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Feeding 5 types



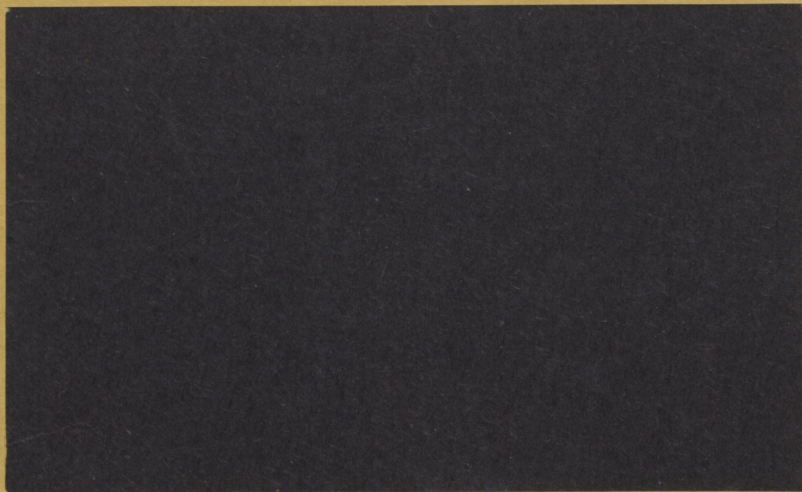
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A MODEL OF THE FARMER
FEED BUYING DECISION PROCESS

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and
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TABLE OF CONTENTS

| | Page |
|--|------|
| 1.0 INTRODUCTION | 1 |
| 1.1. Research Objectives | 3 |
| 1.2. The Integration Question. | 3 |
| 1.3. Research Design | 4 |
| 1.3.1. Depth Interviews. | 5 |
| 1.3.2. Structured Interviews | 5 |
| 1.4. Survey Area and Methods | 6 |
| 1.4.1. Depth Survey. | 6 |
| 1.4.2. Structured Survey | 7 |
| 2.0 THE BROILER FEED PURCHASE DECISION MODEL. | 8 |
| 2.1. Problem Recognition | 8 |
| 2.2. Search for Information. | 11 |
| 2.2.1. Factors Related to Search | 12 |
| 2.3. Evaluation of Alternative Feed Sources. | 13 |
| 2.4. Purchase Decision | 14 |
| 2.5. Post-Purchase Evaluation. | 15 |
| 3.0 RESULTS OF DEPTH INTERVIEWS | 16 |
| 3.1. Problem Recognition | 16 |
| 3.1.1. Marketing Action. | 17 |
| 3.1.2. Influence of Other Growers. | 18 |
| 3.1.3. Past Experience and Results | 19 |
| 3.2. Search for Information. | 20 |
| 3.2.1. Feed and Growing Information. | 21 |
| 3.2.2. Price and Performance Information | 21 |
| 3.2.3. Opinions on Feed Salesmen | 22 |
| 3.2.4. Opinions on Company Literature. | 22 |
| 3.2.5. Influence of Problem Recognition on the Search Process | 23 |
| 3.2.6. Timing of Search Activities | 23 |
| 3.3. Evaluation of Alternative Feed Sources. | 23 |
| 3.3.1. General Evaluation Procedures | 24 |
| 3.3.2. Differences Among Feed Sources. | 24 |
| 3.3.3. Decision Criteria | 24 |
| 3.4. Purchase Decision | 28 |
| 4.0. RESULTS OF STRUCTURED INTERVIEWS. | 29 |
| 4.1. Problem Recognition | 29 |
| 4.1.1. Factors Causing Problem Recognition | 30 |
| 4.1.2. Performance Criteria. | 34 |
| 4.1.3. Influence of Size of Operation. | 35 |
| 4.2. Search for Information. | 38 |
| 4.2.1. Evaluation of Information Sources | 38 |
| 4.2.2. Searching Activities. | 39 |
| 4.2.3. Development of Scales | 42 |
| 4.2.4. Regression Analysis of Search | 46 |

TABLE OF CONTENTS (contd...)

| | Page |
|---|------|
| 4.3. Evaluation of Alternatives. | 47 |
| 4.3.1. Shopping Area. | 49 |
| 4.3.2. Attributes Considered When Selecting a New Feed Source. | 50 |
| 4.3.3. Feed Source Profiles | 56 |
| 4.3.4. Factor Analysis of Semantic Differential Items. | 56 |
| 4.3.5. Evaluation of Present and Alternative Feed Sources | 58 |
| 4.4. Purchase Decision | 63 |
| 4.4.1. Reasons for Changing Suppliers | 63 |
| 4.4.2. Brand Loyalty. | 64 |
| 4.4.3. Brand Loyalty Definition | 68 |
| 4.4.4. Regression Analysis of Brand Loyalty | 70 |
| 5.0 SUMMARY AND IMPLICATIONS | 74 |
| 5.1. Summary of the Model. | 74 |
| 5.2. Marketing Implications. | 75 |
| 5.2.1. Problem Recognition. | 75 |
| 5.2.2. Search for Information | 77 |
| 5.2.3. Evaluation of Alternatives | 78 |
| 5.2.4. Purchase Decision. | 79 |
| 6.0 REFERENCES | 82 |

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INTRODUCTION

1.0

Past research in buyer behaviour has generally proceeded along two basic lines. First, there have been a large number of studies focusing on specific features of overall buying behaviour. Studies dealing with brand loyalty, opinion leadership, adoption behaviour, perceived risk, and learning are but a few in this general area. These studies generally recognize the existence of larger, more complex models of the buying decision process, but for the sake of research efficiency, investigate only small parts of these larger models.

The second type of buying behaviour research is characterized by the integration of findings from specific studies into comprehensive, theoretical models of the buying decision (Sheth, 1974). In general, no attempt is made to measure or validate these general models for specific types of buyers or specific buying situations. As a result, these general models are of limited use from a management point of view since they do not "describe a specific buying situation in the richness of detail required to make a model operational for the marketing manager analyzing opportunities to influence buying decisions." (Webster, 1974, p.34).

In the research reported in this paper, an attempt has been made to combine these two research approaches. Based on the results of

several previous studies in farmer buying behaviour¹ together with existing theoretical models of the industrial buying process,² the objective of this research is to construct and measure a comprehensive model of the farmer decision process in purchasing inputs. As a result of this orientation, emphasis is directed toward a broad examination of the major stages and relationships involved in this process.

Research of this kind is important beyond its academic implications. Managers of firms involved in marketing to farmers can benefit by having better information about the nature of their customers' decision process in purchasing farm supplies. Since the aim of the farm marketer is to influence this decision process, the success of his efforts depends upon his understanding of how the buying decision is made -- that is, what creates a buying situation? What is the process by which alternatives are identified and decision criteria established? How are alternatives evaluated and selected? Answers to these, and similar questions, will enable the farm marketer to develop more effective and efficient marketing programs.

Farmers too can benefit from having better information on how they make purchasing decisions. An analysis of this decision may reveal

¹ Although a large number of farmer buying behaviour studies were reviewed, those that were particularly useful in the development of the model were: (Downey, 1963; Funk, 1972; Funk, 1973; Kohls, 1962; Krueckeberg, 1960; Nordbo, et.al., 1957; Rocke, 1965; and Storey, 1958).

² In particular, the model developed by Webster, 1965.

certain inconsistencies or lack of deliberateness in the process which, if corrected, could enable the farmer to improve his effectiveness as a buyer.

1.1 Research Objectives

The major objective of this research is to develop an operational model of the farmer decision process in purchasing supplies.

