. The distribution of employees among farm machinery dealers is shown in Table 5.

Table 5. Distribution of farm machinery and implement dealers in Utah by number of employees, June 1970

Number of employees	Number of firms	Percent of firms
1- 5	28	42
6-10	23	35
11-20	9	14
More than 20	6	9
	66	100

Legal status

The legal structure of the farm machinery industry changed somewhat in the 5 year period. About half of the firms were organized as corporations in both 1965 and 1970. In 1965, 21 or about one-third of

the firms were single proprietorships; but by 1970, one-fourth of the firms were single proprietorships and one-fourth were partnerships. Ten of the firms operated branches or places of business in more than one location (Table 6).

Table 6. Number and proportion of farm machinery and implement dealers by type of business organization, Utah 1965 and 1970

No. of Firms	Type of Business Organization		
	Single Proprietorship	Partnership	Corporation
1965	21	12	33
1970	16	16	34
Percent of Firms			
1965	32	18	50
1970	24	24	52

Farm equipment sales

Total farm equipment sales and service for both 1965 and 1970 were obtained from each of the firms interviewed. Average sales and services amounted to $312,338 per firm in 1970, up about one-third from $235,522 in 1965. Some of the increased sales would be attributed to price increases and inflation and part to increased physical volume.

In 1970 farm equipment sales and service varied considerably from firm to firm (Table 7). Sales and service of the largest 4 firms accounted for nearly one-fourth of the total sales of all firms. The largest 12 accounted for half and the largest 20 firms had two-thirds of the total sales and service volume.

Table 7. Farm equipment sales and service and concentration by largest firms, Utah, 1970

Combination of firms	Percent of firms	Sales and Service	Percent of sales
4 largest	6.1	$ 4,750,000	24
8 largest	12.1	7,675,000	39
12 largest	18.1	9,937,000	50
16 largest	24.2	11,774,000	60
20 largest	30.3	13,256,000	67
all firms	100.0	$19,694,000	100

Product diversification

Although many were specialized, some firms handled products other than farm machinery. An average of the percentage of gross sales in each category indicated that about 80 percent of gross sales were in farm machinery and 8 percent auto (Table 8).

Table 8. Combination of products sold by farm machinery and implement dealers, Utah 1965 and 1970

Product Category	Percent of Gross Sales	
	1965	1970
Farm machinery	81	78
Auto	8	8
All other	11	14
	100	100

There is some trend toward increased diversification of products from 1965 to 1970.

There were 14 firms in 1970 that sold automobiles in connection with farm machinery, whereas only one firm sold feed and fertilizer. Nearly half of the firms sold "other" products and they were largely in the category of hardware and fencing materials.

Twenty-eight firms solely specialized in farm equipment sales and services. The other firms had varying proportions of gross sales derived from other product categories but only 10 of the 66 firms had more than half from categories other than farm machinery and implements.

Uses of products sold

A large portion of the sales of the firms interviewed were made for agricultural use averaging 85 percent of the total. On the average 12 percent was for industrial use and only 2 to 3 percent for home, lawn and garden purposes. The sales of more than two-thirds of the firms was 90 percent or more for agricultural use. Six, or less than 10 percent of the firms, made more than half of their sales for uses other than agriculture.

Product lines sold

With two exceptions, all firms from which information was obtained indicated they were franchised dealers of various farm machinery and implement manufacturers. One exception was an outlet owned by the manufacturer; the other was a branch of a franchised firm with headquarters outside the state of Utah.

One-third of the firms carried only one major product line of farm equipment, and one-third had three different major franchised lines.

Most of the others carried two lines, although three dealers had four and one dealer five lines.

The number of dealers handling each of the various product lines of machinery in 1965 and 1970 is shown in the first two columns of Table 9.

Table 9. Number of dealers, average years franchise was held, and percent of equipment sales of various farm machinery product lines in Utah, 1965 and 1970

Product Line	Number of Franchised Dealerships		Percent of Sales		Average Years Franchise Held
	1965	1970	1965	1970	1970
Allis-Chalmers	7	6	6	4	6
J. I. Case	11	12	12	11	15
John Deere	13	12	16	14	13
Ford	7	7	6	7	26
International Harvester	18	17	21	19	15
Massey Ferguson	7	8	4	10	10
New Holland	13	14	8	10	15
Gehl	11	12	8	9	14
Hesston	6	12	2	5	4
All Others	28	26	10	11	18
			100	100	

Differences among dealership may be indicative of distribution policy and franchise granting by various manufacturers. For example in 1970, 17 dealers handled the International Harvester line compared with about one-half that number handling Massery Ferguson lines.

There was a high correlation between the number of dealers handling each product line and the percent of all dealer sales in the State represented by that line as shown in columns 3 and 4 of Table 9.

International Harvester sales accounted for about 20 percent of the total of all dealers, John Deere was next in importance with about 15 percent; others having correspondingly smaller percentages. Changes in percentage of sales from 1965 to 1970 were not large although some of these changes are indicative of a trend. For example, Hesston sales increased from 2 to 5 percent of total from 1965 to 1970.

Concerning the method of deriving the sales figures by product line as shown in Table 9, all dealers indicated their firm's dollar sales and service in 1965 and 1970 and were asked to estimate percentage distribution of new equipment sales by product lines. The accuracy of sales by product line would assume similar distribution of sales between new equipment and used equipment and services among various dealers.

The average number of years the franchise was held among the various product lines as shown in the last column of Table 9 indicated striking differences. Ford dealers had held their franchises nearly twice as long as dealers of any other product line. Some franchises of course would be held only a few years because the line is relatively new in the State while others may be few because of the manufacturers policy to withdraw and grant franchises more frequently.

Market share

Dealers were asked what share (percent) of the market their particular business held. Although recognizing that some firms were selling a rather narrow line of products and would, therefore, indicate a rather large share of the limited line, most firms were competitive in a number of products within the broader lines of farm machinery and implements and this measure gives some indication of the nature of

competition within the local markets in the State. Ten firms claimed to have a market share of sales and service in the area in which they operated in excess of 50 percent. On the other end of the scale, 8 firms had a market share of less than 20 percent (Table 10). One-third of the dealers claimed to have about one-third of the business in their market area.

