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# Procurement Policies and Practices of Dairy Manufacturing Plants in Eastern South Dakota

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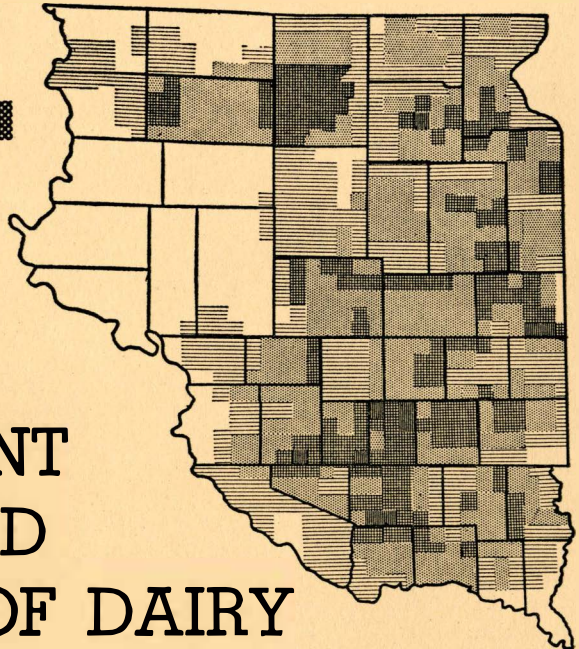
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**PROCUREMENT  
POLICIES AND  
PRACTICES OF DAIRY  
MANUFACTURING PLANTS  
IN EASTERN SOUTH DAKOTA**

Part II. Managerial Decision Making

**ECONOMICS DEPARTMENT  
AGRICULTURAL EXPERIMENT STATION  
SOUTH DAKOTA STATE COLLEGE, BROOKINGS  
U. S. DEPARTMENT OF AGRICULTURE, COOPERATING**

## FOREWORD

This report is the second of a two-part series concerning the results of a project entitled "A Study of Managerial Decision Making and Procurement Policies in Selected South Dakota Dairy Plants." The project was carried out by the South Dakota State College Agricultural Experiment Station under a Research and Marketing Act contract for the U. S. Department of Agriculture.

The first phase of the project dealt with the procurement policies and practices and competitive relationships among the dairy manufacturing plants in eastern South Dakota. The results were reported in *Procurement Policies and Practices of Dairy Manufacturing Plants in Eastern South Dakota: Part I. Market Structure and Behavior*, Bulletin No. 497, South Dakota State College Agricultural Experiment Station. It serves as a background and companion report for the present publication.

The authors are especially indebted to Dr. Louis F. Herrman of the U. S. Department of Agriculture for help and guidance in organizing and carrying out the study; to Dr. Ragnar L. Kristjanson, former associate economist, for encouragement and advice in organizing the study; and to Dr. Carl L. Wilson, former associate professor of speech, for advice in the areas of psychology and communications, framing the decision-making model, organizing the study, and surveying the literature.

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# PROCUREMENT POLICIES and PRACTICES of DAIRY MANUFACTURING PLANTS

in eastern South Dakota

## Part II. Managerial Decision Making

TRAVIS W. MANNING AND RALPH E. NELSON<sup>1</sup>

### INTRODUCTION

Decision making, as a problem-solving activity, is the primary function of management. The efficiency with which this function is performed is important to the effective operation of dairy manufacturing plants.

#### The Problem

The aggregate capacity of the dairy manufacturing plants in eastern South Dakota, as in many other areas, greatly exceeds the available supplies of milk and cream. This has resulted in multiple overlapping of procurement areas, excessive interplant rivalry, and questionable procurement practices. The formulation of procurement policies is an important part of managerial decision making. Thus, one of the requisites for im-

proving procurement practices is efficient decision making.

The structure of the market for manufacturing milk and cream is such that each plant has a few direct rivals, but it is indirectly related to all other plants through the network of direct rivalry. Consequently, while procurement strategies are directed primarily against direct rivals, the effects on indirect rivals also needs to be taken into consideration. A second significant characteristic of the market structure is the relatively smaller numbers and larger sizes of plants compared with producers. However, the potential inequality of market power is to some extent neutralized by the prevalence of producer-

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integrated plants. Another important consideration is that the buying of milk and cream is highly differentiated by services, good will, and location while the selling is not. Procurement strategies under these circumstances tend to concentrate on methods which will hold present patrons and attract those of competing plants.

### **Objectives**

The general purpose of this study was to gain a clearer understanding of managerial decision making in order to learn how it might be improved. The specific aims were to determine the problem situations, goals, sources of information, methods of evaluation, and roles of participants in the decision making process.

### **Procedure**

Bulk milk handling was chosen as the focal point of this study because it involved a major procurement policy decision and a number of plants under similar circumstances had been involved recently in such a decision. The matter was of sufficient importance that boards of directors as well as managers were involved in the decision-making process but not so important that a vote of the members was required.

Bulk milk handling had been considered in 11 dairy manufacturing plants in eastern South Dakota at the time the study began. All of these plants were producer-integrated butter manufacturing plants. Substantially complete information on the bulk milk decision was ob-

tained from six of the plants. Partial information was obtained from two others, one of which went out of business while the study was underway and the decision process was not completed in the other. The others had to be excluded for various reasons.

Data were obtained from managers concerning the nature of the bulk milk decision; procurement policies, goals, and results in terms of quantity and quality of product and efficiency of plant and assembly operations; degree of knowledge; sources, channels, types, and evaluation of information about bulk handling; and participation and roles in decision making of managers, directors, members, and others. The information sought from directors was similar in nature but less extensive than that sought from the managers.

### **ANALYTICAL FRAMEWORK**

Managerial decision making in dairy plants is a complex process. In the analysis of such a process, the simplifying framework of a theoretical model is very helpful. Since mental processes and group behavior are involved, parts of the model derive from disciplines other than economics. The model is presented here to permit the reader to evaluate its adequacy and to facilitate his interpretation of the ensuing analysis:

Major operating decisions in dairy plants tend to be made

- (a) in the context of the plants' internal-external situation;

- (b) where there is some problem in the achievement of plant goals which involves imperfect knowledge and alternative solutions;
- (c) through the manager, who identifies the problem, acquires knowledge concerning its solution, and formulates a choice;
- (d) by the board of directors, which may either participate actively in the problem-solving or simply accept the choice of the manager;
- (e) under the influence of various subgroups which comprise the organizational group affected by the problem or its solution.

While this model was designed specifically for organizations with hired managers and elected directors, it can be adapted to other forms. No attempt was made to test the theory upon which the model was based, but it appeared to be consistent with the findings of the study.

### **Problem-Solving**

Individual decision making is problem-solving or learning behavior. Two kinds of problem solving may be distinguished—genuine decisions and habitual or routine behavior. Katona defines genuine decisions as those which “. . . require the perception of a new situation and the solution of the problem raised by it; they lead to responding to a situation in a new way” (23, p. 49). Habitual behavior, in contrast, involves a routine re-

sponse to a repetitive situation. Genuine decision making requires the recognition that a problem exists—that a gap exists between “what is” and “what ought to be,” or between expectations and aspirations. Decisions are influenced by or through the individual’s motives, attitudes, and perceptions. A decision normally involves making a choice between alternative solutions in a state of imperfect knowledge.

The expectations which influence decision making are themselves a form of learned behavior—an extension of past experiences into the future. Psychological studies indicate that changes in business expectations which bring about new decisions tend to happen infrequently, to be substantial or radical in degree, and to occur at about the same time and in the same direction for many people (23, pp. 54-55). The awareness of a new problem is brought about by some significant change in expectations.

The individual has a complex pattern of aspirations and goals. The simple hedonic (pleasure-pain) theory of behavior, associated with classical economics by Jevons (19), Edgeworth (12), Marshall (29), and others, has little support in modern psychology. Hayes has pointed out that psychological hedonism was grafted onto classical economics without changing its theoretical structure and “. . . did not add any thing to economic theory . . . for it simply begged the question it set out to answer” (16, p. 298).

Much behavior is unexplainable and seemingly irrational in hedonic terms. The "instinct" theory of behavior, popularized in economics by Veblen (40) and others also failed to contribute much to the understanding of economic behavior but it did open the door to a more pragmatic approach.

More recent psychological theories recognize the existence of multiple goals and the possible satiety of needs or drives. Goals need not be fixed but may be adjusted to the attainable on the basis of experience. According to Simon,

If we seek to explain business behavior in the terms of this theory, we must expect the firm's goals to be not maximizing profit, but attaining a certain level or rate of profit, holding a certain share of the market or a certain level of sales. Firms would try to "satisfice" rather than to maximize. (36, p. 263; cf. 23, p. 214ff.)

While the maximizing behavior model may facilitate analysis in some contexts and it may yield results similar to the satisficing behavior mode, in some cases a model postulating multiple competing goals and limited aspiration levels seemed most appropriate for this study. This model avoids one of the more troublesome problems of marginalism—the potential conflict between long-run and short-run gain maximization.

### **Knowledge**

Problem solving, being a form of learning, involves the acquisition of new knowledge. Knight has distinguished three degrees of knowledge—certainty, risk, and uncer-

tainty. Objective certainty, in the sense that knowledge is perfect, implies that learning is complete, the solution to the problem at hand is known, and no genuine decision making is required (25, pp. 267-68). Risk, defined as a situation in which the probabilities of errors are known, also implies that learning has ceased and, thus, is not involved in genuine decision making except as a possible end product.

Genuine decision making may involve any of several imperfect knowledge situations. These may be divided into subjective risk and subjective uncertainty situations (20; 21; 42). Subjective risk may be defined as a situation in which the decision maker feels his knowledge is sufficient for action and additional knowledge would not be worth the cost of acquiring it. Subjective uncertainty is any situation in which the decision maker feels his knowledge is not sufficient for action. He may feel that additional knowledge is worth more than its costs and continue learning. Alternatively, he may feel that additional knowledge would cost too much and quit learning. "Forced action" is a situation not specifically included in any of the foregoing categories. It involves being required to make a decision by outside circumstances although the decision maker feels that the value of additional knowledge would exceed its cost if he had time to acquire it. This can be regarded as a special kind of risk situation since the decision maker has concluded



that he can take action without further learning.<sup>2</sup>

Information is the raw material of knowledge (26). The acquisition of knowledge involves the collection, evaluation, and analysis of information (4, p. 29). The learning process requires the making of a series of minor decisions along the way toward the final decision. Each datum must be examined for relevance, adequacy, and reliability. At some point the decision maker may conclude that it is not worthwhile to collect further information. Then, he must evaluate the data and decide whether his knowledge is adequate for choosing a solution to the problem at hand.

If the decision maker concludes that he has enough information, he must next decide if it is sufficiently reliable. This may involve assigning a subjective probability to each datum or group of data, or it may be much more general and imprecise. Ideally, the analysis of the data would weigh various probabilities concerning adequacy and reliability. When the alternative solutions have been laid out, the final evaluation and selection will be complicated by many considerations—the probable sufficiency of the data, the probabilities of various levels of success, and the probabilities of various levels of cost. The choice among the various alternatives involves weighing probable levels of success against probable levels of cost to arrive at probable efficiencies which, in turn, are weighed against probabilities of success.