Other related objectives are:

1. To evaluate the hypothesis that farmers, in determining input choices, move through four stages -- problem recognition, search, evaluation, and purchase.
2. To investigate the factors influencing decisions at each stage.
3. To derive the implications of this decision process model for marketers of farm supplies.

The specific input under consideration in this research is purchased broiler feeds.

1.2. The Integration Question

One of the main concerns at the outset of this project pertained to the integrated nature of the broiler industry in Ontario. Suspicions arose as to whether or not broiler farmers were free to change their suppliers in the short run. Obviously, if a large proportion were not free to change, then a study dealing with buying behaviour of any major input would not be meaningful.

A study by the Ontario Chicken Producers' Marketing Board

showed that only 8.7 percent of Ontario chicken production is controlled by five fully integrated firms involved in feed, hatchery, processing, and growing operations.¹ Furthermore, only 15.1 percent of Ontario's production capacity is owned directly by organizations involved in one or more of the following businesses: feed, hatchery, and processing. These facts, plus interviews with feed industry executives, led to the conclusion that about 85 percent of Ontario broiler production is under the direct control of independent broiler producers.² It is, however, quite evident that many producers purchase more than one input from a single input supplier. Executive estimates of growers involved in so-called "package deals" ranged from 50 to 80 percent. These same executives estimated that the number of broiler farm mortgages ranged from 5 to 25 percent. Based on the above findings, it was concluded that broiler producers were sufficiently independent of industry control that a project of this nature could be undertaken.

1.3. Research Design

Two surveys were conducted with Ontario chicken growers. The first survey was exploratory in nature, and used the "depth interview" technique. The second survey was based on a probability sample of broiler producers and was intended to quantify some of the major relationships

¹ Unpublished paper, Ontario Chicken Producers' Marketing Board, March, 1973.

² Interviews with executives from five large integrated companies.

in the decision process model.

1.3.1 Depth Interviews

"Depth questioning may be defined as a method of questioning, the purpose of which is to avoid superficial answers and to probe beneath the surface to determine the actions or thoughts of a person and the reasons for these ..." (Paradise and Blankenslip, 1951). This research technique lends itself quite well to the problem of analyzing the complicated decision process of the farm input purchaser. The *raison d'être* for using this technique was solely one of gaining insight that would not have otherwise been obtained into this process. In this study, a semi-structured depth interview questionnaire was developed. The interviewer was required to complete all designated questions but was also free to investigate certain areas more thoroughly by additional unstructured questions.

Interpretation of semi-structured depth interview results is not an easy task. The philosophy of this technique is based on the premise that in-depth knowledge of several case situations gives more useful results than superficial replies from a number of respondents. Obviously, with a small number of cases statistical analysis is impossible.

1.3.2 Structured Interviews

Upon completion of the analysis of the depth interviews, a second fully structured questionnaire was developed. The intent of this

phase of the study was to quantify some of the major relationships in the decision process model, and to investigate the problem more critically given the additional insight gained from the depth interviews.

1.4. Survey Area and Methods

The Ontario Chicken Producers' Marketing Board, for administrative purposes, divides the province of Ontario into nine districts. Industry and board representatives felt that three of these districts adequately reflected the probable differences in purchasing behaviour across the province.

1.4.1. Depth Survey

For the depth questioning interviews a random sample of nine producers was selected from 285 independent operators in Broiler Districts 5, 6, and 7. This area includes the counties of Wellington, Waterloo, Halton, Wentworth, Lincoln and Welland.¹ The sample was stratified by broiler capacity and by district. Three independent producers were selected from each district.² Within each district, one producer was selected with a Basic Quota under 12,000, another with a quota between 12,000 and 23,999, and a third with a quota of 24,000

¹ These counties were recently amalgamated in 1973 to form the Regional Municipality of Niagara.

² For the purposes of the survey, an independent producer was a farming unit which was neither partially or fully owned by a feed, hatchery, or processing firm.

or more.¹ There were roughly 95 producers in each capacity stratum.

Each producer received a letter from the Ontario Chicken Producer Marketing Board explaining the reason and nature of the research. Within a few days of receiving this letter an appointment was made, by telephone, for an interview date. Only one producer refused to cooperate and another had to be substituted. Plans were to tape all interviews, however, two producers did not want the interviews to be taped, and mechanical difficulties nullified attempts to tape two others. Tape recordings were made, for review purposes, of five depth interviews. The length of interviews ranged from 1-3/4 hours to 4-1/4 hours.

1.4.2. Structured Survey

A total of 140 producers were selected at random from the three districts for the second survey. One hundred usable questionnaires were returned by the four-man interviewing team which conducted the survey during August and September of 1973. Of the 40 producers not included in the final sample, eleven refused to participate, nine could not be contacted, seven wanted to postpone their interviews until a later date, five failed to complete the questionnaire, and eight were eliminated

¹ Basic Quotas are the control unit developed by the Ontario Chicken Producers' Marketing Board. It is the number of square feet of broiler building floor area owned by producers. The board allows members to grow varying amounts of total weight per Basic Quota. Total weight allowed depends on the weight of the broiler category to be produced. Producers growing lighter birds are allowed to grow more total poundage per Basic Quota.

for miscellaneous reasons.

2.0. THE BROILER FEED PURCHASE DECISION MODEL

The model of the farmer decision process used in this research is divided into five stages as shown in Figure 2.1.¹ Each stage -- problem recognition, search for information, evaluation of alternatives, purchase decision, and post purchase evaluation -- is discussed in the remainder of this section. While each stage is discussed individually, it is important to note that this process is substantially more complicated than this simplified model reveals, and that numerous overlaps and feedback loops occur between stages. However, it is precisely because of the complex nature of this decision process that a model is necessary. Without a model to simplify and organize this process it would be impossible to achieve anything more than naive understanding.

2.1. Problem Recognition

The decision process begins when the farmer recognizes a problem. In the context of a purchasing decision a problem occurs when a difference exists between the farmer's expectations of a product, and the actual performance achieved in using the product. More precisely, a problem is recognized when a significant difference exists between desired and actual levels of goal attainment. If a farmer's actual level

¹ As mentioned earlier, the farmer decision process model is based in large part on the model of the industrial purchasing decision process developed by Webster, 1965.