Table 10. Distribution of farm machinery and implement dealers by share of business in the market area in which they operated, Utah, 1970

Share of Business in Market Area	Number of Firms	Percent of Firms
Less than 20 percent	8	12
20-25 percent	14	22
30-35 percent	22	33
40-50 percent	12	18
More than 50 percent	10	15
	66	100

In 60 percent of the market areas as identified by dealers, 3 or 4 competing farm machinery dealers were operating. Another 15 percent of the areas had 5 or more competing dealers. One-third of the firms indicated that their share of the market in their operating territory had increased in the last several years. Eight firms indicated a decrease in market share and the remainder, about 55 percent of the firms, indicated no change in share of market.

Expenditures for advertising

The average expenditure for advertising by farm machinery dealers

increased from $1,034 in 1965 to $1,763 in 1970, an increase of 67 percent. The distribution of these expenditures by advertising media and for the two years is shown in Table 11.

Table 11. Distribution of advertising expenditure of farm machinery dealers by media, Utah 1965 and 1970

Advertising media	Percent of advertising expense	
	1965	1970
Direct mail	42	36
Newspapers	14	16
Personal contact	10	14
Radio	12	10
Farm magazine	9	7
Television	6	5
Telephone--yellow pages	4	7
All others	3	5
	100	100

Direct mail was the most important advertising media used by machinery dealers accounting for 33 to 40 percent of total expense. Newspaper, personal contact and radio followed in that order. Changes in advertising expense from 1965 to 1970 though not great may be indicative of trends.

Direct mail was relatively decreased while personal contact, newspaper, and yellow pages increased. Advertising expense in percent of sales and service in 1970 was only one half of one percent.

Financing of equipment sales

The percentage of equipment sales purchased for cash decreased from 23 to 17 percent from 1965 to 1970, Table 12. The proportion of sales financed by local dealers also decreased somewhat from 16 to 11 percent.

Table 12. Percentage of equipment sales financed by various methods, Utah, 1965 and 1970

Method of purchase	Percent of sales	
	1965	1970
Cash	23	17
Financed by local dealer	16	11
Financed by manufacturer	27	31
Financed by local bank	27	32
Financed by production credit association	1	1
Other financing	6	8
	100	100

Machinery manufacturers and local banks were about equally important in financing of sales and each increased from about one-fourth to one-third of the total from 1965-1970.

Services and discounts

Between the years 1965 and 1970 there was little change in number of the various types of discounts except for off season discounts, Table 13.

Table 13. Price discounts offered by machinery dealers, Utah, 1965 and 1970

Type of discount	Number and percent of dealers offering discounts			
	1965		1970	
	Number	Percent	Number	Percent
Quantity purchased	14	19	15	20
Off-season	37	51	42	58
Prompt payment	16	22	16	22
Specific customers	11	15	12	16
Other	8	11	9	12

This type of discount seemed to be the most important with 37 dealers offering it in 1965 and 42 in 1970. The discount for quantity purchased and prompt payment favors those producers who buy in large lots and have the capital to finance promptly. The large scale operater would have an advantage in this respect. Discounts to "specific customers" means new buyers in the market, friends and other buyers who the dealers feel should have a discount.

In order to increase the desirability of his product package the machinery dealer includes certain services with his sales. The frequency of some of the services offered by Utah dealers are enumerated in Table 14.

Table 14. Services offered with sales, Utah farm machinery dealers, 1965 and 1970

Type of service	Number and percent of dealers offering service			
	1965		1970	
	Number	Percent	Number	Percent
Free pickup and delivery for service	14	19	18	25
Free delivery with sales	34	47	36	50
Courtesy equipment loans	17	24	19	26
Parts delivery	11	15	11	15
Other	2	3	2	3

In both years, about 50 percent of the dealers offered free delivery with sales. Next in importance were repair and maintenance aspects. Free transportation for service, equipment loans and parts delivery were offered by 22 percent, 25 percent, and 15 percent of the dealers respectively in both years combined.

Major problems

Machinery and implement dealers were asked to enumerate the major problems confronting their industry. The problems with number of times mentioned are listed in Table 15. Farm price-cost squeeze, increased prices of equipment and high interest rates were problems accounting for nearly 45 percent of the response of dealers. Many other problems were listed with relatively smaller concentration of response.

Table 15. Frequency of comments given by dealers in Utah concerning problems in the farm machinery industry, 1971

Comments	Frequency	Percent
Farmers cost-price squeeze	16	18.6
Equipment price increase	13	15.1
High interest rates	9	10.5
Dealer competition	7	8.1
Lack of adequate personnel	7	8.1
Accounts receivable	6	7.0
Diminishing Utah Agriculture	5	5.8
Dispersed location of parts center	5	5.8
Used equipment buildup	4	4.6
Foreign competition	4	4.6
Freight rates	3	3.4
Rising costs of operation	3	3.4
Sales tax	2	2.3
Inflation	1	1.2
Property tax	1	1.2
	86	100

PRESENTATION OF FARMERS' SURVEY

Fifty schedules were completed from each of Sevier and Box Elder Counties. Agriculture plays an important role in the economy of these two county areas. Their geographic positions are representative of agricultural characteristics of the northern and southern areas in the State. The purpose of the survey was to get opinions from the machinery buyers concerning the market conduct of farm machinery distribution in their areas.

Farm size and type

Questions having to do with the nature of farms in the areas and their respective machinery expenses revealed facts about differences in size and type of operation between areas in the State. According to the 50 farmers surveyed from each area, Box Elder county farms have larger average acreages of every crop with the exception of alfalfa, Table 16.