The choice of a solution is determined by the decision maker's field of behavior (i.e., his drives, attitudes, and frames of reference) (23, p. 31ff., 52ff.; 43, p. 6ff.). Although mental processes *per se* were not a subject of this study, some aspects of them had to be taken into consideration. The role of intuition in decision making is an important question. Intuition may be used as a "short cut" to substitute for information or logical analysis. The decision maker may be unable to give an adequate explanation for a decision arrived at intuitively (26, pp. 67-68). The decision maker's attitude toward risk taking is another important question. Two persons may reach the same conclusions about the potential efficiencies and probable success of various alternatives and still make different choices (11, pp. 80-81; 20, pp. 18-22; 27, pp. 19-23; 36, pp. 257-58; 41). For example, one person might seek to minimize the maximum loss, the other to maximize the minimum gain. Or, one may choose with reference to achieving a specific goal without regard to net gains or losses.

### Group Action

The operation of a dairy plant involves group action of a complex order. Policy making under such

<sup>2</sup>Johnson classified forced action as subjective uncertainty on the basis that the decision maker feels additional knowledge would be worth more than its cost if he had time to acquire it (20, p. 11). However, this excludes one of the important elements of cost—the cost of delaying the decision.

circumstances is genuine group decision making. Katona has pointed out that

Psychological processes occur only in the individual being, not in the group; only the individual acts, not the group. But the individual does not think and act in the same way irrespective of whether he is or is not a member of a group. Action in groups—social behavior—may differ greatly from individual action, but must and can be explained in terms of the same psychological principles (23, p. 37).

Since a dairy organization is a formal group, an institution, and a going concern, the behavior of the various members of the group is channeled along fairly well defined pathways. That is, the members have definite roles, the most clearly defined being the leadership roles.

Leadership operates at all levels or phases of the group decision-making process. Individual goals and problems are communicated to the leaders who weigh and aggregate them. The primary leader—typically, the manager—defines the group problem, seeks knowledge about its solution, weighs the alternatives, and makes a recommendation to the group. In the process, he acts as the focal point for all flows of information concerning the problem and possible solutions. A dominating leader tends to present a final choice to the group for acceptance or rejection, using whatever influence and persuasion he deems necessary to obtain the approval of the group. A passive leader tends to present the various alternatives and leaves the choice to the group.

The “democratic” leader operates between the two extremes.

The role of the board of directors may vary with the nature of the decision and the role of the manager (15, pp. 241-43). Routine decisions may be made exclusively by the manager and major organizational decisions by the membership collectively, leaving operating policy decisions the chief concern of the directors. If the board is dominated by the manager, it may act largely as a “rubber stamp” and routinely accept his decisions. Conversely, if one of the directors dominates the group, the manager may act simply as an advisor to him and the rest of the board. Under a typical arrangement, leadership is shared between the manager and the president or chairman of the board along functional lines. The manager initiates policy actions and the president leads the board action or, as the case may be, the action of the membership or stockholder group.

There are numerous subgroups in the overall group which comprises the dairy plant organization. In addition to the leadership and membership subgroups, there are patrons, customers, plant employees, assembly truck drivers, salesmen, suppliers, financial agencies, and local townspeople. Each subgroup has some interest in the decisions adopted by the plant and it may use any of various means to make its wishes known. Some of the subgroups may be comparatively voiceless while others may have a strong influence on plant decisions.

### EXPECTATIONS AND GOALS

The eight plants included in this study began receiving whole milk in the period from November 1955 to March 1958. Prior to that time the only creamery in South Dakota receiving whole milk was operated by a fluid milk bargaining association. Five of the plants were receiving bulk milk at the time the survey was made, one plant was preparing to receive bulk, one plant was undecided about going into bulk, and one was picking up bulk and hauling it to another creamery. Two of these plants provided incomplete data and were omitted from most of the tabulations and analyses.

### Volume

The volume of products handled varied considerably among the plants studied. Butter production varied from 353,000 to 1,780,000

pounds in 1957 and from 64,000 to 1,960,000 pounds in 1958 (Table 1). Whole milk receipts varied even more, ranging from 3,120,000 to 19,350,000 pounds among six plants reporting milk receipts in 1957, and from 4,000,000 to 21,000,000 pounds among seven plants reporting milk receipts in 1958. For the six plants which furnished relatively complete information, butter production increased 13% and whole milk receipts 36% from 1957 to 1958.

It was assumed that the volume goals would be related to the plant's current situation, the manager's and directors' estimates of the plant's capacity, and their concept of the ideal size for their plant. Managers' estimates of the capacity or optimum volume of their present facilities ranged from 700,000 pounds to 3,000,000 pounds of butter (Table 2). The average capacity estimate was 42% higher than the average

Table 1. Butter Production and Milk and Cream Receipts, Eight South Dakota Creameries, 1957 and 1958

Plants	Butter production		Whole milk received		Butterfat in cream received		Total butterfat received		Estimated proportion of milk received in bulk	
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958
	(thousand pounds)								(%)	
A .....	468	468	5,014	6,200	183	120	377	368	0	3
B .....	618	700	0	4,000	488	390	488	530	0	4
C .....	788	900	13,754	15,000	177	340	681	865	25	40
D .....	797	950	7,643	10,714	371	371	639	746	0	0
E .....	1,016	1,200	19,350	21,000	219	200	844	946	10	19
F .....	1,780	1,960	6,284	14,122	1,192	1,072	1,419	1,581	15	20
Average										
6 plants .....	911	1,030	8,676	11,842	438	416	741	840	—	—
X .....	529	528	3,120	4,150	316	280	431	425	—	—
Y .....	353	64	n.r.*	n.r.	n.r.	n.r.	n.r.	n.r.	—	—

\*Not reported.

Table 2. Managers' Estimates of Optimum Volumes of Present Plants and Ideal Size of Plant, Six South Dakota Creameries, 1958

Plants	Quantity				Proportion of 1958 volume			
	Optimum volume*		Ideal size†		Optimum volume		Ideal size	
	Butter production	Whole milk receipts	Butter production	Whole milk receipts	Butter production	Whole milk receipts	Butter production	Whole milk receipts
		(thousand pounds)			(%)		(%)	
A .....	700	17,000	1,000	36,000	150	274	214	580
B .....	800	13,000	1,000	36,500	114	325	143	912
C .....	1,000	28,000	1,500	36,000	111	187	167	240
D .....	1,250	15,000	1,500	35,000	132	140	158	327
E .....	2,000	40,000	2,000	40,000	167	190	167	190
F .....	3,000	36,500	3,000	68,500	153	261	153	489
Average ..	1,459	24,922	1,667	42,008	142	211	162	355

\*Optimum volume was defined in relation to existing plant and equipment.

†Ideal size was defined in relation to economics of scale and potential milk supplies.

output in 1958. Managers' estimates of ideal size of plant (defined as maximum economies of scale in plant and procurement costs) ranged from 1,000,000 to 3,000,000 pounds of butter. The average of the estimates was 62% higher than average 1958 production. The estimates of ideal size seemed to be restricted by the managers' estimates of how much milk and cream they could procure and by the fact that some of them believed there were little or no further plant economies beyond 1,000,000 pounds capacity. There was a close relationship between current volumes and estimates of ideal volume and five of the managers felt that ideal size was about half again larger than current volume.

It might be hypothesized that managers' concepts of ideal size were a constant ratio of their current volumes. Previous South Dakota studies which involved some of

the same plants tended to support this hypothesis. For example, two of the plants had been surveyed in 1955 when they were producing about 500,000 pounds of butter and the managers then thought 1,000,000 pounds an ideal volume. Apparently, as the plants expanded, the managers' concepts of ideal volume grew because one reported 1,500,000 pounds and the other 2,000,000 pounds as an ideal volume in 1958. The significance of this, insofar as the present study was concerned, was that no manager was satisfied with his current volume and before one goal was reached a higher one was established. Technological changes, no doubt, had a strong influence on goals. Insofar as concepts of ideal size represented goals, the goals appeared to remain fixed only so long as it took volumes to approach the goals, then they were raised.

The emphasis on whole milk was related to both volume and quality

goals. Four of the six managers wanted to receive all of their butterfat in whole milk. Estimates of optimum volume of milk ranged from 40% to 225% above current volumes and averaged 111% higher. Ideal whole milk receipts were estimated to be 90% to 812% above current volumes and averaged 255% more than 1958 average receipts.

The directors' estimates of optimum volumes for existing facilities were generally lower than the managers' estimates. Most directors estimated capacity at 1,000,000 pounds of butter, irrespective of plant size. Some directors of one plant estimated capacity to be 1,000,000 pounds although the plant was producing 1,200,000 pounds. Several directors stated that they did not know either the capacity or the current volume and several others who gave estimates indicated that they were guessing. It appeared that establishment of specific goals was generally left to the managers.

The managers' expectations for increased butterfat receipts over the next five years ranged from 25 to 74% of the 1958 receipts (Table 3). The average expected increase was 50% as compared with 42% in estimated excess capacity of present plants and 62% increase necessary to reach ideal size. Only one manager expected volume in five years to be less than present capacity. The managers of the two largest volume plants expected receipts to exceed the ideal volume. However, they felt their present plants to be ideal in size. Five of the six plants apparently would have to expand facilities if the expectations of the managers were realized. There appeared to be no close relationship between current volume and expected increases.

Managers expected most of the increased receipts to come from present patrons and new patrons inside present supply areas. The range in proportions of the increases expected from outside pres-

Table 3. Butterfat Receipts Expected by Managers in Five Years and Proportion of Increase Expected from Various Sources, Six South Dakota Creameries, 1958

Plants	Butterfat receipts expected in five years		Proportion of increase expected from		
	Amount	Proportion of 1958	Increased production of present patrons	New patrons in present supply area	New patrons outside of present supply area
	(thousand lbs.)	(%)	(%)	(%)	(%)
A .....	543	148	20	60	20
B .....	730	138	40	50	10
C .....	1,081	125	55	30	15
D .....	996	134	40	60	0
E .....	1,646	174	30	40	30
F .....	2,581	163	75	25	0
Average .....	1,263	150	43*	44*	13*

\*Unweighted means.

ent supply areas was 0 to 30%, and the simple average was 13%. Most managers had difficulty in explaining how they would attract additional volume. Three expected to gain more volume by personal contacts with patrons by managers and field men, two by price, and two by bulk procurement.

All managers expected milk production to increase in their procurement areas over the next five years. The percentage increases expected ranged from 15 to 50% and varied directly with current volume of butterfat receipts. Four managers thought they would be able to obtain most of the increases for their plants while two managers gave very low estimates, possibly through misinterpretation of the question, since their answers did not correlate very well with the expectations previously stated (in Table 3). All of them felt that increased dairy production was justified and indicated that they would encourage it by one means or another.

Five managers expected a further shift from cream to whole milk in the following year (1959), assuming no change in procurement policies. They expected to receive an average of 327,000 pounds of butterfat in cream or 21% less than in 1958, and 15,228,000 pounds of milk or 29% more than in 1958. They expected 4,359,000 pounds of the milk to be received in bulk, almost twice as much as estimated for 1958. Four managers indicated they would be satisfied with less, and one would be satisfied only if he received as much

as in 1958. Three managers indicated that they would be satisfied with less can milk than they expected to receive, while the other three would be satisfied only if they received as much as expected. The same division was indicated for bulk milk as for can milk. All managers indicated that they would prefer to receive all milk in bulk.

The managers were generally optimistic about the effects of bulk receiving on total volume. They believed that bulk receipts would increase slowly but steadily. Three managers expected their bulk receipts eventually to exceed 100,000 pounds per day while managers of the two smallest plants did not expect bulk receipts ever to get as high as 25,000 pounds per day. This seemed to be something of an anomaly because most managers indicated that there was no cost advantage in bulk handling as long as they continued to receive any cream or milk in cans. Apparently, only two managers expected to receive bulk milk exclusively within five years, although one other expected to do so within ten years.