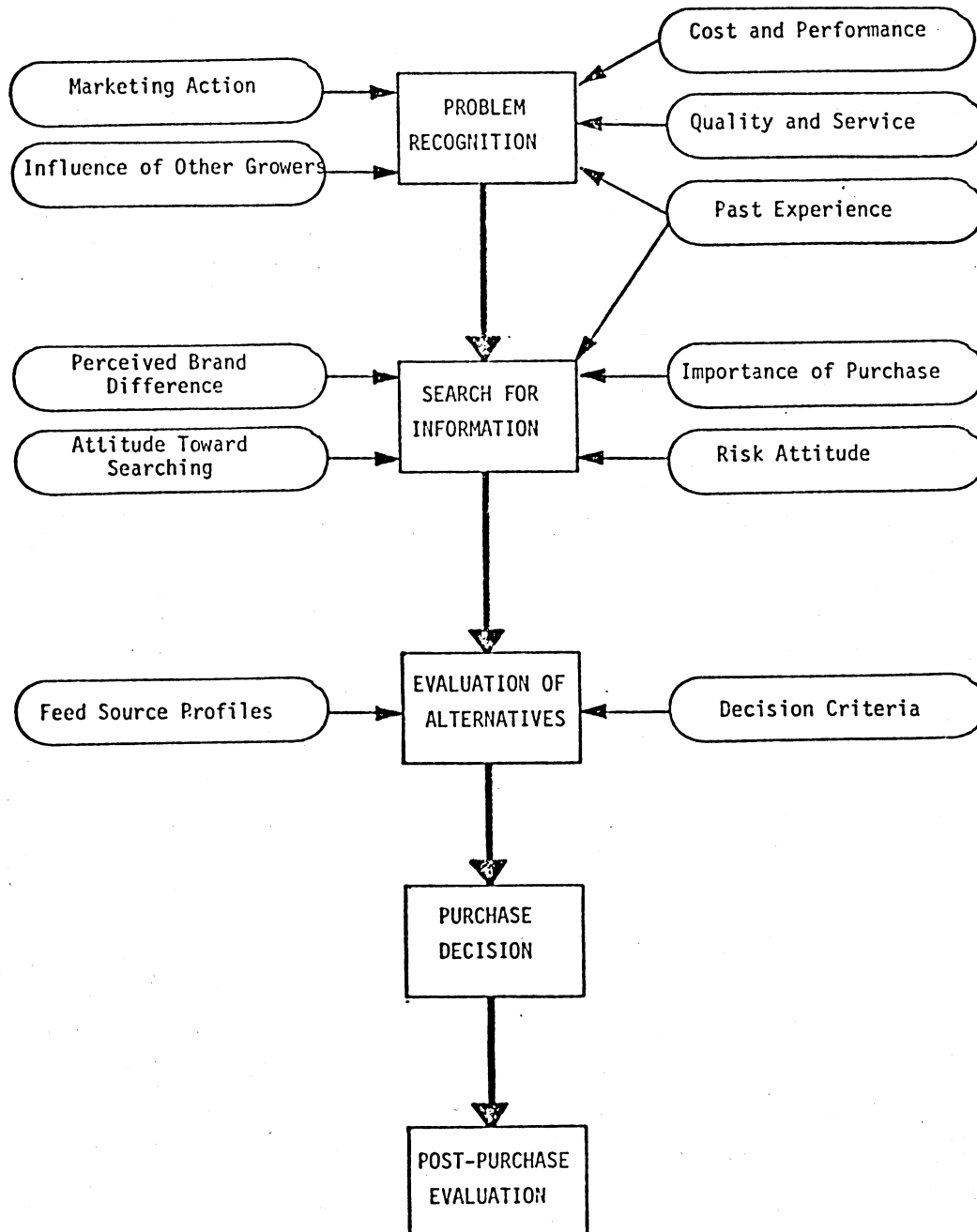


FIGURE 2.1. A Conceptual Model of the Broiler Feed Purchase Decision.

of goal attainment is less than the desired level, a problem will be recognized which in turn will cause the farmer to begin a decision process which ultimately will provide a solution to the problem.

By defining a problem as an unfavourable difference between actual and desired levels of goal attainment there are two ways in which problems can arise. The first, and likely the most common way, is through a decrease in the actual level of goal attainment the producer experiences with his present brand. In this case, potential sources of problems are unfavourable changes in cost or performance characteristics or some deterioration in quality or service. For example, a producer may recognize a problem with his current brand of feed if he notices that his return per bird over feed and chick costs has been declining for the past few crops.

Although most problems are probably the result of decreases in actual performance characteristics, it is also possible that problems may arise as a result of increases in expectations. In this case, potential sources of problems are marketing programs of competing feed firms and the influence of other growers. For example, a neighbour, friend, or salesman may cause a farmer to increase his expectations with respect to feed conversion by relating favourable results they have obtained with different brands. As a result, expectations may become greater than achievement causing the farmer to recognize a problem.

2.2. Search for Information

Once a problem has been recognized, the farmer moves to the second stage of the decision process -- the search for information. Search may be defined as the active quest for information concerning feed sources which may prove to resolve the farmer's problem or problems. While searching activities can take many forms, they all involve the search for relevant information concerning performance characteristics, usage, price, and availability, and they all require some commitment of time, effort, and perhaps expense on the part of the purchaser. It is believed that the search process can be sub-divided into three steps.

First the farmer must identify and select those information sources that will provide him with the most useful feed, growing, and management information. Two types of information sources can be identified -- personal and impersonal. Personal information sources include:

(1) other broiler growers, (2) sales and service personnel of hatcheries, feed mills, processors, and drug manufacturers, (3) marketing board representatives, (4) university and government extension personnel, and (5) government veterinarians employed for disease diagnosis. Impersonal information sources include: (1) broiler feed advertising, (2) general feed advertising, (3) radio commercials or programs, (4) local newspapers, and (5) company literature.

Having identified useful information sources, the farmer then must obtain the information from these sources. Although discussions

with the sales staff of processors, feed companies, or hatcheries are the most important ways of obtaining this information, it can also be obtained by discussions with other producers and exposure to advertisements.

After the information is obtained, some orderly process of organizing this information for use in evaluation is necessary. Although this process probably is not organized to the extent that the farmer maintains a formal, written file, there is little doubt that this information is analyzed and retained in some manner by the producer.

2.2.1. Factors Related to Search

Not all farmers search to the same extent. Some farmers search a great deal for most of their purchases while others do not. In the decision process model, five factors are hypothesized to be related to searching. These are:

1. Past experience - Less searching tends to occur as farmers gain experience in solving feed purchasing decisions.
2. Attitude toward searching - Producers with more favourable attitudes toward searching will devote more time and effort to this type of activity.
3. Risk Attitude - Producers with higher levels of risk aversion are inclined to search more for evaluative information.

4. Attitude toward feed sources - Any feed source which is considered by the farmer to be of questionable value will not be considered when soliciting information.
5. Importance of the purchase - The more important the purchase is to the farmer, the more exhaustive will be his search for information concerning competitive feed supply sources. Farmers will perceive the importance of this purchase differently. Producers who operate larger units will likely consider the feed purchase more important, and therefore will require more information before changing sources. Also, farmers who consider feed to be an important input will search more than other farmers.

2.3. Evaluation of Alternative Feed Sources

Having identified some alternative feed supply sources, the grower must choose among alternatives. This evaluation or choice process is guided by the farmer's decision criteria. He will favourably view only those feed sources which he thinks will help him reach or maintain his "Desired Level of Goal Attainment".

In evaluating alternatives the farmer first must establish certain decision rules to guide this process. These decision rules apply to all of the specific brand or company attributes the farmer considers

to be important. In many cases these are stated in terms of an "acceptable range" along a decision criteria profile (Cardoza, 1971). For example, a farmer may establish an acceptable price range of \$178 - \$173 for a ton of feed. In some instances the decision criteria might take an "or less" perspective. For instance, certain producers might indicate that they will pay \$178 per ton or less. This of course means that either quality does not matter so much to them or they think all feeds are about the same and therefore are not willing to pay a certain minimum price to get a proven quality level. Decision criteria are likely to be established for the following attributes: (1) price, (2) feed conversion, (3) service capabilities, (4) company attributes, and (5) feed mill location.

At the end of the search process, the farmer will have accumulated and organized a considerable amount of information about each source. Now he is forced to solidify his perceptions and compare these with his decision criteria in an effort to eliminate unacceptable alternatives.

2.4 Purchase Decision

The farmer will choose the feed source which offers the greatest probability of permitting him to reach his "Desired Level of Goal Attainment". If no suitable alternative is discovered the obtained information will be stored in his memory and the search process will begin again. It is to be emphasized that the farmer may not necessarily switch brands. He may re-establish his old goals during the search and evaluation processes and decide to continue with his present feed source.

2.5. Post-Purchase Evaluation

The evolution of a purchase decision is not necessarily the final stage in a decision model. Festinger has developed a Theory of Cognitive Dissonance which suggests that when a person makes a decision, dissonance or discomfort will almost always occur. The reason is that the person making the decision knows that it has certain disadvantages as well as advantages. After making his decision, the person tends to expose himself to information that he perceives will support his choice and avoids information that may favour the rejected alternative (Festinger, 1957). This phenomenon results in a search for information to justify the decision. Figure 2.1 incorporates this stage into the model, however no attempt was made to evaluate this aspect of buying behaviour in this study.