Table 16. Average land use in Sevier and Box Elder counties, fifty farmers surveyed from each area, 1972

Crops	Sevier County Acres	Box Elder County Acres
Alfalfa	76	65
Corn	34	41
Grain	41	109
Pasture	88	104
Sugar Beets	--	55
Potatoes	--	38
TOTAL ACRES	170	250

Box Elder county also has a wider variety of crops with sugar beets and potatoes. The average size of farms in Sevier County was 170 acres while farm size in Box Elder county averaged 250 acres.

Machinery expense

Each of the 50 farmers of the two areas was asked to list the machinery items he owned, the date of purchase, new price of each item, and its expected life. From this information an average yearly depreciation expense was computed, Table 17.

Table 17. Average depreciation and custom hire expense for 50 farmers surveyed in Sevier and Box Elder Counties, 1971

County	Depreciation expense	Custom hire expense	Total
Box Elder	$1,198	$803	$2,801
Sevier	1,153	643	1,796
AVERAGE	$1,176	$723	$2,299

The farmers also indicated the type and amount of custom work hired for their farm. These costs were totaled and the average custom hire cost per farm of the 50 farmers from each area is found in Table 17. These figures on machinery expense do not include operating costs such as gas and oil. The average machinery expense, operating expense not included, is greater in Box Elder County than in Sevier County.

Number of dealers in shopping area

The farmers of the two areas were asked how many dealers they usually considered when shopping for machinery, Table 18. The questions dealing

Table 18. Percentage of farmers who solicited various numbers of dealers in buying power equipment and farm implements, 50 farmers surveyed in each of Sevier and Box Elder Counties, 1972

Type of equipment and area	Number of dealers solicited					Total
	1	2	3	4	5	
	Percent of farmers					
Power equipment						
Box Elder	32	24	26	14	4	100
Sevier	40	20	24	12	4	100
Implements						
Box Elder	30	36	22	10	2	100
Sevier	24	36	24	12	4	100

with machinery were subdivided into power equipment and implements. Power equipment referred to items of machinery containing a power unit such as a tractor or a self-propelled swather. Implements were those machines such as a plow or a leveler requiring a source of power.

In shopping for power equipment the greatest percentage of farmers considered only one dealer, Table 18. In shopping for implements the greatest percentage of growers solicited two dealers. Farmers in both areas "shop around" more for implements than power equipment. Forty percent of the Sevier growers went to only one dealer while in Box Elder County 32 percent visited only one dealer. In the case of implements Box Elder had 30 percent dealing in one place while Sevier County was lower with 24 percent.

Importance of conduct factors

Price, location, brand name, service, product suitability, and repayment plan are some of the important factors generally considered by

farmers who "shop around." Farmers were asked to place these factors in order of importance as they applied to their own buying habits. In Table 19 the factors were tabulated in a weighted percentage importance. This took into account the ranking of a factor as well as whether or not it was ranked at all. The results were subdivided between the two areas (Box Elder and Sevier Counties) as well as according to type of equipment (power equipment and implement).

Table 19. Percentage importance of general conduct factors considered in choosing among sales offers of power equipment and farm implement dealers according to 50 farmers surveyed in each of Box Elder and Sevier Counties, 1972

	Conduct Factors							
	Price	Location	Brand	Service	Product Mix	Credit	Other	Total
	- - - - - Percentage importance - - - - - - - - - -							
Box Elder								
Power	27	5	28	28	3	8	1	100
Implement	32	6	25	27	2	1	7	100
Sevier								
Power	29	10	32	27	-	-	2	100
Implement	38	11	28	23	-	-	-	100
AVERAGE TOTAL	32	8	28	26	1	2	3	100

The farmer considered price a more important factor when choosing implements than when choosing power equipment. Brand name and service were the important criteria in choosing power equipment purchases.

Some evidence of variation in choosing among dealers was noted when farmers were asked to cite in order of importance the factors that actually influenced a recent power equipment or implement purchase, Table 20.

Table 20. Percentage importance of factors stated by farmers of a recent purchase of power equipment and farm implements, 50 farmers surveyed in each of Box Elder and Sevier Counties, 1972

	Conduct Factors							
	Price	Location	Brand	Service	Product Mix	Credit	Other	Total
	- - - - - Percentage importance - - - - - - - - - -							
Box Elder								
Power	28	4	32	10	-	-	26	100
Implement	32	-	46	10	-	-	12	100
Sevier								
Power	16	8	56	9	-	-	11	100
Implement	17	8	54	3	-	-	18	100
AVERAGE TOTAL	23	5	45	7	-	-	22	100

In Box Elder County the importance of brand name and "other" factors rose while service was relatively lower in importance. The "other" category included to the greatest extent the "dealer a friend" factor which means a farmer dealt with a particular dealer because he was a good friend.

In Sevier county the importance of both price and service dropped while brand name rose sharply as did the "other" category.

Conduct factors varied with type of equipment and according to market area and other competitive factors such as "dealer a friend" weighed heavily as criteria in choosing among alternative sales offers.

Details of recent equipment purchase

Various details of a recent power equipment and implement purchase were given along with an alternative deal for each if there was one.

Less than half of the farmers had or could remember much of another deal they were considering at the time of a recent purchase. Actual deal and nearest alternative were compared to see which factors differed if any and to what extent if the magnitude could be measured, Table 21.

Table 21. Frequency of differences between actual deal made and nearest alternatives by 50 farmers from each of Sevier and Box Elder Counties, 1972

	Sevier Power	Box Elder Power	Sevier Implement	Box Elder Implement
No. Alternatives	19	20	15	17
Identical	2	4	0	0
Price	10	10	11	11
Brand name	7	8	7	10
Location	1	3	0	1
Dealer	0	2	1	0

There was little difference between county areas. Price and brand name accounted for the greatest frequency of differences between deals accepted and the nearest alternative. It is difficult to measure brand name differences but price differences can be measured, Table 22.

Power equipment alternative deals had greater price differences than did implement deals. The Sevier County power equipment deals have smaller differences than did those in Box Elder County. However, Box Elder County has smaller differences between implement alternatives. Implement deals would tend to have smaller price differences because they generally cost less than power equipment. Box Elder County had more occurances of price differences than did Sevier County.