All managers felt that increased volume would decrease manufacturing costs (Table 4). Three managers thought it would decrease assembly costs, two thought it would not change them, and one thought it would increase them. Five managers felt increased volume would improve quality and one felt they were unrelated. Four managers expected it to increase prices paid to patrons and two expected no change.

Table 4. Managers' Expectations of How Increased Volume Will Affect Costs, Quality, and Prices to Patrons, Six South Dakota Creameries, 1958

Plants	Expected effect of increased volume on			
	Manufacturing costs	Assembly cost	Quality	Prices to patrons
A .....	Decrease	Decrease	Improve	Increase
B .....	Decrease	Decrease	Improve	No change
C .....	Decrease	Decrease	Improve	Increase
D .....	Decrease	No change	Improve	No change
E .....	Decrease	No change	No change	Increase
F .....	Decrease	Increase	Improve	Increase

All managers expected patrons to be benefited most by an increased volume of business but, as noted above, two of them felt an increased volume would not change prices paid to patrons, so it was not clear how the patrons would be benefited. All managers ranked other local people, particularly businessmen, second or third in degree of benefit from increased volume. Three managers mentioned themselves as beneficiaries and five mentioned other employees of the plants.

#### Quality

There was a wide range in quality of products bought and sold by

the six plants. The proportion of top grades received ranged from 0 to 50% for cream, 80 to 95% for can milk, and 92 to 98% for bulk milk in 1957 (Table 5).

Two plants received better quality in bulk than in cans while one plant received slightly lower quality in bulk. However, in the latter case, the can milk quality was higher than that of the other plants. The quality of skim milk sold varied from 70 to 95% grade 1. The relationship between grades of milk received and skim milk sold was not as close as might be expected. One plant reported a better grade on

Table 5. Proportion of Cream and Milk Receipts and Skim Milk and Butter Sales Which Were Top Grade—Six South Dakota Creameries, 1957

Plants	Proportions of receipts and sales which were grade					Manager considered quality satisfactory
	Sweet cream	No. 1 can milk	No. 1 bulk milk	No. 1 skim milk	AA and A butter	
	(per cent)					
A .....	12	80	n.r.*	85	60	yes
B .....	2	80	n.a.†	80	0	yes
C .....	0	80	98	70	80	no
D .....	5	85	n.a.	70	90	no
E .....	50	88	98	95	100	yes
F .....	15	95	92	75	40	neither

\*No reply because experience in bulk was too short.

†Not applicable.

skim milk than on whole milk. This would be possible with careful blending but it would be very difficult to maintain. Two plants showed sharp drops in quality from whole to skimmed milk, reflecting either poor grading, poor handling, or both. Butter quality varied from 0 to 100% grades AA and A combined. Only two plants reported selling grade AA butter, one having 10% and the other 25%.

Three managers expressed satisfaction with their quality situations although two of them had considerable room for improvement. Two managers considered their quality situations unsatisfactory and one did not consider his either satisfactory or unsatisfactory.

Quality goals were difficult to specify. Four managers defined quality goals in percentage terms, one in terms of continued improvement, and one could not define his goals. Most of the directors defined quality goals in terms of continued improvement, although several

specified 100% grade A or grade 1. They were almost unanimous that quality should be improved. Most managers felt that quality could be improved by increased field work. All of them felt that quality was a farm problem and none mentioned any quality problems within the plants.

The managers felt that quality needed to be improved in order to improve the demand for butter. Five said it would increase prices, but the expected improvement in prices was quite nominal. Expected improvement in prices ranged up to 0.5 cents per pound for butter and up to 15 cents per hundredweight for skim milk (Table 6). Two managers expected no effect on operating costs and four expected some decrease ranging up to 1.0 cent. Two managers expected no improvement in prices paid patrons for milk, two expected nominal improvement, and the highest was 15 cents per hundredweight.

Most managers seemed to recog-

**Table 6. Managers' Opinions of How a One-grade Improvement in Quality Would Affect Prices Received for Butter and Skim Milk, Prices Paid to Patrons, and Operating Costs, Six South Dakota Creameries, 1958\***

Plants	Expected effects of a one-grade improvement in quality on prices received for		Prices paid to patrons for milk	Operating costs
	Butter	Skim milk		
	(cents per lb.)	(cents per cwt.)	(cents per cwt.)	(cents per lb. of butter)
A .....	+0.25	+2.0	+1.0	0.0
B .....	+0.50	+10.0	0.0	0.0
C .....	0.00	+15.0	+15.0	—fraction
D .....	0.00	+5.5	+4.5	—1.0
E .....	+0.12	0.0	0.0	—0.12
F .....	+0.50	+5.0	+10.0	—fraction

\*In some cases, a one-grade improvement was not possible, and the question was interpreted to mean improvement to top grade.



nize that quality improvement would increase producers' costs. However, they did not feel that producers would net less by improving quality. In predicting that plant operating costs would be the same or lower with improved quality, managers apparently thought strictly in terms of processing costs and ignored the costs of quality field work. If additional costs of field work were included, quality improvement probably would cause total costs to increase.

Four managers ranked producers first in order of benefits which would result from quality improvement and the other two ranked them second. All managers indicated the dairy industry would be benefited and five thought consumers would benefit. Most of them felt that quality improvement would improve the market position of butter *vis-a-vis* margarine. This, they felt, would indirectly benefit producers. Apparently, they feared that butter might lose even more of its market if quality was not improved.

The managers seemed to feel that "quality" was a very worthwhile objective for its own sake. Four managers stated that quality was more important than volume and two said that they were equally important. Five managers stated that there were conflicts between their quality and volume goals. One manager said there were no conflicts but followed by saying that he would not sacrifice quality for volume. It was noted especially that managers conceived of quality al-

most exclusively in terms of sanitation. Consumers taste and preferences for dairy products were considered as something apart from quality, except that managers seemed to assume that consumers could recognize and did prefer more sanitary dairy products. Directors generally seemed to agree with managers about the definition and importance of quality.

### Efficiency

When the managers were asked to define "efficiency," four could not frame a definition at all and the other two described it in terms of its measurement. Among the measures of efficiency mentioned by managers were operating costs, assembly costs, prices received, prices paid, volume, quality, overrun, labor output, and cleanliness. Since manufacturing and assembly costs were the only readily measurable indices of efficiency, the investigation was not directed toward other efficiency factors. Also, managers' and directors' goals were stated primarily in terms of costs.

The managers' estimates of their manufacturing costs ranged from 5.0 to 7.6 cents per pound of butter (Table 7). These figures are not entirely comparable because of differences in allocating joint costs and the proportions of farm separated cream received. Three plants handled substantial amounts of whole milk and their costs were higher because milk receiving, separating, and storage costs were included. Five managers thought their costs

**Table 7. Managers' Estimates of Manufacturing Costs and Their Goals, Six South Dakota Creameries, 1958**

Plants	Estimates of manufacturing costs in 1957*		Manufacturing cost goals	
	Own plant	Competing plants	1959	1964
	(cents per lb. of butter)		(cents per lb. of butter)	
A .....	7.60	same	7.60	6.00
B .....	5.06	lower	5.06	5.06
C .....	5.00	same	4.75	3.75
D .....	6.80	same	n.r.†	n.r.
E .....	6.90	same	6.00	‡
F .....	5.47	same	5.00	n.r.

\*While costs were based on audit reports, overhead and joint costs were not allocated uniformly and this may account for some of the differences. Observations of the interviewer indicated that the 1957 figure for plant C was much too low.

†No reply.

‡The manager's goal was to achieve a cost one cent lower than the average of competing plants.

were the same as those of competing plants.

Three managers had lower cost goals for 1959 and two had lower cost goals for 1964. One wanted to reduce his costs one cent below the average of competing plants. The managers expected to achieve these goals by using more efficient equipment, increasing volume, and receiving more milk in bulk form. The most frequently mentioned cost problem was labor, followed by supplies and overhead costs.

Estimated assembly costs for cream in 1957 ranged from 2.1 to 5.0 cents per pound of butterfat and were inversely related to the proportion of product received in the form of cream (Table 8). Four

managers estimated their costs to be the same as competing plants and two estimated theirs to be higher. Two managers expected their cream assembly costs to be higher in 1959, two the same, one lower, and one did not make an estimate. Managers generally expected cream assembly costs to go up as more producers shifted from cream to whole milk.

Hauling costs for milk were more uniform than for cream, ranging from 25 to 32 cents per hundred-weight for can milk and 15 to 20 cents for bulk. Some plants reported more than one rate, the difference being between routes. Three managers expected to reduce can milk assembly costs and two expected to reduce bulk hauling costs. The three plants which received bulk milk in 1957 had considerably lower hauling costs for bulk milk than for can milk. This was due partly to larger volumes per producer.

Most managers and directors felt that there was little opportunity to reduce hauling costs for a given type of product. A number of them indicated that increasing bulk receiving would reduce assembly costs. Some of the directors mentioned bulk receiving as a means of reducing manufacturing costs too. The major assembly problems mentioned by managers were distances traveled to assemble a truck load and duplication of cream, can milk, and bulk milk assembly routes.

The managers were evenly di-

Table 8. Managers' Estimates of Assembly Costs for 1957 and Goals for 1959 and 1964 for Cream, Can Milk and Bulk Milk, Six South Dakota Creameries, 1958

Plants	Cream				Can milk				Bulk milk			
	Estimates of assembly costs for 1957		Assembly cost goals		Estimates of assembly costs for 1957		Assembly cost goals		Estimates of assembly costs for 1957		Assembly cost goals	
	Own plant	Competing plants	1959	1964	Own plant	Competing plants	1959	1964	Own plant	Competing plants	1959	1964
	(cents per lb. of butterfat)	(cents per lb. of butterfat)	(cents per lb. of butterfat)	(cents per hundred-weight)	(cents per hundred-weight)	(cents per hundred-weight)	(cents per hundred-weight)	(cents per hundred-weight)	(cents per hundred-weight)	(cents per hundred-weight)	(cents per hundred-weight)	(cents per hundred-weight)
A	3.5	same	3.0	3.0	25	same	25	25	n.a.*	n.a.	15	15
B	2.1	same	higher	higher	n.a.	n.a.	n.r.†	n.r.	n.a.	n.a.	n.r.	n.r.
C	4.0	higher	4.0	n.r.	25-30	higher	25	n.r.	15-17	same	15	n.r.
D	3.0	same	n.r.	n.r.	32	same	30	n.r.	n.a.	n.a.	n.r.	n.r.
E	5.0	higher	5.0	n.r.	25	same	25	25	15	same	15	n.r.
F	3.0	same	4.0	n.r.	32	lower	25	22	20	higher	18	15

\*Not applicable. †No reply.

vided as to whether there were any conflicts between manufacturing cost and assembly cost goals. Only one thought there were conflicts between his cost and volume goals. He was the only one to mention the cost of maintaining a quality field man.

The managers and directors were unanimous in feeling that bulk handling was better than can handling. The most frequently mentioned advantages were lower cost and better quality. Four of the six managers reported one or two disadvantages of bulk, the most frequently mentioned being the initial cost of the farm bulk tank. Only five of the 27 directors interviewed felt that there were any disadvantages to bulk handling, two mentioned cost of the farm bulk tank, two felt it would be more difficult to separate the fat from the milk because it would be colder, and one thought there was danger of contamination from one bad tank in a truck load.