3.0. RESULTS OF DEPTH INTERVIEWS

Analysis of depth interviews is undoubtedly a subjective process. The authors used both taped responses and notes taken during the interviews in the following analysis. These written and oral testimonials form the core of the analyzed data, but also incorporated into the analysis and conclusions are the overall impressions of each grower's attitudes and decision making criteria, as evidenced by his gestures and facial expressions. Careful attention was given to being as objective as possible in drawing conclusions. The discussion which follows parallels the model development in the previous section.

3.1. Problem Recognition

All producers had some profit objective with regard to their broiler operation. The desired profit goal of four producers was a certain profit per bird over feed and chick costs. Primary targets of two growers were profits per bird over all expenses, while two others spoke in terms of vague objectives such as making as much money as possible. Only one grower had a certain return on investment as an objective.

Considerable prodding was required to obtain target income information. This is probably because the determination of target profit objectives is a semi-conscious activity carried out by the farmer. Numerous variables modify this vague goal over time as market prices, feed efficiencies, and desired net income change. The initial response to a question along this line was often: "I've no idea, you take what you can

get; with today's feed prices, who knows". As a result, it appears that farmer objectives are latent and subject to change. Nevertheless, most farmers were able to come up with some reasonably exact targets, leading the authors to conclude that the number of farmers not establishing income or profit goals is minimal. It appears as though changes in income could be a major variable through which farmers are made aware of input supplier deficiencies.

In addition to cost and performance considerations problem recognition can also be caused by marketing action, other growers, and past experience. Responses to questions in these areas are discussed below.

3.1.1 Marketing Action

Considerable tact in interviewing was essential to the development of the necessary rapport with the interviewee, if he was to admit the influence, if any, of marketing programs. The authors feel that this rapport was developed, and that the following results reflect the actual situation.

Few growers felt that they had been strongly influenced by non-price marketing action. In purchasing broiler production inputs, a producer can consider information from several commercial sources: advertisements, flyers, pamphlets, etc., but of primary importance is the sales representative. Two growers readily admitted to changing feeds on the advice of sales representatives, however, it was not a case of the sales-

man causing the grower to recognize a problem, but rather a problem had been previously acknowledged by the farmer, and the salesman simply offered a potential solution. One farmer admitted that he had selected his first feed dealer largely because he had met the owner on a non-business basis before deciding to get into the broiler business. This is an example of quasi-marketing action and suggests that in a rural environment a local businessman may get some business through community activity involvement. Advertisements in the Canadian Poultry Review made one grower aware of an alternative chick supplier which he ultimately tried.

Virtually none of the producers believed that they had set higher objectives as a result of sales information. A single grower inferred that he might have been so influenced, but he was quick to emphasize that it is the grower who must decide if a salesman's promises are realistic.

3.1.2. Influence of Other Growers

Most growers expressed an interest in talking to other producers about common problems including feed sources. Two growers had recently switched feed suppliers on the advice of other growers, while two others had switched hatcheries and medications for the same reason. A few growers had very little contact with other producers and did not appreciate such information sources. There was a strong indication that growers should critically review the advice of any producer for he may tend to exaggerate his performance results. A slight inclination to set higher

income targets as a result of other producers' influence existed only in one or two cases.

3.1.3. Past Experience and Results

Past experience, as used in this study, is a rather all-inclusive concept. It includes conversion results, feed prices, flock management changes, and mortality records.¹ Some criteria such as feed conversion may be viewed on the basis of past, present, or perceived results. Nearly all growers compare current crop results with past ones. The manner of comparison depends upon the grower, and on the level of current results; that is, if profits are excellent, a grower gives little thought to what he has made on past crops. Some growers keep quite exhaustive records while others rely on their recollection of past results to compare with current performance. Past experience also includes the producer's perception of previous growing problems that have come up on a day-to-day basis as each crop progresses.

Six growers placed varying emphasis on historical analysis, but all six did evaluate this in one manner or another. Within this group, a single producer, who did not keep written records, stated that

¹ Price and feed conversion stimuli are related to the firm's marketing mix. They are viewed by a grower in this manner, but are also seen by him in terms of his degree of success with a particular feed as compared with other feeds previously used or used by his neighbours. For this reason, his concern for feed price and performance is included here. The point of inclusion is arbitrary; the necessity for inclusion is obvious.

he had definitely become dissatisfied when his expectations did not measure up to past achievements. Three growers were adamant that written records over a one to two year period provided a useful control mechanism by which to evaluate current crop performance. Criteria mentioned included: feed conversion, cost of feed per pound of meat produced, per bird profits, and profit changes. Another grower who did keep some records stated that he found it interesting to keep such information, but noted that he had never changed an input on the basis of operating results. A single grower had changed feeds partially as a result of record analysis. His analysis demonstrated that he was not able to meet his debt repayment schedule given his current income levels. Since he felt that his lower income was a function of questionable feed and chick quality, he changed both inputs and has been more successful over the last four crops.

One grower, less than a year in business, stated that he could not really interpret performance results or visually judge how the birds were doing in the barn. Two, more experienced poultrymen, attached greater emphasis to visual inspection during the growth period. One firmly believed that poor profits were a result of disease, input, or management problems during the production period, and felt that it was possible to tell what the problem might be just by looking at the flock.

3.2. Search for Information

After a problem is recognized, the grower must then search for information to aid in solving this problem. This stage of the decision

process was explored by questioning the growers on their usage and opinions of several information sources, the relationship between problem recognition and the search process, and the timing of searching activities.

3.2.1. Feed and Growing Information

Producers were asked to give the names of sources used in obtaining information on feeds and on other management or industry problems. Their own supplier's salesmen was mentioned by eight producers as an important feed information source in this regard. Nearly all of the eight growers also used competitive salesmen for the same purpose. Personal or past experience was mentioned by three growers, while agricultural magazines and agricultural representatives were mentioned by only a single producer.

In the case of general growing or management problems, three farmers relied most heavily on their own experience. Disease problems were handled by two growers in consultation with the Ontario Veterinary College or company diagnostic laboratories. The advice of other producers was of value to three poultrymen, while two looked to their feed salesmen for help in solving all management problems.

3.2.2. Price and Performance Information

Most growers check feed prices with salesmen. Only one grower made phone calls in order to ascertain feed price quotations. Feed conversion results are also verified with sales personnel, but a few growers also checked this performance criteria with other broiler growers.

Services, according to the growers, do not vary greatly from source to source, hence they do not regularly investigate this aspect. One large producer was reluctant to deal with small volume suppliers, as he perceived potential delivery problems.

3.2.3. Opinions on Feed Salesmen

In general, salesmen were considered to be a somewhat valuable information source by most growers. Two growers were particularly appreciative of efforts made by sales personnel when they had started in the broiler business. They added, however, that as their own experience grew, sales advice became less useful. Three growers complained that competent salesmen were a rare resource, and that the quality of advice was a direct function of the particular salesman concerned. Some salesmen were perceived as being observant, knowledgeable, and willing to transfer advice as they travelled from grower to grower, while others were perceived as being little more than order-takers. Despite the above observation, one grower continued to say that feed salesmen had been his best general information source. Two men felt that most salesmen were nice people to know, but not very useful to their operation, while two other growers distrusted salesmen completely and did not respect their opinions at all.

3.2.4. Opinions on Company Literature

Nearly all growers complained about the lack of written information from feed firms. A few called for more realistic "average" grower result information. Most would like to have more information with regard

to areas of decision making such as diseases, control, medication, ventilation, and building structures.