Table 22. Frequency of various price differences between actual deal made and nearest alternative according to 50 farmers surveyed from each of Box Elder and Sevier Counties, 1972

Price difference	Sevier Power	Sevier Implement	Box Elder Power	Box Elder Implement
		Frequency of differences		
$ 100- 200	1	2	1	4
200- 300	2	-	2	2
300- 500	2	1	-	2
500- 800	2	1	-	1
800-1200	1	1	6	1
1200-2000	-	1	-	-
2000-3000	-	-	1	-

Seventy nine percent of the implement sales were within a ten mile radius of the buyer. Ninety one percent of power equipment sales were made within 10 miles of the buyer.

Sales were more evenly distributed among dealers in Sevier County than in Box Elder County, Table 23.

Table 23. Distribution of sales among dealers in Sevier and Box Elder Counties according to 50 farmers surveyed from each area, 1972

Dealers	Number Sales in Sevier County	Number sales in Box Elder County
A	10	13
B	10	9
C	6	5
D	6	5
E	6	5
F	5	3
G	2	2
Other	5	7
TOTAL	50	50

Box Elder is led by one dominant firm with one firm fairly close behind and three that have less than half the amount of the dominant firm. Sevier has two dominant firms with four fairly close behind.

Satisfaction

After giving details of their most recent equipment purchase, farmers were asked to state whether their satisfaction of the deal made was good, fair, or poor, Table 24.

Table 24. Degree of satisfaction reported by farmers on their most recent power and implement purchase. Box Elder and Sevier Counties, 1972

Satisfaction	Sevier Power	Sevier Implement	Box Elder Power	Box Elder Implement
good	62 percent	78 percent	56 percent	58 percent
o.k.	34 percent	20 percent	38 percent	38 percent
poor	4 percent	2 percent	6 percent	4 percent
TOTAL	100 percent	100 percent	100 percent	100 percent

Very few were poorly satisfied with the deals made. There was a greater satisfaction shown by the dealers in the Sevier County area than by those in Box Elder County. Also according to the 50 farmers surveyed in Sevier County more satisfaction was felt with implement purchases than with power equipment purchases, Table 24.

Problems viewed by farmers

Farmers were given the opportunity to comment on problems of the immediate future, Table 25. Repairs and service seemed to dominate the

Table 25. Frequency of comments given by farmers in Sevier and Box Elder Counties concerning problems in the farm machinery industry, 1972

Comments	Frequency	Percent
Need more available parts	15	27
Prices are too high	10	18
Need better repair service	9	16
Need faster order service	7	13
Labor costs too high	6	10
Need better warranty	5	9
Need longer store hours	3	5
Need better mechanics	1	2
TOTAL	56	100%

comments given by the farmers. Thirty six farmers (64 percent of the comments) commented on needs in the service area. Fifteen stated a need for more available parts, 9 said that there was a need for better repair service, 6 replied that labor costs in service were too high, 5 wanted a better service warranty and 1 felt that mechanics needed to be more competent.

DISCUSSION

The results of the study are discussed in this section. The discussion entailed analyzing the results of the surveys according to the various criteria used in traditional market structure theory. Market structure, conduct, and performance were discussed in that order.

Market structure

Market structure refers in a descriptive way to the physical dimensions involved--the approximate definitions of industries and markets, the number of firms and/or plants in the market, the distribution of firms or plants by various measures of size and concentration, descriptions of products and product differentiation and conditions of entry.

(1) Definition of markets. The term market has several definitions. It may refer to an area delineated by political boundaries, an area where supply and demand are in force, or a particular population area. The scope of this thesis is a political area--that of Utah. However, for analytical purposes the State can be broken down into divisions where the forces of supply and demand operate. The Utah farm machinery industry consists of a number of such markets. In 1971 and 1972 farm machinery dealers comprised approximately 13 markets throughout the State. Market areas in which each operated, however, varied in size so that there was considerable overlapping. Geographical market areas for 20 firms were confined to about a 25 mile radius whereas the radius covered by 8 firms was in excess of 75 miles. Some of the variations in size of operating areas were related to franchising policies of the various manufacturers

and some due to the specialized nature of the product line. Producers in practically all farming areas of the State had convenient access to 3 to 5 dealers with most of the available manufacturer brand lines of farm equipment at their disposal. Since market boundaries are not definite, market research is highly complex. Utah's farm machinery market was considered as a whole except in the instances of two representative county areas where more specific data were obtained. A farmer survey was taken in Box Elder and Sevier Counties to see how these buyers felt about the conduct of dealers in their area.

(2) Definition of the industry. The Utah farm machinery industry is largely a distribution and service industry. In 1970, 64 of the 66 firms interviewed were franchised dealers of various farm machinery and implement manufacturers. The exceptions were an outlet owned by the manufacturer and a branch of a franchised firm outside the State. The dealers distributed the product lines manufactured and provided repair service much like that of an automobile dealer.

In 1970, 34 of the 66 firms interviewed were corporations while the remaining 32 were equally divided between single proprietorship and partnership. In the same year 78 percent of all firm sales was for farm machinery sales and service.

(3) Number of firms. In the geographic market of Utah in 1970 there were approximately 72 dealers. However, within the supply-demand market areas there were varying numbers of dealers. There were 3 to 4 dealers in the majority (60 percent) of the market areas as defined by the 66 dealers in the survey. Fifteen percent of the markets had more than 4 competing dealers. The remaining areas as surveyed had fewer than 3 dealers.

(4) Concentration. The sales volume of the firms in Utah differed considerably in 1970. The 4 largest firms accounted for 24 percent of total sales and service; the 20 largest firms had 67 percent of the total sales and service volume. There were various indications that the size of the average firm increased over the 5 year period, 1965 to 1970; for instance, the average number of employees during the peak month (June) increased from 8 to 10 employees. Average sales and service increased 33 percent from $233,000 to $312,000 over the 5 year span. One-third of the firms indicated an increase in market share during the 5 year period while only about one-eighth reported a decrease. Finally the percentage of firms legally organized as partnerships and corporations increased while those organized as single proprietorships decreased. This trend away from single proprietorship supports the growth assumption of the average farm machinery firm in Utah.