#### ACQUISITION OF KNOWLEDGE

The sources and kinds of information used by managers and directors were of interest as indications of how best to improve the knowledge of decision makers. It was hypothesized that decision makers would differ by the amount and kind of knowledge they felt they needed for making a decision, by the urgency of the problem for which a solution was sought, and by their willingness to assume risk.

### Degree of Knowledge

The dairy plant managers placed a great deal of emphasis upon trends. It appeared that managers were primarily interested in information upon which they could successfully predict trends and only secondarily interested in information upon which they could estimate the local success of a given solution. Managers and directors repeatedly stated that they decided in favor of bulk handling because it was the "coming trend." Two managers stated that they decided in favor of bulk handling because of competition. Another stated that his larger patrons demanded it and he was afraid of losing them. These might be regarded as forced action decisions. However, most of the managers apparently were attempting to get ahead of their competitors. The emphasis upon trends and forced actions suggested that some of the managers disliked being innovators. However, two managers were the first in their competitive areas to go into bulk handling.

Table 9. How Managers Felt About the Sufficiency, Reliability, and Clarity of Bulk Milk Information at the Time They Made Their Decisions, Six South Dakota Creameries, 1958

Plants	Information was considered		
	Sufficient in amount	Reliable enough	Clear enough
A .....	yes	yes	yes
B .....	yes	yes	yes
C .....	yes	yes	yes
D .....	no	yes	yes
E .....	yes	partly	yes
F .....	no	yes	yes

Table 10. How Managers Felt About the Potential Successfulness of Bulk Milk Procurement When Their Decisions Were Made and the Degrees of Confidence They Had in Their Conclusions, Six South Dakota Creameries, 1958

Plant	How managers felt about success of bulk procurement when decisions were made		
	Eventually more successful than cans*	Expected degree of success	Confidence in their conclusions (probability)
A .....	yes	none†	1.0
B .....	yes	moderate	0.5
C .....	yes	high	1.0
D .....	yes	moderate	0.9
E .....	yes	high	0.7
F .....	yes	high	0.7

\*No manager expected bulk to be immediately more successful than can handling.

†Manager claimed to have had no expectations but that the decision was a forced action.

Perhaps it could be said that they were secondary innovators who watched trends so they could be more certain of innovating in the right direction.

Four of the managers felt that they had enough information on bulk milk procurement when they made their decisions (Table 9). Five of them felt that their information was reliable. All indicated that the information they had was clear enough to be useful.

All of the managers felt at the time the decisions were made that bulk procurement eventually would be more successful than can milk procurement (Table 10). Three felt that bulk handling would be highly successful, two moderately successful, and one said he had no expectations at the time he made his decision. None of the managers ex-

pected bulk procurement to be immediately successful in comparison to can procurement.

The managers varied considerably in degree of confidence in their decisions. The degree of certainty or uncertainty felt by the manager could be expected to vary with his estimate of the adequacy and reliability of his information and his confidence in his own evaluation and thinking abilities. This assumption was not entirely supported by the data. The manager who expressed the least confidence in his conclusion ( $p=0.5$ ) indicated that his information was sufficient, reliable, and clear. The two managers who felt they had insufficient information had more confidence in their conclusions ( $p=0.7$  and  $0.9$ , respectively).

An attempt was made to determine managers' tendencies to be conservative or audacious in decision making, that is, how much confidence they had to have in their information and conclusions before taking a positive action. The ques-

tions were difficult to frame in an understandable form and some confusion resulted. It was especially difficult to avoid confusion between degree of confidence and expected degree of success. Consequently, the data should be interpreted with caution.

Managers were asked how much confidence they would have had to have (in terms of probability of success) to make a decision in favor of bulk milk if they had expected it to be highly successful. The answers ranged from 0.1 to 1.0 (Table 11). Both the manager answering 0.1 and one of those answering 1.0 had previously stated that their previous decision was a forced action. Another of those answering 1.0 had previously indicated (Table 10) that his degree of confidence was only 0.9 when he made his decision and at that time he had expected only moderate success. Two managers said that they would have required more confidence to make a positive decision had their expected degree of success been

Table 11. Minimum Confidence Limits Managers Felt They Would Require to Make a Decision in Favor of Bulk Handling Under Various Degrees of Expected Success, in Terms of Probabilities of Success, Six South Dakota Creameries, 1958

Plant	Minimum confidence managers would require to make a decision in favor of bulk handling if expected degree of success were			Degree of confidence manager would have required for a favorable decision if			
				Financial condition had been		Procurement situation had been	
	High	Moderate	Slight	Better	Worse	Better	Worse
	(probability of success)						
A .....	1.0	n.r.*	n.r.	same	same	same	same
B .....	0.1	0.3	0.5	same	higher	higher	no dec.†
C .....	1.0	1.0	no dec.	same	same	no dec.	same
D .....	0.8	0.8	no dec.	same	higher	lower	lower
E .....	0.5	0.5	0.5	same	higher	higher	same
F .....	0.4	0.5	0.8	same	higher	lower	higher

\*No reply. †No decision in favor would be made.

lower. Two managers stated that they would require the same degree of confidence to make a positive decision if they expected moderate success but they would not make a positive decision if they expected only slight success. One manager said he would make a positive decision with 0.4 confidence regardless of the expected degree of success. This was consistent with his previous statement that it was a forced action. The remaining manager found the question too confusing to answer further.

All of the managers said they would have required the same degree of confidence if their financial condition had been better. The four who had given confidence minima less than 1.0 said they would have required more confidence had their financial conditions been worse. Two managers said they would have required higher degrees of confidence had their procurement situations been better, two would have required lower confidence, one the same, and the other would not have made a positive decision at all. Their answers concerning required degrees of confidence had their procurement situations been worse were rather confusing. Of the two who would have required higher confidence if the procurement situation had been better, one said he would require the same confidence as before and the other said he would not make a positive decision had the procurement situation been worse. The two who previously said they would require lower confidence gave opposing answers, one would

require higher confidence and the other lower confidence in the face of a worse procurement situation. It seems quite likely that these divergent answers resulted from different interpretations of what a better or worse procurement situation meant, or that the questions were unclear.

The authors, who were also the interviewers, felt that the replies to questions about how the bulk milk decisions were made were largely rationalizations. One indicator of this was that it took most of the managers several months before deciding to shift to bulk, yet they could think of very few of its disadvantages once they had made the decision. The senior author worked with some of the plants before the bulk milk decision was made and provided information (but not advice) to them which was used in shaping their decisions. There was a marked contrast in attitudes before and after the decisions were made. One of the managers went through a long period of appraisal of bulk milk and swung back and forth between positive and negative decisions for a long while. After he decided in favor of bulk and his decision was approved by the directors, his attitude changed considerably. He appeared to have eliminated all doubts from his mind and had complete confidence in his conclusions. He could give only the positive side of the story leading up to the making of the decision. The same characteristic showed up in other managers, more particularly regarding the decision to shift from cream to whole milk.

### Sources and Channels of Information

Bulk milk procurement was a relatively new idea to the managers. The dates they recalled first hearing about it ranged from 1948 to 1955. Only the two who were last to hear about it were immediately interested. Each manager had observed bulk handling in other plants and had discussed it with other managers before making his decision. They were particularly impressed by lower assembly costs, better quality, and easier handling of bulk milk.

All of the managers reported receiving useful information on bulk handling from dairy, farm, and trade periodicals, from people with experience in bulk handling, and from equipment salesmen (Table 12). Each of the following sources was mentioned by four managers: State and U.S. Department of Agriculture publications, meetings, visits to other plants, and college personnel (including Extension). Three managers mentioned newspapers and one each mentioned county agent and radio. Two managers

Table 12. Managers by Sources of Information on Bulk Milk Procurement, Six South Dakota Creameries, 1958

Sources of information	Number of managers
Radio and television.....	1
Newspapers .....	3
Dairy, farm, and trade periodicals .....	6
State and USDA publications....	4
Meetings .....	4
Visits to other plants.....	4
People with experience in bulk..	6
County agent .....	1
College personnel (including Extension) .....	4
Equipment salesmen .....	6

said they received the most helpful information from Extension Service bulletins, two mentioned another manager, one mentioned salesmen, and one mentioned a butter marketing association.

The sources of information on bulk procurement used by directors included own managers, periodicals, salesmen, other managers, and college (including Extension) bulletins and personnel (Table 13). All but two directors mentioned their

Table 13. Directors by Ranking of Amounts of Information Received on Bulk Milk Procurement from Various Sources, Six South Dakota Creameries, 1958\*

Source of information	Ranking of amount of information					Total listing source
	1	2	3	4	5	
	(number of directors)					
Own manager .....	14	6	3	1	0	24
Periodicals .....	5	4	5	4	1	19
Salesmen .....	6	3	2	1	0	12
Other managers .....	0	4	4	1	0	9
College† .....	1	1	0	2	1	5
Others .....	2	5	6	3	0	16

\*One director did not answer the question.

†"College" included bulletins and personal contact by extension and research personnel.

managers as sources of information and more than half mentioned managers as their chief sources of information on bulk handling. Periodicals were listed as sources by 19 directors, but were not ranked as high as managers. Twelve directors listed salesmen and they were ranked fairly high. Only five directors listed college sources and four of those indicated that the information was from bulletins.

### Types and Evaluation of Information

Managers sought information primarily upon efficiencies of bulk milk assembly and farm bulk tanks

when they were considering the feasibility of bulk milk procurement (Table 14). Since bulk handling requires a large investment by the producer and a very small investment by the plant, little emphasis was placed on plant receiving equipment. Most of the information was found easily. Three managers found information on operating costs of bulk assembly equipment difficult to obtain, and two had difficulty in obtaining information on the advantages and disadvantages of bulk assembly equipment.

Most of the managers found the information on prices and operating

Table 14. Managers by Types of Information on Bulk Procurement Which Were Sought, Found, and Evaluated, Six South Dakota Creameries, 1958

Type of information	Looked for	Information was					
		Found			Valuable*		
		Easily	Difficultly	Not at all	Very much	Some	Very little
About farm bulk tanks							
Construction and performance .....	6	5	0	1	2	3	0
Prices .....	6	6	0	0	3	2	0
Operating costs .....	5	5	0	0	1	4	0
Advantages and disadvantages .....	6	5	1	0	3	2	1
Financing† .....	2	1	1	0	1	0	1
About bulk assembly equipment							
Construction and performance .....	5	4	1	0	3	2	0
Prices .....	6	6	0	0	5	1	0
Operating costs .....	6	3	3	0	5	0	1
Advantages and disadvantages .....	5	3	2	0	3	1	1
About bulk receiving equipment							
Construction and performance .....	3	1	1	0	2	1	0
Prices .....	3	3	0	0	3	0	0
Operating costs .....	4	2	1	1	2	0	0
Advantages and disadvantages .....	2	1	1	0	2	0	0
About bulk procurement							
Comparative efficiency .....	6	5	0	0	5	1	0
Effects on quality† .....	4	3	0	1	2	1	0
Benefits to producers† .....	2	1	1	0	2	0	0

\*All of the managers did not give evaluations of all of the types of information they received.

†These types of information were not listed on the questionnaire but were mentioned by managers.



costs of bulk assembly equipment and the comparative efficiency of bulk procurement to be very valuable. Not more than half of them found any of the information about farm bulk tanks to be very valuable, however, most found it to be of some value. Most of those who obtained information on plant receiving equipment found it to be very valuable.