3.2.5. Influence of Problem Recognition on the Search Process

Two growers said that they had started to look for alternative feed sources as a result of low returns while utilizing a particular source. For both of these growers, this search process ultimately resulted in changes in suppliers. Three growers had made processor changes because their previous processors had refused to accept delivery at the desired age. This policy, in the view of the growers concerned, had resulted in lower profits since more feed was consumed by the birds in the interim. Dissatisfaction over profits while using certain chick suppliers led to changes in these sources.

3.2.6. Timing of Search Activities

One of the more opportune times for producers to switch feed brands is just after a flock of birds has been shipped. Five growers revealed that they tended to check alternatives more thoroughly at this time. Three growers said that they would not consider changing at this time since chick orders and other arrangements are normally made several weeks ahead of the shipping date.

3.3. Evaluation of Alternative Feed Sources

During the evaluation process, growers compare their perceptions of ideal suppliers with the potential offerings of alternative feed sources.

Questionning in this area centered on determining the nature and magnitude of the decision criteria used by producers in evaluating feed sources.

3.3.1. General Evaluation Procedures

In evaluating alternatives, most growers referred to such characteristics as feed prices, feed conversion, cost of feed per lb. of meat produced, shipping weight, feed mill service, and potential profits. A few growers, rather than evaluating on the basis of performance results, used criteria related to progress during the production period.

3.3.2. Differences Among Feed Sources

Two growers felt that little difference existed among feed firms in terms of overall results. Two others were equally certain that results varied markedly from firm to firm, particularly in terms of feed conversion and growth rates. Four growers believed that feed price differences existed, but two of these also thought that there was a definite tendency for lower priced feeds to perform less efficiently in terms of feed conversion. Smaller feed firms were believed to offer lower prices according to one grower, while another commented that the quality of protein sources used varied from firm to firm.

3.3.3. Decision Criteria

In evaluating alternative brands of feed, the nine farmers in the sample used a variety of decision criteria. Among the more important were the following:

1. Price - Most producers could not say what price they expected to pay because prices were changing so quickly as a result of the current protein crisis. Many could give only the price paid for their last load of feed.
2. Market Weight and Conversion - Market weight objectives varied from 3.9 to 3.5 pounds. Feed conversions were mostly in the area of 2.10 to 2.20 pounds, with the greatest absolute range being 0.10 to 0.15 pounds. A few growers expressed this criteria using a "not more than" approach. For many growers there was a tendency to give their criteria levels in relation to present supplier performance.
3. Feed Cost per Pound of Meat Produced - Three growers said that they had no idea what price they should pay given the changing feed price situation. The remainder of the growers only had a vague idea of what they would expect in this area.
4. Sales Advice Requirements - Advice concerning disease problems and/or the willingness to take diseased specimens to diagnostic laboratories was a criterion for seven producers. These growers also mentioned that the sales staff might help in the areas of ventilation and feeder location. Three growers preferred to have their

representatives finalize chick placement and processing arrangements.

5. Canadian Ownership - Most producers expressed a preference for dealing with Canadian feed firms provided they were equivalent in all respects to American corporations.
6. Preference for Nearby Feed Firm - Distance from the feed source was an important factor to a few producers. Some growers stated that they would be willing to deal with a supplier located 40 miles away. The most distance conscious buyer stated that he would not deal with a firm over 12 miles away. Most growers felt that it was up to the firm to deliver the feed as requested, and as long as deliveries were on schedule, mill location was irrelevant.
7. Preference for a Cooperative - None of those interviewed expressed a preference for dealing with a cooperative.
8. Importance of Research Capability - Two growers attached no importance to the research capabilities of feed sources. They were of the opinion that nutrition information was available from government and universities to all firms,

hence no firm had any advantage in this area. The rest of the producers attached some importance to research capability.

9. Importance of Company Advertising - Four growers strongly believed that advertising only increased feed costs and that no advertising was needed. New product advertising designed to create awareness was encouraged by a couple of growers, but they also felt that saturation advertising programs increased feed costs.
10. Importance of Knowing Mill Manager - Only two growers felt that it was important to know the mill owner or manager. Most growers said that it would be nice if they could, but it was not essential.
11. Views on Integration - Two growers were quite happy to purchase feed and chicks from the same firm that processed their poultry. They felt that it was more convenient to run their business in this manner. A majority of growers disagreed with this philosophy and expressed a strong preference for separate feed, chick, and processing arrangements. Three-way deals, according to them, permitted the firms the opportunity to take advantage of growers. A separate purchase policy, on the other hand, encourages suppliers to offer better prices and services to get a

larger share of the grower's business. A couple of producers, while agreeing in principle with these views, feared that in periods of excess broiler supply such a stance might result in a grower not being able to get his product processed.

3.4. Purchase Decision

The final step in the decision process is the purchase decision. Following problem recognition, search, and evaluation, the producer is confronted with the prospect of deciding whether to continue using his present feed supplier or switching to an alternative. Because of time constraints this area was not fully explored in the depth interviews. Detailed analysis of this decision area will be discussed in the following section.

4.0.

RESULTS OF STRUCTURED INTERVIEWS

In the previous section attention focused on a discussion of the results of the depth interviews with Ontario broiler producers. The purpose of these interviews was to probe the broiler feed purchase decision in as much depth as possible in order to gain an initial understanding of this complex decision. To further study this decision process an additional 100 producers were interviewed using a shorter, structured questionnaire. The purpose of this second set of interviews was to obtain measured information which could be used in a more rigorous investigation of the proposed buying behaviour model.

Analysis of the data from the structured interviews centered around the decision process model beginning with problem recognition and ending with the purchase decision. The objectives of each step of the investigation were to determine the factors influencing the decisions made at each stage and, where possible, the interrelationships among the stages.

4.1. Problem Recognition

The decision process begins when the farmer recognizes a problem. In the context of a purchasing decision a problem occurs when a difference exists between the farmer's expectations of a product, and the actual performance achieved in using the product. Several sources of problems can be identified of which the more important are: influence of other growers, marketing action, past experience, quality and service,

and cost and performance.

4.1.1. Factors Causing Problem Recognition

To investigate sources of problem recognition, the sample farmers were asked to respond to a series of statements designed to depict situations which might cause farmers to recognize a problem with their feed brand or supplier.¹ The situations depicted by these statements cover a wide range of possible problem sources, but for the sake of convenience have been grouped into five major categories. Three of these sources -- feed cost and performance, quality and service, and reliance on in-crop inspection and experience -- can cause farmers to recognize problems as a result of unfavourable changes in the actual level of goal attainment. The remaining two sources -- influence of other growers and influence of marketing action -- can potentially cause problems by increasing the desired level of goal attainment.

For each situation the farmers were asked to indicate whether it would result in (1) a definite chance of switching, (2) some chance of switching, or (3) no chance of switching feed brands or suppliers. For any of the statements a response of (1) or (2) indicates that the situation described by that statement can potentially cause the farmer to recognize a problem.

1. Other growers - The first category considered in Table 4.1

¹ Most of these situations were identified by the growers in the depth interviews.