(5) Products and differentiation. The farm machinery dealers distribute various lines of farm machinery. One-third of the firms handled only 1 line or brand of equipment, another third carried 3 franchises. The remainder had 2 although 3 dealers had 4 and 1 dealer 5 lines. The tangible products of dealers are limited by the production of manufacturers and their franchise granting policies to dealers. Because the chief product of the farm machinery industry is distribution and service, differentiation must come in the form of individual dealer's policies toward services and pricing. This subject is treated further in the conduct section of the discussion.

(6) Conditions of entry. Again, entry into the industry is highly dependent upon the farm machinery manufacturing companies. There is little capital outlay involved in setting up a dealership, although entry

into a supply-demand market area with a fair market share would require certain conditions.

Entry into the market would be highly influenced by customer acceptance especially in the smaller rural areas. For instance, in the Box Elder county area the John Deere name seems to be particularly popular. Should a new seller enter the market with another brand he may be at a disadvantage in increasing his market share. Farmers also prefer to deal with friends or people who they can trust.

The number of dealers in an area and their particular market shares would also have an influence upon ease of entry. Depending on the particular area and its concentration of sellers the new entrant would or would not have difficulty carving out a segment of the market. There were 10 firms that changed hands or ended business completely in 1970 which indicated ease of entry and exit.

Market conduct

Market conduct refers to the behavior of firms under different market structure, and especially to the types of decisions that managers can make under these varying market structures. In a market where perfect competition exists each firm acts as if in isolation because the actions of an individual firm in this situation have little effect on price or output. However, as the concentration of firms in a market increases, the firms become more interdependent in determining price and output. Therefore, firms act differently under various market structures. The elements of firm conduct are those of price and non-price competition such as price and output policy, sales promotion, diversification, financing, services and discounts, etc.

(1) Price and output policy. Pricing is an important behavioral aspect of market conduct. Although machinery manufacturers determine to a great extent the price of the product, there is some price negotiation by farm machinery dealers especially with respect to large purchases and trade-ins. Of the 66 dealers surveyed, 15 gave price discounts for quantity purchased, 42 gave discounts for off-season purchases and 12 gave discounts to specific customers such as new customers, friends, etc. When farmers were asked what factors most influenced their purchasing from a particular dealer, price was mentioned 24 percent of the time. Fifty percent of the time price was the determining difference between alternative power equipment deals made to 50 farmers in each of Box Elder and Sevier Counties.

(2) Sales promotion. According to the dealer survey, sales promotion costs increased from an average of $1,034 per firm in 1965 to $1,763 in 1970. According to the farmers surveyed, the fact that a particular dealer was a friend played an important role in determining where the farmer did business.

(3) Diversification. Although there was a trend among dealers to diversify their products farmers surveyed considered product mix of little importance to a farm machinery business.

(4) Financing. Cash sales declined during the 5 year period. Dealers also became less important in financing sales; however, manufacturer financing as well as local banks increased their importance to farmers as a means of financing. Firm behavior concerning repayment became more dependent upon manufacturer policy. According to the survey, to farmers credit extension was of little importance as a criterion for choosing an equipment dealer.

(5) Service. During the period 1965 to 1970 there was a slight increase in the number of firms offering various services according to the dealer survey. The farmer survey showed service third in importance as a factor determining dealer choice; as a factor which actually influenced a recent purchase, service dropped to fourth place. Repair and maintenance were important to firm conduct. Free transportation for service, equipment loans, and parts delivery were rated essential to 27 percent, 29 percent, and 17 percent of the dealers respectively.

Market performance

Market performance is the ultimate test of how well the market is performing its function. It is the real impact of structure and conduct as measured in terms of variables such as prices, costs, and volume of output (2).

Performance generally flows from structure and conduct and any change in the two will be related to performance although not necessarily in a causal way; however, there is generally a relationship among structure, conduct, and performance. The surveys that were taken somewhat described the market structure of the farm machinery industry in Utah and some of the behavioral patterns that firms follow within this market structure. Also included in the surveys were some evaluations of market performance given by dealers as well as by farmers. Some aspects of market performance were: efficiency, price competition, progressiveness, product suitability, level of profits, sales promotion costs, and labor relations.

(1) Efficiency. This is the scale of the firm and rate of utilization of capacity relative to demand. There are some ad hoc hypotheses relating the relationship of structure to efficiency which have been

suggested by theorists. High concentration and strong barriers to entry are conducive to greater technical efficiency. The size of farm machinery firms in Utah as a whole varied considerably, and there seemed to be a trend toward increasing size in the average firm. However, entry into the market was rather easy. This was illustrated by the high rate of turnover in the business.

(2) Price competition. A hypothesis somewhat contradictory to the one stated above is that low concentration and easy entry stimulate effective price competition; however, effective price competition tends to enforce efficiency. Although the greatest number of market areas contained only 3 to 4 firms 85 percent of the farmers surveyed shopped at no more than 3 dealers. Also according to the 50 farmers surveyed in each of Box Elder and Sevier counties, price was the deciding factor between actual purchase and nearest alternative 50 percent of the time. The survey indicated that more farmers were competitive in Sevier County than in Box Elder County. Satisfaction of past purchases were greater in Sevier County than in Box Elder County as well.

(3) Technological progressiveness. The progressiveness of an industry concerns how innovative an industry is and how well it exploits available opportunities for invention and progress. An ideal rate of innovation through time is one that promptly exploits every available technological change which would reduce cost.

Each year the machinery manufacturing companies spend great effort to convince the buyer that improvements are continually being made to reduce costs. It is difficult to measure technological progress in a distribution industry. There were some managers of parts departments who were thinking of computerizing their operations. This would reduce labor

costs and improve availability of parts. There were no reported innovations in the service area although some farmers felt that service people ought to be better trained.