When the managers listed sources of information by types, salesmen were mentioned most frequently, 45 times; and, following in the order of frequency, visits to plants receiving in bulk were mentioned 17 times; dairy, farm, and trade periodicals, 16 times; people with experience in bulk, 15 times; and state or U. S. Department of Agriculture publications and meetings attended, 10 times each. Mentioned two times each were county agents, college people, bankers, and others. One manager mentioned a newspaper source. Equipment salesmen were mentioned the most frequently for nearly all types of information except comparative efficiency of bulk and can milk procurement.

Five managers regarded other plants as sources of the most useful general information—two each listed college publications and periodicals (Table 15). Two managers mentioned salesmen and one listed farm magazines as the sources of least useful information. There appeared to be something of an inverse correlation between amount and reliability of information from various sources. Four managers listed college publications as the most reli-

Table 15. Managers by Sources of General Information According to Their Evaluations of Usefulness and Reliability, Six South Dakota Creameries, 1958

Sources of information	Usefulness of information		Reliability of information	
	Most	Least	Most	Least
	(number of managers)			
College publications .....	2	0	4	0
Periodicals .....	2	1	2	0
Salesmen .....	0	2	0	5
Other plants .....	5	0	3	0

able source and five listed salesmen as the least reliable source. There was a possible bias introduced by the fact that the managers knew the interviewers to be college personnel. Also, the fact that managers felt salesmen as a group to be unreliable did not mean that they regarded all salesmen to be unreliable. Some salesmen were regarded as very reliable. However, some managers seemed to discount all sales approaches to some extent.

Fifteen directors ranked their own managers first as sources of most useful information on bulk procurement; six ranked them second; three, third; and two did not mention their managers (Table 16). Salesmen, other managers, and miscellaneous others were ranked high as sources of useful information. Periodicals and college sources were ranked moderately low. However, 19 mentioned periodicals; 12, salesmen; 9, other managers, but only five mentioned college as a source of useful information.

Some of the managers made useful criticisms of the information

Table 16. Directors by Ranking of Usefulness of Information Received on Bulk Milk Procurement from Various Sources, Six South Dakota Creameries, 1958\*

Source of information	Ranking of usefulness of information					Total listing source
	1	2	3	4	5	
	(number of directors)					
Own manager .....	15	6	3	0	0	24
Periodicals .....	2	5	7	4	1	19
Salesmen .....	4	3	4	1	0	12
Other managers .....	0	6	3	0	0	9
College (including Extension)†	1	1	1	2	0	5
Others .....	4	5	5	2	0	16

\*One director did not answer the question.

†"College" included bulletins and personal contacts.

received. Their primary emphasis was on short and direct articles. They were particularly critical of long, rambling bulletins in which the things that interested them were hidden among others of little or no interest. A preference was indicated for short mimeographed articles *vis-a-vis* slick paper printed bulletins. This, apparently, was based upon the belief that mimeographed articles were more concise and recent. Two managers said they never had time to read bulletins but they did read mimeographed publications if they were short. Emphasis was placed on a direct style in which the results were presented in a clear-cut fashion, followed by elaboration of the methods and findings. Some emphasis was placed on more specific information. Apparently, some managers had difficulty in applying general information to their specific situations. Directors had few comments on improvement of information. Most of them relied very heavily on their managers to keep them informed. A few of them mentioned the desirability of a newsletter which would

report current developments in dairy marketing.

#### PARTICIPATION AND ROLES OF DECISION MAKERS

A major policy decision in a dairy plant is likely to involve or affect a large number of people. These include the manager, directors, members, patrons, employees, suppliers, and various groups in the local community. The making of a decision may involve an evaluation of the effect of the proposed action upon the welfare of various groups. Most of the people affected by the decision have a role in the making of the decision either directly by taking some action with respect to it or indirectly by influencing those who actively participate in the process. One of the major objectives of the study was to discover the active participants in the decision making process and to determine the roles played by both active and inactive participants.

#### Managers

Forty-two of the dairy plants surveyed in the first phase of this pro-

ject had hired managers. The managers played a dominant role in most of the minor plant decisions (Table 17). Only in the setting of wages and salaries did a large number of managers not participate at all in decision making. In making assembly route changes 20 managers said they made the decisions alone and 14 indicated that it was a joint decision with the directors, owners or home office, as the case might be.

The situation with respect to major decisions of plant operations was quite different. Few managers indicated that they had full authority to add or drop lines of business, make major equipment purchases, or change the method of procuring milk or cream. It should be noted that many cooperative articles of incorporation specifically assign such responsibilities to the directors. A number of managers indicated that they did not participate at all

in making major decisions. Further analysis showed that the average volume of business in plants where managers made no major decisions was much smaller than that of plants where managers did participate in major decision making.

The managers of the six creameries studied in the present phase of the project generally shared decision making responsibilities with their boards of directors. The managers said that they always attended board meetings (Table 18). All indicated that they initiated most of the plant policy decisions and that they had considerable influence with the board of directors. All of the managers were permitted to make certain kinds of decisions on their own. However, five of them reported that their boards always reviewed their decisions. Several managers volunteered the information that they had never had their boards turn down any of

Table 17. Managers by Degree of Participation in the Making of Various Types of Plant Decisions, 42 South Dakota Dairy Manufacturing Plants with Hired Managers, 1958

Types of decisions	Degree of managers' participation in decision making		
	All	Some	None
	(number of managers)		
<b>Minor</b>			
Hiring and firing .....	33	8	1
Wages and salaries .....	11	16	15
Prices paid to patrons .....	39	3	0
Selling prices .....	39	0	2
Assembly route changes .....	20	14	0
Adding and dropping patrons .....	32	4	0
<b>Major</b>			
Adding or dropping lines of business .....	9	19	14
Major equipment purchases .....	3	28	11
Changes in procurement methods .....	4	18	10

**Table 18. Managers by Types of Decision-Making Responsibilities, Six South Dakota Creameries, 1958**

Types of decision-making responsibilities	Number of managers
Always attend board meetings.....	6
Initiate most policy decisions .....	6
Considerable influence with board	6
Often make certain kinds of policy decision alone .....	6
Board reviews managers' decisions	5
Initiated idea to shift to whole milk .....	4*
Initiated idea to shift to bulk.....	6
Not enough guidance from the board .....	3

\*Two managers were appointed after the decision had been initiated.

their recommendations.

Four of the managers had initiated the idea of shifting from farm-separated cream to whole milk. The other two had been appointed after the idea was initiated. All six had initiated the idea of starting bulk milk procurement and persuaded their boards to go along with the idea. Three managers reported that they did not receive enough guidance from their boards and that their boards delegated too much decision-making responsibility to them. They desired more help from their boards. The other three said they received the right amount of guidance.

### Directors

All of the managers reported that board meetings were conducted democratically using standard parliamentary procedures. None reported a ruling clique or disagreeing faction on their boards. One re-

ported that one of his directors had a dominating personality but that he was democratic in decision making. Another manager reported that there were two dominating personalities on his board—one was fairly democratic while the other was not. According to the managers, two of the 35 directors were dominating in board decision-making actions, 29 were democratic, and four were passive (Table 19).<sup>3</sup>

**Table 19. Directors by Managers' Descriptions of Their Personalities, Six South Dakota Creameries, 1958**

Managers' descriptions of directors' personalities	Number of directors*
Dominating .....	2
Democratic .....	29
Passive† .....	4

\*This included several directors who were board members when the bulk milk decision was made but not when the survey of directors was made.

†“Passive” in this context means one who is always a follower of the group and does not participate in the decision-making process.

In listing their concepts of their primary duties, 17 directors mentioned general supervision of plant operations and only 12 of them mentioned decision making (Table 20). Several of the latter answered “help the manager make decision,” implying that decision making was largely the manager’s responsibility as they saw it. One director mentioned only attending board meetings and keeping informed and

<sup>3</sup>Passive means recessive in personality—one who does not participate in the decision making process but simply votes with the majority.

another said his primary responsibility was "to have good sound judgement." Both of them were described as passive personalities. There appeared to be a definite relationship between size and financial success of the plant on one hand and directors' concepts of their duties on the other. The directors of the larger and more successful plants had more elaborate and positive concepts of their duties. However, the extent to which they allowed managers to assume large decision-making responsibilities was not related to size or successful operation as measured by financial condition.

**Table 20. Directors by Concepts of Their Primary Duties, Six South Dakota Creameries, 1958**

Directors concepts of their primary duties*	Number of directors
General supervision of plant operations .....	17
Make or help make decisions.....	12
Help the manager.....	8
Public and patron relations.....	7
Keep informed .....	5
Attend board meetings.....	3

\*Concepts which were mentioned less than three times were not tabulated.

The directors did not agree with the managers about their relative decision-making roles, nor did directors of the same plants agree with each other very much. Twenty directors said that managers made no decisions alone and 10 said that the board alone made no decisions (Table 21). Nine said that all decisions were made jointly by the manager and the board,

11 said 75 to 99% were so made, and 5 said 50 to 74% were jointly made. In one board, one director said all major operating decisions were made by the board alone while another director said all were made jointly, and the other directors said they were made in different ways. The highest percentage of decisions attributed to a manager alone was 50 and only one director attributed more than 50 % of the decisions to the board acting alone. The discrepancies appeared to be of three types: (1) different interpretations of "major operating decisions," (2) different interpretations of what "made by manager alone" and "made by board alone" meant, and (3) ignorance on the part of the director.

The directors were in general agreement as to the major functions of the board of directors although there were considerable differences in emphasis. The general opinion was that the board's function was to oversee the plant

**Table 21. Directors, by Estimates of the Percentages of Major Operating Decisions Made by Manager Alone, Manager and Board Together, and Boards Alone, Six South Dakota Creameries, 1958**

Directors' estimates of percentage distribution of decision-making activity	Major operating decisions were made by		
	Manager alone	Manager and board	Board alone
(%)	(number of directors)		
0 .....	20	1	10
1-24 .....	5	0	9
25-49 .....	1	1	6
50-74 .....	1	5	1
75-99 .....	0	11	0
100 .....	0	9	1

operations, making or approving major decisions, and seeing that the plant was operated efficiently. Their opinion of an ideal relationship between manager and board was generally that the manager should identify problems, seek solutions, and make a recommendation to the board for action. Some directors said that managers should make only minor decisions and should inform the board and made recommendations to the board for major decisions. Other directors said managers should make major decisions but take them to the board for approval before acting on them. It was difficult to tell to what extent these differences were semantic and to what extent they were really differences in opinion.

#### **Members and Patrons**

The bulk milk decision was not submitted to the members for their approval at any of the plants. An unofficial vote was taken at one plant and although the vote was in favor of bulk handling, the board of directors decided not to act on it. Later, it decided to take action without returning to the members for approval. While members and patrons did not participate directly in the decision to go into bulk milk procurement, they were influential in several ways. In the first place, it is logical to assume that no plant would go into bulk handling unless some patrons wanted to sell in bulk and there was enough potential to make it successful. However, there was ample evidence that influence worked in both directions. Once

the management had decided that bulk procurement was desirable, some effort was made to sell the idea to the patrons.

The managers reported that they learned of patron interest in bulk handling through meetings, visits to patrons' farms, surveys, truck drivers, and patrons coming in to see the manager. All managers reported that some patrons had come in and expressed a desire to sell in bulk before the decision was made. One manager said only one patron had requested bulk handling. The other managers reported that from five to 40 had done so. Five managers, excepting the one with only one patron request, said that patrons had influenced their decisions.