TABLE 4.1 Situations Causing Farmers to Recognize Problems With Their Feed Brand or Supplier

| | Percentage of Farmers Reporting | | |
|--|---------------------------------|-----------------------------|---------------------------|
| | Definite Chance of Switching | Some Chance of Switching | No Chance of Switching |
| <u>Influence of Other Growers</u> | | | |
| 1. I thought that other growers were doing better with another feed company. | 6 | 48 | 46 |
| 2. Other growers suggested that I might do better with a different feed supplier. | 3 | 46 | 51 |
| <u>Influence of Marketing Action</u> | | | |
| 1. A very respectable feed company seemed anxious that I try their feed at least once, on one flock or in one building. | 8 | 48 | 44 |
| 2. I found another feed firm that had a better reputation. | 7 | 35 | 58 |
| 3. I could see from the results shown to me by a trustworthy salesman that I might do better if I changed feeds. | 3 | 38 | 59 |
| 4. A new dealership opened closer to my farm. | 2 | 18 | 80 |
| 5. Feed company literature suggested that I might be doing better. | 0 | 26 | 73 |
| <u>Concern for Quality and Service</u> | | | |
| 1. The feed mill service was not very reliable. | 35 | 51 | 14 |
| 2. The feed salesman did not always provide me with good service. | 7 | 58 | 35 |
| 3. I thought there were too many fines in the feed. | 10 | 47 | 42 |
| 4. The appearance of the feed did not appeal to me. | 10 | 42 | 47 |
| <u>Reliance on In-Crop Inspection and Experience</u> | | | |
| 1. Based on my previous growing experience I thought I should be doing better and believed the cause for my poor results might be due to the feed. | 32 | 45 | 22 |
| 2. I suspected the feed was not good by the way the birds grew. | 17 | 64 | 19 |
| 3. The birds seemed too light for their age. | 10 | 64 | 25 |
| <u>Concern for Feed Cost and Performance</u> | | | |
| 1. I thought that the feed price was too high for the feed conversion I was getting. | 36 | 46 | 18 |
| 2. The return per bird over feed and chick costs on two crops was lower than I had anticipated. | 28 | 50 | 22 |
| 3. I thought the price per ton for the feed was too high. | 18 | 59 | 22 |
| 4. The feed conversion appeared to be too high. | 12 | 63 | 25 |

is the influence of other growers. Earlier it was pointed out that other growers may cause farmers to recognize problems by increasing their expectations. The responses to the two questions in this area tend to confirm this point. While only a small percentage of growers indicated that the apparent success or suggestions of other growers would definitely cause them to switch feed sources, a substantial proportion indicated that it would cause some chance of switching. For about half the producers the influence of other growers has no apparent effect on problem recognition.

2. Marketing action - The second source of problems are related to the influence of marketing action. As in the preceding category, the idea here is that through certain activities a feed firm can cause a farmer to increase his expectations and, as a result, recognize a problem. The responses to statements in this category show that while some types of firm-initiated marketing action can be effective in causing problem recognition, others have limited effectiveness. Particularly important in this area are the efforts of firms to secure experimental adoption of their product, the firm's general reputation, and the influence of trusted salesmen.

3. Quality and service - In addition to arising as a result

of increased expectations, problems can also arise from inadequate performance. The responses to statements in the third grouping of Table 4.1 show that below standard performance in regard to quality and service can be important sources of problems for farmers. In this regard, unreliable feed mill and salesman service seem to be more important sources of problems than product quality considerations. However, in both cases poor performance can cause a majority of producers to recognize a problem with their present brand or supplier.

4. Experience - Farmers can also recognize problems as a result of in-crop inspection or previous experience. Responses to the three statements in this category indicate that a very high proportion of growers recognize problems based on their previous growing experience and observation of performance during production.
5. Cost and performance - The final, and most important source of problems considered relate to feed cost and performance. In general, the responses to the four cost and performance oriented situations show a strong tendency for problems to be recognized as a result of higher than expected prices or feed conversion, or lower than anticipated returns.

4.1.2. Performance Criteria

Because of the importance of product cost and performance in problem recognition, this area was explored in more detail. In doing this the first step was to determine what criteria farmers use to measure their performance goals or objectives. From a list of six possible criteria, each producer was asked to select the one he usually used to judge the financial success of his broiler operation. The criteria considered, and the percent of farmers using each are shown in Table 4.2.

TABLE 4.2. Performance Criteria Used in Judging Success of Feeding Operation

| Criteria | Percent of Producers |
|---|----------------------|
| Return on Investment | 5 |
| Annual Net Income After All Expenses | 5 |
| Return per Bird Over All Expenses | 12 |
| Return per Bird Over Feed and Chick Costs | 65 |
| Return per Working Foot Over All Expenses | 2 |
| Return per Working Foot Over Feed and Chick Costs | 4 |
| Other | 7 |

These results show that return per bird over feed and chick costs was the most widely used measure by the sample producers.

Anticipating this result, some follow-up questions were asked in an attempt to quantify this measure. First, each producer was asked

to estimate what return over feed and chick cost he expected to achieve over the long run. Responses to this question indicated that with a return of approximately 30 cents per bird, the average producer would be reasonably satisfied with the performance of his broiler operation.

Having established the above measure of desired level of goal attainment, two additional questions were asked to get some indication of the distance between the desired and actual level of goal attainment which would cause the farmer to recognize a problem with his feed supplier. First the producers were asked to estimate the level to which the return over feed and chick costs would need to drop for three or four crops before these poor returns would cause a switch in feed suppliers; and second, the level to which they would have to drop for only one crop to precipitate such a change.

The results of this analysis indicated that for three or four crops the return where a switch would occur was 23 cents, while for only one crop it was 21 cents. Thus returns which are seven cents, or approximately 25 percent below expectations for three or four crops, or nine cents, or 30 percent below for one crop were indicated to be sufficient reason for most producers to recognize a problem with their broiler operation and switch suppliers.

4.1.3. Influence of Size of Operation

As a final step in the analysis of problem recognition, the responses to the situations discussion in Section 4.1.1 were analyzed by

size group. The objective of this analysis was to determine the influence of size of operation on problem recognition. The three size categories used were:

1. Small - less than 12,000 quota
2. Medium - 12,000 to 30,000 quota
3. Large - greater than 30,000 quota

In this analysis mean scores were computed for each of the 17 problem recognition situations, and one-way analysis of variance used to statistically test whether the means were significantly different from each other.

The results of this analysis (Table 4.3) show significant differences among size groups for eight of the seventeen situations. Two differences were observed for the situations relating to the influence of marketing action. In both cases the differences indicated that the larger the producer, the more receptive he will be to the trial use of feed brands or the arguments of trustworthy salesmen.

Only one difference was found for the quality and service situations. This related to the texture of the feed, and again showed that this consideration was more important for the larger growers.

All of the situations grouped under the heading "reliance on in-crop inspection and experience" were found to be evaluated differently among the three size categories. In all the cases the larger producers indicated a greater willingness to change feed suppliers or brands as a result of these situations.