(4) Product suitability. It is difficult to give a clear-cut measure of customer satisfaction; however, firms should elevate quality so long as the resulting addition to buyer satisfaction outweighs the resulting addition to cost. Although farmers were generally satisfied with the purchases they had made, problems in the repair and service area were frequently commented upon.

(5) Level of profits. Profit rates may be defined as percent return on net worth or assets. The size of profit rates may be determined or strongly influenced by two structural dimensions: 1) degree of seller concentration, and 2) conditions of entry into the industry. Generally speaking a high seller concentration as well as high barriers to entry can be associated with relatively high profits.

Information concerning actual profits was not collected in the survey. Because of price discounts and trade-in negotiations, actual prices received would have been difficult to obtain.

(6) Sales promotion costs. Advertising is justified when it decreases production costs through higher volume and when the cost reduction is credited to the consumer. In the 5 year period, 1965-1970, advertising expense increased by 67 percent while sales increased by 33 percent. However, since average sales promotion costs are only 1 percent of sales the increased sales promotion costs are rather insignificant.

(7) Labor relations. During its peak month the average firm employs 10 persons. Six to seven of these employees work in the service and repair area. This means, assuming around 70 firms in Utah that 700 people

are employed by the farm machinery industry, the greatest portion of which work in service. Farmers stressed the importance of adequate service and dealers stated that there was a need for trained mechanics. There seems to be a need for trained personnel in the service area. Perhaps a more attractive wage or more sophisticated working conditions would bring service up to par.

Alternatives for saving in the factor market

One way to improve the performance of a market is to impose the necessary regulatory restrictions upon the market structure of the industry in such a manner that workable competition becomes characteristic. Other means by which farmers may save in the factor markets are cooperative buying, renting, and financial leasing of farm equipment.

(1) Co-op buying. For many years farmers have depended upon supply cooperatives to obtain their factor inputs. As the amount and specialization of these inputs increases the importance of supply cooperatives increases.

Farmers have organized cooperatives for three purposes: (1) to reduce costs, (2) to improve quality, and (3) to provide dependable service. Production supply cooperatives conduct daily business transactions similar to those of other business concerns that handle supplies. The chief difference is that in cooperatives, farmers are the stockholders and therefore profit is not emphasized as in a regular corporation.

Supply cooperatives range in size from the small locals that serve a single community trading area to regionals that serve several states, and in scope from those that handle a single product to those that make available to their farmer-members a wide variety of production supplies and services.

Farm machinery has been one of the most difficult items for farmer cooperatives to handle successfully. Local associations have the problems of trade-ins, reconditioning and selling used equipment, servicing and repairing, and financing or credit extension and collection. Other co-ops have attempted to manufacture items of machinery but with difficulties. Some of these problems were the need to modernize the plants, raising capital and management weakness.

If cooperatives in the farm machinery market are to succeed in the future, they must be carefully operated. The co-op route would probably be more likely to succeed in smaller items of farm machinery of which service is not an important part. Farmer cooperatives of the future must keep in mind the importance of (1) adjusting to changes in agriculture, (2) adjusting to changes in the industry, (3) keeping policies and practices efficient and equitable, (4) and successfully promoting the cooperative idea to producers (17). Supply cooperatives in the past have not been an important part of the farm machinery markets although they may come to be a possible alternative for improvement in the future.

(2) Renting and financial leasing. Another alternative for saving in the factor market may be renting or financial leasing. The producer must first select the best combination of machinery to fit his needs. Then he must decide whether to rent his machinery, have his work custom done, or own the machinery.

Renting tools and equipment is becoming more popular among farmers in the United States. There are several reasons why farmers have become more interested in filling their machinery needs this way. One of the advantages of renting or leasing is that large initial capital outlays are not required and thus operating capital is conserved. This gives the

farm operator more financial flexibility in planning his year to year production adjustments.

Another advantage to renting is the reliability of new equipment. Time is often an important factor in harvesting perishable crops. Since much machinery work is seasonal, money is saved by not having machinery idle. The farmer can rent a specific size machine for a particular purpose and time.

If the farmer decides to own the machinery he must choose among the cash purchases, credit purchases or financial leases. The above decisions are dependent upon each other. There are several factors to be considered among which are price and availability.

The farmer must set up the alternatives in terms of cash flows and determine the present value of each of these cash flows. An example of this problem is found in the article by John A. Hopkin, (9).

Financial leasing is relatively new in agriculture and has several benefits. It has the following characteristics. The lessor acquires the specified equipment and maintains title to it while the lessee takes physical possession and maintains it during the life of the contract.

The lease has a base period over which the price and financing charges are paid. A provision can be made where the lease may be renewed or the equipment purchased. The lessee pays for insurance maintenance and property taxes. The lessee can charge annual lease payments as expense in his income taxes.

Financial leasing has several advantages under some circumstances. Through leasing one can acquire the use of assets without the cash for down payment. In this respect it can stretch limited capital. Also leasing may provide cash flow advantages for the farmer who can use the

additional working capital for profitable alternative investments, even where the cash down payment is not the dominant problem. If lease payments exceed allowable depreciation plus interest paid, leasing will decrease taxes.

If cash cannot be raised for a down payment and custom hiring or short-term leasing is not available, financial leasing might be a good means of acquiring control of needed machinery resources. Under these circumstances one should lease if the returns from the machine promise to be higher than the costs (9).

To minimize costs and maximum returns, costs of ownership, renting, or custom hire should be weighed against the advantages of each and their tax considerations.

SUMMARY

Increased specialization and technological developments in agriculture have shifted many functions formerly performed on farms to the so-called agribusiness sector of our economy. Some of these industries are concerned with handling and processing the products of agriculture while others specialize in providing various ingredients used in the productive process. The farm machinery and equipment industry is one of the latter and in Utah in 1970 about 72 firms accounted for sales and service of 20 million dollars.