The directors said they found out largely through the managers how many patrons wanted to sell in bulk. However, there was some confusion as to how the patrons made their wishes known. For example, different members of one board said that patrons interest was determined by a special meeting, a canvass of the milk patrons, and requests made directly to the manager, whereas the manager stated there was neither a special meeting nor a canvass.

All managers felt that patrons with requests or complaints should and did come directly to them rather than go to a director. However, many directors felt that they were representative of the patron-members and that they should come to them with requests and complaints. Directors seemed to

be more concerned with the wishes and welfare of members while the managers seemed to be oriented more toward the success or welfare of the plant as distinguished from the organization and its members. Also, the managers seemed to be more concerned with producers as patrons than as members of the organization. They were well acquainted with those whom they considered their best patrons, and they seemed to be influenced by these patrons more than by others.

### **Employees and Others**

According to the managers, employees and others were relatively uninfluential in decision making. Four managers said that one or more of their employees had discussed bulk handling with them. Two said they had no influence and the other two said they had little influence. Five managers had discussed bulk procurement with their assembly truck drivers. They, also, had little influence. Four managers said they each had one or more employees with whom they discussed problems. Each of the plants had part-time quality field men at the time bulk was being considered. The managers reported that they had little or no influence.

Only two managers reported that they were ever advised by outsiders. Both mentioned bankers and equipment salesmen and one mentioned an Extension specialist and an equipment company manager. They both said that some of these people were influential.

There was some question in the minds of the interviewers about the accuracy of the responses concerning influence. In retrospect it seemed that the term "influence" may not have been defined sufficiently. Some observations made by the interviewers while in the plants indicated that certain employees were relied upon for information and advice. Thus, they were influential as advisors even though they may never have participated in the final stages of decision making.

### **SUMMARY AND CONCLUSIONS**

This study was directed toward gaining a better understanding of managerial decision making in dairy manufacturing plants. The focus of the study was the decision on whether to receive milk in bulk. Bulk milk receiving had been considered in 11 South Dakota dairy manufacturing plants, all of which were producer-integrated creameries. The managers and directors of six plants and the managers of two additional plants were interviewed. Three plants had to be entirely excluded from the study for various reasons. The data from six plants were included in the analyses and the limited information from the two additional plants was considered in the evaluations primarily as a check.

#### **Summary**

The six plants analyzed had an average output of about one million pounds of butter in 1958, the range being from one-half million to nearly two million pounds. About two-

thirds of the butterfat receipts were in cream and one-third in whole milk. Approximately 20% of the whole milk was received in bulk and the range was 0 to 40%. Managers' estimates of plant capacities averaged about 50% greater than 1958 volumes of production. Their estimates or opinions of ideal volumes of butter production averaged about 62% above 1958 outputs. These relationships for the individual plants varied only slightly from the averages. Also, managers' expected butterfat receipts for 1963 (planned expansion during next five years) were very close to their estimates of their present capacities.

All managers expected bulk receiving to increase their receipts. Two managers expected to receive only bulk milk within five years, while another expected all bulk within ten years. Most managers felt there was no cost advantage in bulk receiving until the shift was complete. This seemed to indicate that some did not expect a cost advantage.

The range in quality of raw and finished products among the six plants was quite wide. Three managers expressed satisfaction with their present situations, two were dissatisfied, and one was neither. None reported that all his products were top quality. The managers conceived of quality almost entirely in terms of sanitation. They found it difficult to specify quality goals. They felt that improved quality would benefit the dairy industry but none expected it to raise prices more than a nominal amount. They seem-

ed to feel that markets would diminish if quality was not improved.

Four managers felt that quality was more important than volume and two felt that they were equally important. All recognized that there were actual or potential conflicts between volume and quality goals. Managers and directors alike were seriously concerned over quality problems, although there seemed to be some feeling that they **ought to be** concerned rather than a sense of urgency to act.

Managers thought of efficiency primarily in terms of operating costs. All felt that their costs were competitive. Four expressed definite goals of plant operating cost reduction. In general, their assembly cost goals were to hold costs at or near present levels.

All of the managers and directors felt that bulk handling was superior to can handling. They expected bulk handling to improve quality and reduce costs but there were some inconsistencies about the latter. Few thought there were any disadvantages of bulk handling other than the initial cost of the farm bulk tanks. There seemed to be general agreement that bulk handling was important to the achievement of their goals.

Plant managers were especially interested in trends. This led them to seek information upon which they could base estimates of developing trends. The objective seemed to be to foresee what their competitors were going to do and then try to do it first. A large proportion of the managers and directors placed great



emphasis upon their belief that bulk handling was the "coming thing."

Three managers implied that their bulk milk decisions were forced actions—required to keep up with competitors or satisfy patrons' demands. However, there seemed to be a definite indication of innovation even though it was a cautious innovation. Each wanted to be first but only if he was sure that he was moving in the right direction.

Four of the managers were satisfied with the quantity of information they had when they made their decisions on bulk handling. Five felt their information to be reliable and all of them were satisfied with the clarity and usefulness of the information. All managers expected bulk handling eventually to be more successful than can handling. Three expected a high degree of success, two moderate success, and one had no definite expectation. Their estimates of the probabilities of success ranged from 0.5 to 1.0. These may also be taken as the degrees of confidence in their conclusions and the information upon which they were based. However, the managers may not have felt these degrees of confidence at the time the decisions were made.

The sources of information on bulk handling most frequently mentioned by managers were periodical publications, others with experience in bulk handling, and equipment salesmen. State and U.S. Department of Agriculture publications, meetings, visits to other plants, and college personnel (involving Extension Service specialists) were

each mentioned by four managers. Two managers indicated that Extension Service bulletins were the sources of most helpful information on bulk handling and two mentioned another manager as the most helpful source. Directors relied most heavily on their own managers for information. They also frequently mentioned periodicals and salesmen.

The type of information most sought by managers concerned the efficiencies of bulk milk assembly and farm bulk tanks. Most of the managers considered the most valuable information to be prices and costs of operating bulk assembly equipment and the efficiency of bulk procurement.

The most useful sources of general information were other plants, listed by five managers, and college publications and periodicals, mentioned twice each. Two managers listed salesmen as the least useful sources. College publications were listed by four managers as the most reliable sources. Other plants were listed by three, and periodicals by two managers. Five managers listed salesmen as the least reliable source of information. Directors most frequently mentioned their own managers as sources of most useful and most reliable information.

Managers expressed a preference for brief, direct style articles as opposed to long detailed bulletins. Bulletins were criticized for excessive length, lack of clarity, improper indexing, and obsolescence when published. Specific information seemed to be preferred to general

information.

Managers seemed to have played a dominant role in the decision making process. All of the managers shared major decision making responsibilities with boards of directors. In each case, the manager initiated the idea of bulk milk handling, recommended action to the board of directors, and the board approved the recommendation.

Boards of directors used democratic procedures with no single director or group having complete dominance over board actions. The managers generally attended board meetings but did not vote. They initiated most of the actions of the boards and their recommendations were almost always approved. Board actions were generally unanimous and motions were rarely brought to vote until every member was convinced of its desirability. Motions to which objections were made usually were tabled for further study or withdrawn. There were some differences of opinion among directors concerning managers' roles in decision making.

Apparently, members and patrons influenced most of the bulk milk decisions although they did not participate directly. The interests of patrons were determined through meetings and visits with managers, truck drivers, and field men. There seemed to be little direct communication between directors and patrons on bulk handling. There were some discrepancies among directors as to how they found out how many

patrons wanted to sell bulk milk.

Managers reported that employees and others had little influence in the bulk milk decisions. Several managers were advised by employees or others but did not receive recommendations from them in the bulk milk decision.

### **Conclusions**

The bulk milk decision was a genuine decision. It involved a change in expectations, an awareness of a new problem, the acquisition of new knowledge, and the choice of a solution. It probably was typical of the manner in which most policy decisions are made in dairy plants. The decision to adopt bulk handling apparently was made largely for strategic reasons. Although all of the managers and directors interviewed expected bulk handling to be more efficient than can assembly, they seemed to be strongly influenced by the actions or expected actions of competing plants. Judging from this and other observations, it appears that many procurement policies have been adopted more for reasons of competitive strategy than for reasons of efficiency. While the two purposes may not have been antithetical in this instance, there are other instances in which they are.

In general, it seemed that the expectations of dairy plant managers were well founded and that their goals were reasonably attainable. There appeared to be much room for improvement in information and its use. Several managers felt the need for better informa-

tion. Much of what they received was inappropriate, misleading, inadequate, or otherwise unreliable. Some of the managers and most of the directors apparently did not know how to obtain better information. It seemed that they were not adequately supplied with usable information from unbiased sources.

None of the managers and directors interviewed was trained in the art of decision making. Most of the managers were trained as dairy plant technicians and most of the directors had no training in operating a dairy plant. Some of the managers seemed to rely heavily on what they thought other managers were thinking. Their analyses of information seemed haphazard and they either relied on intuition to a large extent or, for some other reason, were unable to reconstruct the process by which they arrived at a decision. Many of them were unable to give a logical explanation for some of their conclusions. This seemed to be true for directors even more than for managers.

The managers were the primary leaders in the dairy plants studied. In some cases, the president or secretary of the board of directors also exhibited fairly strong leadership but most of the direc-

tors did not seem to exert themselves very much in this respect. Apparently every manager could influence his board very strongly and some could completely dominate it. There seemed to be several reasons for this, including (1) members and patrons with problems seemed to turn to their managers more often than to directors, (2) the dairy business was more of a full-time job for managers than for directors so the managers kept better informed, and (3) managers were more directly in contact with plant operations and could perceive problems more quickly. The directors generally had little choice but to rely on the manager for information and advice.

Decision making could be improved and procurement policies made more efficient through (1) less emphasis on competitive strategy where it conflicts with marketing efficiency, (2) more usable and reliable information, (3) more and better management training, and (4) a better understanding of dairy marketing problems and procedures by directors, members, and patrons. All of these call for better educational efforts on the part of experiment stations, Extension services, and other agencies serving agriculture.

**APPENDIX A****METHODOLOGICAL PROBLEMS IN DECISION-MAKING RESEARCH**

The methodology used in decision-making research has been assembled from various fields and it has yet to be developed systematically for its special purpose. Much of the research by economists in this area has been restricted to normative questions and very little has dealt with how decisions actually are made. Psychological research in decision making has been restricted largely to clinical experiments of isolated behavioral elements. There seems to have been no effort to trace the complete decision-making process under field conditions. The existing body of decision-making theory apparently is based on a synthesis of fragmentary results from various studies and ideas obtained from introspection and speculation. In view of the insufficient guide lines provided by previous studies, this study utilized a broad approach incorporating various investigative techniques. Some of them yielded useful information but many did not. It may be helpful to future investigators to know how successful the different techniques were and what recommendations the present investigators would make on the basis of their experience.

Three questionnaires were used in this overall study. The first was used to gather background information from the managers of all of the dairy manufacturing plants

in eastern South Dakota. The second was a detailed schedule covering the circumstances of the bulk milk decision from the viewpoint of the plant managers involved. The third schedule was an abbreviated version of the second used in interviewing the directors of the plants involved. Selected portions of schedule 2 pertinent to the following discussion are included in Appendix B. The first part deals with the manner in which the decision to procure milk in bulk was made, the second with goals and their achievement, the third with the acquisition and use of information, and the fourth with the roles of those who participated in the bulk milk decision.