TABLE 4.3 Distribution of Problem Recognition Scores Across Size Groups

| Situation | Mean Scores ^(a) | | | F ^(b) Value |
|--|----------------------------|-------------------|------------------|---------------------------|
| | Small Growers | Medium Growers | Large Growers | |
| <u>Influence of Other Growers</u> | | | | |
| 1. I thought that other growers were doing better with another feed company | 4.2 | 3.8 | 3.8 | 1.18 |
| 2. Other growers suggested that I might do better with a different feed supplier | 4.5 | 3.9 | 4.1 | 2.26 |
| <u>Influence of Marketing Action</u> | | | | |
| 1. A very respectable feed company seemed anxious that I try their feed at least once, on one flock or in one building. | 4.4 | 3.6 | 3.6 | 3.07* |
| 2. I found another feed firm that had a better reputation. | 4.6 | 3.9 | 4.1 | 2.21 |
| 3. I could see from the results shown to me by a trustworthy salesman that I might do better if I changed feeds. | 4.8 | 4.2 | 3.9 | 4.27** |
| 4. A new dealership opened closer to my farm. | 4.8 | 4.6 | 4.6 | 0.43 |
| 5. Feed company literature suggested that I might be doing better. | 4.8 | 4.6 | 4.6 | 0.83 |
| <u>Concern For Quality and Service</u> | | | | |
| 1. The feed mill service was not very reliable | 2.7 | 2.3 | 2.4 | 0.70 |
| 2. The feed salesman did not always provide me with good service. | 4.0 | 3.6 | 3.6 | 0.83 |
| 3. I thought there were too many fines in the feed. | 4.1 | 3.9 | 3.4 | 2.51* |
| 4. The appearance of the feed did not appeal to me. | 3.9 | 4.0 | 3.4 | 1.56 |
| <u>Reliance on In-Crop Inspection and Experience</u> | | | | |
| 1. Based on my previous growing experience I thought I should be doing better and believed the cause for my poor results might be due to the feed. | 3.3 | 2.7 | 2.2 | 3.51** |
| 2. I suspected the feed was not good by the way the birds grew. | 3.7 | 3.1 | 2.8 | 2.47* |
| 3. The birds seemed too light for their age. | 4.0 | 3.3 | 3.1 | 3.74** |
| <u>Concern for Feed Cost and Performance</u> | | | | |
| 1. I thought that the feed price was too high for the feed conversion I was getting | 3.3 | 2.5 | 2.3 | 3.28** |
| 2. The return per bird over feed and chick costs on two crops was lower than I had anticipated | 3.2 | 3.0 | 2.6 | 0.98 |
| 3. I thought the price per ton for the feed was too high. | 3.4 | 3.0 | 3.0 | 0.55 |
| 4. The feed conversion appeared to be too high. | 3.9 | 3.0 | 3.0 | 3.74** |

(a) Mean scores were calculated using the following coding system: (1) 100 percent chance of changing, (2) 75 percent chance of changing, (3) 50 percent chance of changing, (4) 25 percent chance of changing, (5) No chance of changing.

(b) * = $p < .10$, ** = $p < .05$.

Finally, in the case of the four feed cost and performance situations, two were found to be different among the size groups. Both of these situations were related to feed conversion and, as in the preceding cases, both were of more concern to larger growers.

4.2. Search for Information

Once a problem has been recognized, the grower moves to the second stage of the decision process -- the search for information. Search is comprised of a series of efforts to obtain specific information concerning feed brands and dealers, feed prices and conversions, and other related information.

This section investigates the searching behaviour of broiler producers from several perspectives. First, the information sources used in searching are evaluated. This is followed by a consideration of the type and extent of searching activities used, and an analysis of various factors related to search.

4.2.1. Evaluation of Information Sources

The Ontario broiler grower has a large number of sources from which he can obtain information concerning feed brands and suppliers. Several of these sources were identified and presented to the sample for their evaluation. The results in Table 4.4 show that other broiler growers, a reference group, appear to be the most respected source. Feed salesmen and dealers are also considered important, but written business sources such as feed company advertisements and pamphlets are not highly

regarded. Neutral information sources such as university nutritionists and poultry veterinarians are less useful to some growers than salesmen, but equally useful to others. The Ontario Chicken Producers' Marketing Board appears to be highly regarded by one-quarter of the growers in terms of the information it provides through zone meetings.

The responses in Table 4.4 were also analyzed by size group using the methodology specified in Section 4.1.3. The results of this analysis showed significant differences among size groups for only two information sources -- other broiler growers and poultry magazine articles. In both cases these sources were evaluated more favourably by the larger producers than either the small or medium size producers.

4.2.2. Searching Activities

Search activities, as defined in this research, include those activities growers use in gathering evaluative information about alternative dealers and brands. A common characteristic of these activities is that they require some commitment of time, effort, and perhaps expense on the part of the grower. A list of the activities considered in this project together with a frequency distribution of producer responses is shown in Table 4.5. Reference to this table indicates that two-thirds of the sample producers never check feed prices on the phone or through personal contacts with feed companies. Of the remaining one-third of the producers who use these means of checking prices, less than 20 per cent do so more than three times a year. The most prevalent means of

TABLE 4.4. Evaluation of Selected Information Sources

| Information Sources | Mean | Standard Duration | Not Important | Somewhat Important | Very Important |
|-----------------------------|------|----------------------|------------------|-----------------------|-------------------|
| | | | (1) | (2) | (4) |
| Other Broiler Growers | 2.5 | 1.1 | 26 | 24 | 25 |
| Feed Salesmen | 2.3 | 1.1 | 34 | 24 | 21 |
| Poultry Veterinarians | 2.2 | 1.3 | 48 | 8 | 28 |
| Feed Dealers | 2.1 | 1.1 | 43 | 21 | 13 |
| Feed Company Nutritionists | 2.0 | 1.2 | 51 | 12 | 19 |
| OCPMB (a) | 2.0 | 1.3 | 56 | 6 | 24 |
| University Nutritionists | 2.0 | 1.3 | 55 | 7 | 21 |
| Poultry Magazine Articles | 1.8 | 1.1 | 51 | 21 | 11 |
| Feed Company Pamphlets | 1.4 | 0.6 | 70 | 25 | 2 |
| Feed Company Advertisements | 1.3 | 0.6 | 83 | 9 | 1 |

(a) Ontario Chicken Producers' Marketing Board.

TABLE 4.5. Farmer Participation in Searching Activities

| | Responses | | | | |
|---|---|---------------------------------|---|--|--------------|
| | More than Three Times a Year (5) | Three Times a Year (4) | Twice a Year (3) | Once a Year (2) | Never (1) |
| How often do you telephone or personally contact other feed companies concerning their prices? | 16 | 5 | 10 | 2 | 67 |
| How often do you discuss the pros and cons of another company's feed with their representative? | 33 | 4 | 19 | 16 | 28 |
| How often do you talk to other broiler producers about their feed results and suppliers? | 47 | 22 | 13 | 9 | 9 |
| | Every Time They Call (5) | Every Other Call (4) | Twice in Every Five Calls (3) | Once in Every Five Calls (2) | Never (1) |
| How regularly do you check feed prices with salesmen? | 58 | 8 | 4 | 15 | 15 |
| How often do you check the feed conversions and results of other growers with salesmen? | 19 | 15 | 12 | 18 | 35 |
| | No (1) | Yes (2) | | | |
| Do you attend poultry shows? | 33 | 67 | | | |
| Do you attend company seminars on broilers? | 45 | 55 | | | |
| Do you attend Broiler Board Zone Meetings? | 19 | 81 | | | |

obtaining current price information apparently is from salesmen. Almost 60 percent of the sample producers indicated that they checked prices everytime a salesman called compared to only 15 percent of the growers who said they never checked prices with feed salesmen. The extent to which salesmen are used to obtain other types of evaluative information does not appear to be as great.

A commonly used searching activity involves talking to other broiler producers about their feed results and suppliers. Almost one-half of the growers indicated that they visited with other producers for this purpose more than three times a year. Less than 10 percent claimed they never talked to other growers about feeds or suppliers.

4.2.3. Development of Scales

In the model of the farmer decision process, the extent of searching was hypothesized to be related to five major variables: past experience, perceived difference among brands, attitude toward searching, importance of the purchase, and risk attitude. These variables were defined and measured in the following manner.

1. Past Experience - This variable relates to the past experience of a grower in the broiler business. The hypothesis tested was that less searching occurs as farmers gain experience in solving feed purchasing decisions. Past experience was measured by the number of years a producer had been in the broiler business.

2. Perceived difference among brands - Also related to the extent of searching is the grower's perceived difference among brands. Farmers who perceive large and significant differences among brands will spend more time and effort evaluating these differences than growers who think most brand differences are small and trivial.

To measure a farmer's perceived difference among brands, a series of four attitude statements were evaluated by each respondent. These statements were:

1. No matter which feed company you use, your results are about the same.
2. To me all feed companies have equally good reputations.
3. Most feed companies charge about the same price for feed.
4. All brands give about the same feed conversion.