Market structure information was obtained from 66 Utah farm machinery firms. Data were analyzed for the years 1965 and 1970 so that structure and conduct changes could be examined and evaluated.

The change in legal status of Utah firms as well as a growth in the average number of employees per firm indicates an increase in size of the average firm. Farm equipment sales increased one-third over the 5 year period, and varied considerably in 1970 with the 4 largest firms accounting for 25 percent of total sales.

There was a slight increase in sales diversification during the interval with a smaller percentage of farm machinery sales and a larger amount of "other" products sold.

Various franchised lines of machinery were sold. International Harvester accounted for the greatest amount of full line sales in Utah for both years while Hew Holland led among short line franchises.

Claiming a market share of about 30 percent, the majority of firms operated in an area in which there were 3 to 4 firms.

Advertising expense increased by 67 percent over the 5 year period but even with the increase it amounted to less than 1 percent of farm machinery sales.

Local banks and manufacturing companies became more important in financing sales. In 1970, 32 percent of all sales were financed by a local bank and 31 percent by the company manufacturing the equipment.

Services with sales and price discounts both increased as behavioral characteristics of Utah firms. Off-season discounts were given by 42 of the 66 firms while 36 firms offered free delivery with sales.

Fifty farmers were surveyed from each of Box Elder and Sevier Counties on their views of the market conduct of the farm machinery firms in their area. According to the survey in the two areas, average acreages per farm were less than 250 acres. Total machinery expense not including operating expense amounted to an average of $2,299 per farm in Box Elder and Sevier Counties.

Few farmers shopped at more than three dealers although in some areas more firms were available. Price, brand, and quality of service weighed heavy as factors considered in determining the best deal.

When making a recent purchase, about half of the farmers surveyed considered a close alternative. In cases where an alternative was examined, price was the decisive difference 50 percent of the time.

CONCLUSIONS

The Utah farm machinery market can be described as a series of imperfect oligopolistic market areas comprising on the average 3 to 4 firms. Although the firms differ in size, the average firm increased its sales and service volume over the period, 1965 to 1970.

The farm machinery industry in Utah is a distribution and service industry and thus differentiates its product by attaching a "bundle of services" to the physical product.

Entry into the farm machinery business is easy but entry into a market would depend upon customer acceptance and the structure of the existing market.

Farmers considered price, quality of product and repair service as conduct factors that were important to them. The improvement needed most in this respect was repair service.

The growth of firm concentration in Utah as a whole would indicate a degree of increased efficiency while ease of entry and exit stimulates price competition. Of course, the supply-demand market areas have their uniqueness. The sales among firms in Sevier County appeared to be more competitive than those in Box Elder County and the farmers surveyed appeared to be more satisfied with their recent purchases.

The problems viewed by both buyers and sellers centered around high prices and a need for better repair service. Of course, farmers are caught in a cost-price squeeze that to a great extent cannot be helped. However, dealers can concentrate upon upgrading the repair service they offer.

Farm machinery rental may be a solution to many machinery needs. Perhaps this service could be offered by farm machinery dealers in Utah.

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APPENDIXES

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COLLEGE OF AGRICULTURE
COLLEGE OF BUSINESS

DEPARTMENT OF
ECONOMICS

June 2, 1971

Dear Sir:

The Department of Economics at Utah State University is participating in a western regional research project concerning organization and structure of the farm machinery industry.

As a first step in this project, we are conducting a survey of the farm equipment and implement dealers in Utah. The data obtained from your responses will be used for a master's thesis by Paul Stuart, a graduate student in Agriculture Economics. He will be in your area within a few weeks and will be calling upon you.

Your responses to a brief interview at the time of his visit would be helpful in gathering information for the study. Some questions may require information from your records; however, most of your responses will come from memory and experience as a dealer. The objectives of the study are to describe the changing organization, structure, and functions of the industry, to determine common operating practices within firms and to relate these changes to the status of the industry. A summary analysis of the questionnaire will be sent to participants as soon as it is available. All information will be held in strict confidence.

Sincerely,

Roice H. Anderson

Roice H. Anderson
Professor, Agricultural Economics

UTAH STATE UNIVERSITY, Logan

Department of Economics

C O N F I D E N T I A L

Western States Survey of

Farm Machinery and Implement Dealers

Date_____

1. _____
Firm Name Street

_____
City State

2. When was the firm established?_____

Number and seasonality of employees:

	1965	1970		1965	1970
Peak month	____	____	Number of employees	____	____
Low month	____	____	Number of employees	____	____

How many employees in peak month in 1970 worked in: service_____,

sales_____, clerical_____, management_____.

3. Legal status of the firm (Please check (✓) appropriate descriptions)

	1965	1970
Single proprietorship	____	____
Partnership	____	____
Corporation	____	____
Cooperative	____	____
Other (specify) _____ . . .	____	____

4. Does your firm operate sales and/or service facilities for farm equipment at more than one location? Yes_____, No_____.
If yes, give names and addresses.

	Name	Address
a.	_____	_____
b.	_____	_____
c.	_____	_____

5. Please indicate your total farm equipment sales and service 1965 ____ 1970 ____

6. What percent of your firm's gross sales in 1965 and 1970 was:

		1965	1970
a.	Machinery and implement sales and service?	____	____
b.	Automobile and truck sales and service?	____	____
c.	Feed sales and service?	____	____
d.	Fertilizer sales and service?	____	____
e.	Other agricultural chemicals?	____	____
f.	Petroleum sales and services?	____	____
g.	Hardware and fencing materials?	____	____
h.	Other (specify)_____	____	____
	Total	100%	100%

7. What percent of your gross sales in 1965 and 1970 was made for:

		1965	1970
a.	Agricultural uses?	____	____
b.	Industrial uses?	____	____
c.	Lawn and garden uses?	____	____

8. How were your firm's total new equipment sales distributed among product lines in 1965 and 1970? Also indicate the number of years you have been a dealer for each product line?