A serious difficulty developed in the part dealing with goals. The term "goal" has two meanings—(1) an explicitly defined magnitude accompanied by a specific plan designed to achieve it and (2) a general level or direction of movement which is not explicitly defined or accompanied by a plan for achievement. The dairy plants were expected to have explicit goals and plans, and the questions were based on this assumption. However, the manner in which the questions were answered and the inconsistencies revealed in the analyses suggest that both types of goals were involved but that they did not indicate clearly which

were which. It would seem highly desirable in any subsequent study, first to determine the nature of the goals then to choose follow-up questions accordingly. Special care should be taken not to prompt "spur-of-the-moment goals" by implying that they **should** have explicit goals.

The questions concerning goals elicited a number of inconsistent replies, especially between those relating to volume, quality, and efficiency. For example, one of the managers made the following replies in answer to different questions—(1) he decided to shift to bulk handling because it would improve the efficiency of his plant, (2) efficiency would not be improved unless all milk was received in bulk, and (3) he never expected to receive all milk in bulk. There were numerous inconsistencies between the answers given by managers and those given by directors. Substantial agreement would be expected if the goals had been discussed and agreed upon. In one case, some directors of a plant stated volume goals which were lower than the plant had achieved the previous year. Few of the directors were acquainted with the current levels of volume, quality, and efficiency of their plants. Consequently, they seemed to have no basis on which to formulate explicit goals. The managers and some of the officers seemed to be the only ones involved in planning.

Since decision making concerns

problem solving and a problem is a difficulty in achieving a goal, it is pertinent to investigate not only the characteristics of the goal but how it was formulated in the first place. It was expected that the goals would be directly and proportionately related to past and present achievements but this was not confirmed by the replies. This may have been due partly to the confusion of the two types of goals. In retrospect, the investigators felt that more effort should have been devoted toward finding out how goals were determined. The goal-formulating process may involve a complex decision in itself.

An attempt was made to find out how much information managers felt they needed in order to make a decision. This was conceived in terms of "degrees of knowledge," where certainty and uncertainty represent the two extreme situations and risk is the intermediate situation in which the probabilities of success are known. It was assumed that decision making would occur only under risk conditions since it involves a rational choice between alternatives whose outcomes are imperfectly known. Under certainty the outcomes are known and there is no problem in selecting the best alternative while under uncertainty there is no rational basis for making a choice. So-called "forced action" decisions were considered to be risk situations since sufficient probabilities were known to warrant making a choice.

In the abstract, it is possible to distinguish expected degree of success, expected probability of success, and degree of confidence in the information on which the expectations were based. However, there is some doubt that decision makers ordinarily make such distinctions. There seemed to be considerable correlation between expected degrees of success and probabilities of success but it was not clear whether this was because of failure to make such distinctions or not understanding the questions. It was apparent that the managers did not think of probabilities in explicit numerical terms. Also, there were indications that the probability estimates were higher after the decisions were made than they were before. One manager stated that he never acted unless he felt the outcome was absolutely certain. However, the enumerator had observed the manager previously in the process of making the decision and, in his opinion, the manager felt considerable doubt at the time he made the decision. Since the manager apparently was answering honestly, it seemed likely that he simply forgot his doubts once the decision was made. Some of the other managers seemed to forget their previous doubts, too.

It was difficult to determine how the managers evaluated and used information in making their decisions. Some managers seemed to be more successful in making decisions than might be expected from the relative dearth of reliable information they received. It would seem

that their success was due either to chance, intuition, or information they had forgotten. Having made the decisions, the managers seemed to rationalize their actions and to take a defensive attitude toward anything which might reflect upon their good judgement. Consequently, it may be impossible to obtain a clear picture of the decision-making process from *ex poste* direct questioning. Alternatively, the investigator might observe the managers in the process of making decisions but this also poses some grave difficulties. If the observation is made in a controlled experiment, some of the usual conditions, such as the urgency of the problem, may be omitted and the use of intuition may be inhibited. However, if the observation is made under field conditions it may be impossible to detect and measure all of the factors affecting the process. In both cases, there is the everpresent danger that the act of observing may influence that which is being observed.

Decision-making roles may vary from casual influences to actual participation in the process of making the decision. A fairly clear and consistent picture of the direct participation roles was obtained. The decisions were made largely by the managers and then approved by the boards of directors. Members, patrons, and others apparently did not participate directly in the making of the decisions. However, there were indications of various influences on the decisions made, some of the strongest coming from equipment salesmen. Although it was basically

the members' and patrons' problems the managers were seeking to solve, there seemed to be no systematic communication between them. Most of the managers knew relatively few of their members and patrons and they had never met many of them. It was not possible to trace all of the influences on the managers' decisions and many of the influences may have been so subtle that the managers were never aware of them. Others may have been forgotten although the effect may have remained subconsciously. Again, it seems that *ex poste* direct questioning may not reveal all of the relevant information, and that observation of

the process might reveal more.

It might be worthwhile, especially from a methodological standpoint, to have one investigator observe a decision process and to have another conduct an *ex poste* study. A series of such case studies should enable them to select the better techniques for decision-making research. In addition, it might be valuable to test the conclusions of the research in follow-up experiments and field studies. For example, improved information or special training in making decisions might be given a selected group and their decisions and results compared with a control group.

## APPENDIX B

## SELECTED SECTIONS OF THE MANAGERS' SCHEDULE

STRICTLY CONFIDENTIAL

Budget Bureau Number -40-58112  
Expiration Date June 30, 1959SOUTH DAKOTA STATE COLLEGE  
AGRICULTURAL EXPERIMENT STATIONStudy of Managerial Decision Making and Procurement  
Policies in Selected South Dakota Dairy Plants

## Schedule Number 2

Name of Organization .....

Address .....

Manager .....

Interviewer ..... Date .....

## Part I. The Bulk Milk Decision

1. When did this plant begin receiving whole milk?.....
2. When was the official decision made on bulk handling?.....
3. Was the decision in favor of bulk handling? Yes ( ) No ( )  
IF YES When did bulk receiving operations begin?.....
4. Concerning the official decision on bulk handling
  - a. What was your personal decision? in favor ( ) against ( )  
undecided ( )
  - b. IF MANAGER MADE A DECISION Did you recommend your de-  
cision to the board of directors? Yes ( ) No ( )  
IF NO Explain.....\*
  - c. What was the board's decision? in favor ( ) Against ( ) did  
not make a decision ( )

\*More space was provided for answers of this type in the original schedule; extra lines were omitted in this Appendix Schedule to conserve space.



Part II. Procurement Policies, Goals and Results

Section A. Volume of Business

1. What were your physical volume figures for the fiscal year ending in 1957 and what do you expect for fiscal 1958?

	1957	1958
a. Butter manufactured ( pounds )	.....	.....
b. Cream purchased ( lbs. of b.f. )	.....	.....
c. Whole milk purchased for mfg. ( pounds )	.....	.....
d. Pounds of butterfat in whole milk for mfg.	.....	.....
e. Estimated bulk milk receipts for mfg. ( lbs. )	.....	.....

2. Would you prefer receiving  
 a. all milk and no cream Yes ( ) No ( )  
 IF YES Why.....

b. all milk in bulk Yes ( ) No ( )

3. What do you consider an "optimum" (most desirable) annual volume for this plant with its present equipment?

- a. butter production .....pounds
- b. whole milk receipts .....pounds
- c. Why did you choose these figures?.....

4. What do you consider an "ideal" volume for this plant with such additional facilities as might be required?

- a. butter production .....pounds
- b. whole milk receipts .....pounds
- c. why did you choose these figures?.....

5. Do you plan to increase your volume of business during the next five years? Yes ( ) No ( )

IF NO, SKIP TO Q. 6

IF YES

a. How much, in terms of pounds of butterfat?.....

- b. What proportions of the increase do you expect to obtain from
  - (1) increased production of present patrons .....%
  - (2) new patrons in your present supply area .....%
  - (3) new patrons outside your present supply area .....%

c. How do you expect to get the additional volume ( new procurement practices, consolidation, etc. )?.....

d. How do you think your competitors will react to your actions?.....

e. How do you expect to counteract your competitor's reactions ( i.e., outmaneuver them or meet their competition )?.....

6. If you did not change your procurement policies or practices, how much milk and cream would you expect to receive during the next fiscal year?

- a. cream ( pounds of butterfat ) .....
- b. can milk ( pounds ) .....
- c. bulk milk ( pounds ) .....

- 7. What are the minimum amounts of milk and cream you will be satisfied to receive during the next fiscal year?
  - a. cream (pounds of butterfat) .....
  - b. can milk (pounds) .....
  - c. bulk milk (pounds) .....

**Section B. Quality**

- 1. What percentage of your receipts (production) of (cream, etc.) for the fiscal year ending in 1957 was of (sweet cream, No. 1, etc) quality?
 

a. cream	Sweet:.....%	No. 1:.....%	No. 2.....%	Reject:.....%
b. can milk	No. 1:.....	No. 2:.....	UG:.....	Reject:.....
c. bulk	No. 1:.....	No. 2:.....	UG:.....	Reject:.....
d. skim milk	No. 1:.....	No. 2:.....	UG:.....	Reject:.....
e. butter	AA:.....	A:.....	B:.....	C:.....

NOTE: All lines above should total 100%.

- 2. How satisfactory do you consider this situation?
 

very unsatisfactory ( )	unsatisfactory ( )	neither ( )
satisfactory ( )	very satisfactory ( )	
- 3. What quality goals, if any, do you have for
  - a. 1959? .....
  - b. 1964? .....
  - c. ....? (eventual) .....
  - d. why did you choose these goals? .....
  - e. what do you plan to do to achieve these goals? (new procurement practices) .....

**Section C. Efficiency**

- 1. What does "efficiency" mean to you? (Define "efficiency.") .....
- 2. What are some measures of efficiency, in rank order?
 

Measure	Rank	How is it related to efficiency?
a. ....	( )	.....
b. ....	( )	.....
c. ....	( )	.....
d. ....	( )	.....
e. ....	( )	.....

(If not mentioned, ask about costs, prices received and paid, and patronage refunds. Check unprompted answers.)
- 3. What were your manufacturing costs (including overhead) per pound of butter for last fiscal year? .....¢
- 4. How do you think your manufacturing costs compare with those of your competitors?
 

Higher ( )	Same ( )	Lower ( )	Do not know ( )
------------	----------	-----------	-----------------

5. What manufacturing costs goals do you have for
  - a. next fiscal year (1959)? .....
  - b. five years from now (1964)? .....
  - c. eventual ( )? .....
  - d. Why did you choose these goals? .....
  - e. How do you plan to achieve these goals? .....
  
6. What assembly cost goals do you have for
 

	Cream (per lb. of b.f.)	Can Milk (per cwt.)	Bulk Milk (per cwt.)
a. next fiscal year: (1959)	.....¢	.....¢	.....¢
b. five years from now? (1964)	.....¢	.....¢	.....¢
c. eventual?	.....¢	.....¢	.....¢
d. Why did you choose these goals?	.....		
e. How do you plan to achieve these goals?	.....		

### Part III. Information

#### Section A. Degree of Knowledge

1. You told me earlier that you were personally (in favor of, against, undecided about) bulk handling at the time that the "official" plant decisions were made.  
**IF UNDECIDED**  
 Would you say you tended to favor bulk handling, tended to be against or were neutral?  
 undecided, tending in favor ( )      undecided, neutral ( )  
 undecided, tending against ( )
  
2. When you formed your own opinion:
  - a. did you feel that you knew enough about bulk handling?  
 Yes ( )      No ( )
  - b. did you feel the information you had was sufficiently reliable?  
 Yes ( )      No ( )
  - c. was the information clear enough to be useful to you?  
 Yes ( )      No ( )
  - d. comments: .....
  
3. Based on the information available to you at the time the bulk milk decision was made, how successful did you think bulk handling would be as compared with can handling (in terms of cost, quality, convenience efficiency and any other factor you considered important)?  
 immediately more successful ( )      eventually more successful ( )  
 no difference ( )      less successful ( )

- a. How much confidence did you have in your information and evaluation, in terms of so many chances in 10 that your conclusion was correct (i.e., how certain did you feel of the predicted outcome)?  
(Circle) 1 2 3 4 5 6 7 8 9 10
  - b. (If manager concluded bulk handling would be more or less successful),  
How successful or unsuccessful (circle correct one) did you feel bulk handling would be?      slightly ( )      moderately ( )  
highly ( )      ..... ( )
  - c. (1) Suppose your information had led you to feel that bulk handling would be highly successful. And suppose you were very sure of yourself—suppose you thought the chances were 10 in 10 that you were right. Would you have decided to go into bulk handling (+)? Would you have decided against bulk handling (-)? Would you have preferred not to make a decision (0)?  
(2) If you had been less sure of yourself—say, chances seemed to be 9 in 10 that you were right. Would you have decided for bulk handling? Against it? Prefer not to decide?  
(3) (Continue this line of questioning until a point is reached where a negative decision would be made)  
(4) (Repeat line of questioning for “moderately” successful)  
(5) (Again repeat for “slightly” successful)
- |                                   |                                      |
|-----------------------------------|--------------------------------------|
| <b>Answer table</b>               | <b>Chances of correct conclusion</b> |
| <b>Expected degree of success</b> | <b>1 2 3 4 5 6 7 8 9 10</b>          |
| (1) highly successful             |                                      |
| (2) moderately successful         |                                      |
| (3) slightly successful           |                                      |
- d. How would your answers to “c” have differed if the financial condition of your plant had been:  
(1) better? .....  
(2) worse? .....
  - e. How would your answers to “c” have differed if the procurement situation of your plant had been:  
(1) better? .....  
(2) worse? .....

**Section B. Sources and Channels**

- 1. When did you first hear of bulk handling? .....
- a. How did you hear about it? .....
- b. What kind of information did you get when you first heard of bulk handling? .....
- c. Were you immediately interested?    Yes ( )      No ( )
- d. IF NO: When did you become seriously interested? .....

2. IF PLANT IS RECEIVING BULK: Was your plant the first in this area (of overlapping supply areas) to decide to shift to bulk?  
Yes ( ) No ( )
3. Did you observe other bulk milk operations before the decision was made in your plant? Yes ( ) No ( )  
IF YES:
  - a. Which plants? .....
  - b. What did you learn? .....
4. Did you discuss the subject with other managers who had bulk handling experience before the decision was made? Yes ( ) No ( )  
IF YES:
  - a. Who? .....
  - b. What did you learn? .....
5. a. Where did you get the information that you consider was the most helpful for your personal evaluation and conclusions? .....  
b. What did you learn from this source? .....
6. From which of the following sources do you recall getting some information on bulk milk handling?

	Information		
	Useful	Not useful	No information
a. Radio	_____	_____	_____
b. Television	_____	_____	_____
c. Newspaper	_____	_____	_____
d. Dairy farm, trade or technical periodicals	_____	_____	_____
e. General farm periodicals	_____	_____	_____
f. State or USDA publications	_____	_____	_____
g. Meetings attended	_____	_____	_____
h. Conference proceedings or papers	_____	_____	_____
i. Annual reports of dairy plants	_____	_____	_____
j. Visits to plants handling milk	_____	_____	_____
k. People who had experience in bulk	_____	_____	_____
l. County agent	_____	_____	_____
m. College people	_____	_____	_____
n. Equipment salesmen	_____	_____	_____
o. Other	_____	_____	_____

**Section C. Types and Evaluation**

1. What kinds of information did you look for at the time you were trying to decide about bulk handling? .....

2. Of these kinds of information, which did you find to be (may list several in rank order):
  - a. very valuable? .....
  - b. some value? .....
  - c. little or no value? .....
  - d. found easily? .....
  - e. found with difficulty? .....
  - f. not found? .....
3. Were there kinds of information which you overlooked at the time but would want if you had to make the decision over again?  
 Yes ( ) No ( )  
 IF YES: What were they? .....
4. What do you think about the usability of the information you found (i.e., form, content, understandability, clarity, etc.)? .....
5. How reliable do you think the information was (i.e., contradictions, misleading, unscientific, etc.)? .....
6. From what sources have you generally found:
  - a. most usable information? .....
  - b. least usable information? .....
  - c. most reliable? .....
  - d. least reliable? .....
7. How, in your opinion, could information you need be made more useful to you? .....
8. What kinds of information did you provide to the directors for their use in deciding on bulk handling? .....
9. Where else did they get information, and what kind did they get, to your knowledge? .....
10. What information did you provide to others for their use in making the decision on bulk handling (i.e., the plant decision)?
  - a. Types of information: .....
  - b. To whom: .....
11. How did you find out whether, and how much, patrons were interested in having the plant receive bulk milk? .....

#### Part IV. Participants and Roles in Managerial Decision Making

##### Section A. Manager's Role

1. When were you born? ..... where: .....  
 (State of birth)
2. How many years of school did you complete? .....
3. When did you become manager of this plant? .....

4. Had you had previous managerial experience? Yes ( ) No ( )

IF YES:

a. Where? .....

b. When? .....

c. Position and duties: .....

5. What non-managerial experience have you had?

Title	Duties	No. of yrs.
-------	--------	-------------

6. What are your primary duties, what proportion of your time does each take, how important are they, how well do you like them, and how well do you do them?

Nature of duties	Time %	Importance Rank	Preference Rank	Performance Rank
(1) .....	.....	.....	.....	.....
(2) .....	.....	.....	.....	.....

7. Do you attend board meetings? Always ( ) Usually ( )  
Occasionally ( ) Seldom ( ) Never ( )

Please explain the policy regarding your attendance at board meetings:

8. Does the board have executive sessions from which you are usually excluded? Yes ( ) No ( )

IF YES:

a. What are you told about what goes on in these sessions? .....

b. Who usually tells you? .....

9. When the board makes a policy decision, what role do you usually play? (you initiate actions, they consult you often or seldom, they act without your advice, etc.) .....

10. How much influence would you say that you have with the board?

Dominant ( ) Considerable ( ) Moderate ( )

Slight ( ) None ( ) Explain: .....

11. Do you feel that they allow you enough influence?

Yes ( ) No ( ) Explain: .....

12. Does the board allow you to make any policy decisions?

a. Often ( ) Seldom ( ) Never ( )

b. IF OFTEN OR SELDOM: All kinds of policies ( ) certain kinds only ( )

c. IF CERTAIN KINDS ONLY: What kinds? .....

d. Does the board review your decisions (if any)? Yes ( ) No ( )

13. Did you initiate the idea (i.e., suggest the action to the board)

a. to shift to whole milk Yes ( ) No ( )

IF YES How? IF NO Who did? .....

- b. to start bulk receiving? Yes ( ) No ( )  
 IF YES How? IF NO Who did? .....
- c. to set present price policy on bulk milk? Yes ( ) No ( )  
 IF YES How? IF NO Who did? .....
14. Do you feel that the board does not give you enough guidance ( )  
 gives you just the right amount of guidance ( ) or gives you too  
 much guidance ( )
15. When you want the board to do something how do you go about getting  
 what you want? That is, how do you persuade them or sell them on an  
 idea? .....

**Section B. Roles of Directors**

1. Who were on the board at the time the decision on bulk milk receiving  
 was made?
- |     |             |                                     |                                    |
|-----|-------------|-------------------------------------|------------------------------------|
| a.  | <b>Name</b> | <b>Office held<br/>at that time</b> | <b>Office held<br/>now, if any</b> |
| (1) | .....       | .....                               | .....                              |
| (2) | .....       | .....                               | .....                              |
- b. Could you give me a brief personal description of each of these direc-  
 tors? If you do not know some of the answers please give your best  
 estimate. (Fill out separate personal data sheet on each director.)
2. Describe how the president conducts board meetings? .....
3. Does the board of directors:
- |                                   |         |        |
|-----------------------------------|---------|--------|
| a. have a ruling clique?          | Yes ( ) | No ( ) |
| b. have disagreeing factions?     | Yes ( ) | No ( ) |
| c. have an executive committee?   | Yes ( ) | No ( ) |
| d. have one dominant personality? | Yes ( ) | No ( ) |
- Explain how the board operates when it has a problem to study and de-  
 cide on: .....
4. Is the board more strongly influenced by some patrons than others?  
 Yes ( ) No ( )  
 IF YES: Who are the most influential patrons; which directors do they  
 usually influence; and are they related through business,  
 blood, social group, etc.?

**Section C. Patrons and Stockholders**

1. What proportion of your patrons do you know by sight?
- |                       |        |
|-----------------------|--------|
| a. Bulk milk patrons? | .....% |
| b. Can milk patrons?  | .....% |
| c. Cream patrons?     | .....% |
2. How frequently do patrons come to you for advice?  
 often ( ) seldom ( ) never ( )



Section D. Employees and Others

1. Who were your full-time creamery department and supervisory employees at the time the decision on bulk milk receiving was made?

a.		<b>Position or duties?</b>	<b>Still employed here?</b>
	<b>Name</b>		

(1) \_\_\_\_\_

b. Did any of them discuss bulk handling with you or the board?

Yes ( ) No ( )

(IF YES)

c. Who? .....

d. What were their attitudes on bulk? .....

e. How influential were they? .....

2. Who were your assembly truck drivers at the time the decision on bulk milk receiving was made?

a.		<b>Can milk or cream</b>	<b>Employee or Contract</b>	<b>Still with Plant?</b>
	<b>Name</b>			

(1) \_\_\_\_\_

b. Did any of them discuss bulk handling with you or the board?

Yes ( ) No ( )

(IF YES)

c. Who? .....

d. What were their attitudes on bulk? .....

e. How influential were they? .....

3. Which employee or driver helps you most in making decisions? .....

4. Do any of the employees or drivers ever advise or report directly to the directors? Yes ( ) No ( )

(IF YES)

a. Who? .....

b. To whom? (whole board or individual director) .....

c. Do you feel that this interferes with your functions?

Yes ( ) No ( )

(IF YES)

How? .....

5. Did you have a field man before the bulk milk decision was made?

Yes ( ) No ( )

IF YES

a. Did he discuss bulk handling with you or the board?

Yes ( ) No ( )

b. IF YES TO a. What was his attitude on bulk? .....

c. How influential was he? .....

6. Who else advises or aids you in decision making ( equipment salesmen, banks, local businessmen, etc. )?

a.           **Name (rank order)?**                           **Address?**                           **Occupation?**

(1) -----

b. Did any of them discuss bulk handling with you or the board?

Yes ( )            No ( )

**IF YES**

c. Who? -----

d. What were their attitudes on bulk? -----

e. How influential were they? -----

f. Did any of them discuss bulk handling with the directors?

Yes ( )            No ( )

**IF YES**

Who? -----

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