Line	Percent of New Equipment sales 1965	1970	Number of Years a Dealer
Allis-Chalmers	____	____	____
J. I. Case	____	____	____
John Deere	____	____	____
Ford	____	____	____
International Harvester	____	____	____
Massey-Ferguson	____	____	____
Minneapolis-Moline	____	____	____
Oliver	____	____	____
New Holland	____	____	____
Others (please list)			
_____	____	____	____
_____	____	____	____
_____	____	____	____

9. To identify your present sales and service territory for farm equipment, indicate the number of miles North, South, East, and West which you serve, and the farthest community served in each direction. Remove extreme cases by including territory in which approximately 90 percent of sales were made:

	Miles	Boundary Community
North	_____	_____
South	_____	_____
East	_____	_____
West	_____	_____

10. What is your firm's approximate market share of farm equipment (percent of sales in market area defined above)? _____%. Has this changed in the past several years? If yes, how? _____

What are the names, addresses, and approximate market shares of your firm's primary competitors?

	Name	Address	Market Share
1.			
2.			
3.			
4.			
5.			

11. How would you describe your firm? Check (✓) only one description for each year.

	1965	1970
a. A franchised dealer	____	____
b. Owned by a manufacturer (specify the manufacturer)_____ . . .	____	____
c. Other (please describe)_____ . . .	____	____

12. Give total expenditures for sales promotion and advertising in 1965 and 1970:

$_____1965; $_____1970.

Of these total expenditures approximately what percentages went for:

	1965	1970
Personal contact by salesmen.	____%	____%
Farm magazine	____	____
Radio	____	____
Television.	____	____
Newspaper	____	____
Direct Mail	____	____
Yellow Pages.	____	____
Other (specify)_____	____	____
	100%	100%

13. What percent of your agricultural machinery and implement sales was made under each of the following payment plans?

	1965	1970
a. cash.	____%	____%
b. your firm financed.	____	____
c. manufacturer financed	____	____
d. local bank financed	____	____
e. credit card	____	____
f. Production Credit Association (PCA) . .	____	____
g. other (specify)_____ . .	____	____
	100%	100%

14. Please check (✓) the price discounts on equipment sales which your firm offered customers from the following schedule:

	1965	1970
Quantity purchased.	____	____
Pre-season.	____	____
After season.	____	____
Prompt payment.	____	____
Specific customers		
-from outside sales territory	____	____
-regular customers.	____	____
-new customers.	____	____
Other (specify)_____. .	____	____

15. Please check (✓) any of the following services which your firm included with equipment sales:

		1965	1970
a.	free pickup and delivery for service. .	____	____
b.	free delivery with sales.	____	____
c.	courtesy equipment loans.	____	____
d.	parts delivery.	____	____
e.	other (specify)		
	_____ . .	____	____
	_____ . .	____	____
	_____ . .	____	____

16. What do you view as problems facing farm machinery dealers in the immediate future? (If you need more room, please use the back of the questionnaire.)

APPENDIX C

Utah State University
Survey of Farm Production Units
Farm Machinery

Date _____

1. _____
(Name) (Street)

_____
(City) (State)

2. List major types of crops No. of acres

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

Total _____

3. Types of livestock No.

_____ _____
_____ _____
_____ _____
_____ _____

4. Machinery and implement items

Machinery item	Date purchased	New price	Expected life (yrs)

5. Custom machine hire this year:

Type	Amount	Rates	Total Cost

6. Where would you go to shop for a major item of power equipment:

Dealer	Location

7. What are your reasons for picking a particular power equipment dealer (order of importance):

( ) price
( ) location and/or convenience
( ) Quality and features of product
( ) service and parts
( ) sales promotion
( ) product mix
( ) credit extension
( ) other _____

8a. Where would you go to shop for a major farm implement:

Dealer	Location

8b. What are your reasons for picking a particular implement dealer (order of importance):

( ) price
( ) location and/or convenience
( ) quality and features of product
( ) service and parts
( ) sales promotion
( ) product mix
( ) credit extension
( ) other _____

9. Most recent power equipment purchase: Alternative:

Date	_____	_____
Type of equipment	_____	_____
Size	_____	_____
Brand	_____	_____
Dealer	_____	_____
Trade-in value	_____	_____
Cash difference	_____	_____
Price	_____	_____
Credit extension	_____	_____
Distance travelled	_____	_____

Comments on dealer satisfaction: _____

_____

_____

_____

_____

10. Factors that most influenced purchase from this particular dealer (order of importance):

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

11. Would you buy power equipment from this dealer again?_____

Why or Why not? _____

_____

_____

_____

_____

_____

_____

12. Most recent implement purchase: Alternative:

Date	_____	_____
Type of implement	_____	_____
Size	_____	_____
Brand	_____	_____
Dealer	_____	_____
Trade-in value	_____	_____
Price	_____	_____
Cash difference	_____	_____
Credit extension	_____	_____
Distance travelled	_____	_____

Comments on dealer satisfaction: _____

_____

_____

_____

_____

_____

13. Factors that most influenced purchase from this particular dealer (order of importance):

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

14. Would you buy an implement from this dealer again? _____

Why or why not? _____

_____

_____

_____

_____

_____

15. General comments: _____

VITA

Paul J. Stuart

Candidate for the Degree of

Master of Science

Thesis: An Evaluation of the Farm Machinery Market in Utah

Major Field: Agricultural Economics

Biographical Information:

Personal Data: Born at Ogden, Utah, January 8, 1947, son of J. Earl and Vanice Moss Stuart.

Education: Attended elementary school in Randolph, Utah; graduated from South Rich High School, Randolph, Utah, in 1965; received the Bachelor of Science degree from Brigham Young University, Provo, Utah, with a major in Agricultural Economics in 1971; completed requirements for Master of Science degree, majoring in Agricultural Economics at Utah State University in 1972.

Professional Experience: 1971 Research Assistant, Western Regional Research Project WM-61, Utah State University.