Responses to these statements were recorded on a six-point scale ranging from (1) Strongly Disagree to (6) Strongly Agree. Perceived difference scores were computed for each respondent by summing his responses to each statement. Using this procedure higher scale scores indicate lower perceived brand differences.

3. Attitude toward searching - Another factor which was thought to be related to the amount of searching was the

grower's general attitude toward searching. Producers with more favourable attitudes toward this type of activity were hypothesized to devote more time and effort to searching for evaluative information.

To measure a grower's attitude toward searching an additional series of four attitude statements were evaluated by each respondent. These statements were:

1. I enjoy reading any written material provided on broilers by feed firms.
2. I always take time to talk with feed salesmen.
3. I appreciate the information given to me by other broiler growers on feed suppliers and brands.
4. It is often a good idea to check with other broiler growers before changing suppliers.

Responses to these statements were recorded on a six-point scale ranging from (1) Strongly Disagree to (6) Strongly Agree and attitude scores computed for each respondent by summing his responses to each statement. In this case, higher scale scores were associated with a more favourable attitude toward searching.

4. Importance of the purchase - The fourth factor related to search was the importance of the purchase to the farmer. It was hypothesized that farmers for whom feed is a very critical input would search more than other farmers.

Although there are several ways to measure importance, the one used in this analysis was the size of the broiler unit as measured by the broiler quota.

5. Risk attitude - The final factor related to search behaviour was the risk attitude of the producer. It was felt that producers with higher levels of risk aversion would be inclined to search more for evaluative information.

A producer's risk attitude was measured by his responses to a series of four attitude statements. These statements were:

1. Before I would make any changes in the set-up of my broiler buildings, I want to know exactly what they would be like when finished.
2. I feel uncomfortable when I have a number of unanswered questions concerning my broiler operation.
3. It is important to know how your results will turn out before you change feeds.
4. It would be useful to know the probable conversion of a feed before switching to that brand.

As before, responses to these statements were recorded on a six-point scale ranging from (1) Strongly Disagree to (6) Strongly Agree and attitude scores computed for each respondent by summing his responses to each statement. Using this procedure higher scale scores were associated with greater risk aversion.

In the regression analysis which follows the above factors were used as independent variables, while the dependent variable was a measure of searching behaviour. The searching behaviour measure was formed by assigning scores to producers based on different levels of participation in eight searching activities. The eight activities considered, and the participation scores are shown in Table 4.5. The search scale was constructed so that higher scores represented greater searching effort.

4.2.4. Regression Analysis of Search

To test the hypothesis that searching behaviour is related to the five factors identified in the previous section, the following equation was specified and estimated using ordinary least squares regression analysis. In addition to the five original variables, two others -- age and country of origin -- were included as dummy variables.

$$\begin{aligned}
 S = & B_0 + B_1 \text{EXP}_i + B_2 \text{PD}_i + B_3 \text{ATS}_i + B_4 \text{IMP}_i \\
 & + B_5 \text{RA}_i + B_6 \text{AGE1}_i + B_7 \text{AGE2}_i + B_8 \text{ORIG1}_i \\
 & + B_9 \text{ORIG2}_i
 \end{aligned}$$

where

- S = Search score
- EXP = Years of broiler growing experience
- PD = Perceived difference score
- ATS = Attitude toward search score
- IMP = Broiler quota
- RA = Risk attitude score

- AGE1 = Dummy variable for age
 AGE1 = 1 if age is less than 35; otherwise zero
- AGE2 = Dummy variable for age
 AGE2 = 1 if age is 35 - 54; otherwise zero
- ORIG1 = Dummy variable for country of origin
 ORIG1 = 1 if country of origin is Canada;
 otherwise zero
- ORIG2 = Dummy variable for country of origin
 ORIG2 = 1 if country of origin is Western
 Europe; otherwise zero.

The results of this analysis are shown in Table 4.6. These results show that four variables are significantly related to search. These variables are perceived brand difference, attitude toward searching, importance of the purchase, and country of origin.

With respect to perceived brand differences, the negative coefficient for this variable indicates that farmers who perceive larger differences among brands search more than farmers perceiving smaller differences. The same is true for attitude toward searching and purchase importance: farmers with more favourable attitudes toward searching and for whom this purchase is more important, search more than other farmers. Finally, the negative coefficient for the Western Europe country of origin dummy variable indicates that growers with this background search less than growers of Canadian or Eastern European origin.

4.3. Evaluation of Alternatives

The third step in the decision process is the selection and evaluation of alternative feed sources. Only those sources which offer

TABLE 4.6. Results of Regression Analysis of Search Behaviour

| Variable | Variable Name | Unstandardized Coefficient | Standardized Coefficient | Standard Error | "t" Value (a) |
|----------|-------------------------------|----------------------------|--------------------------|----------------|---------------|
| EXP | Past Experience | -0.080 | -0.122 | 0.074 | 1.081 |
| PD | Perceived difference | -0.987 | -0.242 | 0.413 | 2.389** |
| ATS | Attitude to searching | 0.920 | 0.200 | 0.445 | 2.067* |
| IMP | Importance of Purchase | 0.059 | 0.229 | 0.024 | 2.458** |
| RA | Risk Attitude | 0.466 | 0.102 | 0.456 | 1.022 |
| AGE1 | Age Dummy (less than 35) | 2.284 | 0.147 | 2.025 | 1.128 |
| AGE2 | Age Dummy (35 - 54) | 0.207 | 0.018 | 1.413 | 0.146 |
| ORIG1 | Origin Dummy (Canada) | -0.929 | -0.080 | 1.518 | 0.612 |
| ORIG2 | Origin Dummy (Western Europe) | -2.941 | -0.271 | 1.314 | 2.238* |
| | Constant | 17.176 | | | |

(a) * = $p < .05$;** = $p < .01$.

the grower a reasonable chance of satisfying his needs will be considered. Once a list of feasible alternatives has been developed, the grower evaluates them, paying particular attention to the level of success enjoyed with his present supplier. If the grower finds an alternative better than his present source he switches; if not he continues using his present supplier.

4.3.1. Shopping Area

Growers were asked to list their available feed source alternatives in the event they were to change from their present supplier. In responding to this question they listed an average of 4 alternative suppliers. The average distance from their farm to these alternatives was 34.6 miles. Results showed that the first alternative supplier was an average of 33.4 miles away, while the fourth alternative (56 growers had fourth alternatives) was 38.4 miles from the farm. The present feed source was determined to be at a mean distance of 27.5 miles. These results are summarized in Table 4.7.

Correlation analysis was employed to study the relationship between search behaviour and number of alternatives considered. Results of this analysis showed a highly significant positive association between these variables. In particular, this analysis revealed that growers with higher overall search scores tended to purchase from dealers who are situated at distances slightly further away than growers with lower search scores. Also, producers with higher search scores considered a signif-

icantly larger number of alternatives than other broiler growers.

TABLE 4.7. Average Distance of Present and Alternative Suppliers

| Suppliers | Average Distance | Number of Farmers Reporting |
|-----------------------------|------------------|-----------------------------|
| Present Supplier | 27.6 | 100 |
| Alternative Suppliers | | |
| 1st | 33.4 | 97 |
| 2nd | 36.5 | 86 |
| 3rd | 39.2 | 69 |
| 4th | 38.4 | 56 |
| 5th | 35.6 | 35 |
| 6th | 36.0 | 27 |
| 7th | 47.0 | 15 |
| 8th | 46.0 | 9 |
| 9th | 32.0 | 5 |
| 10th | 65.0 | 3 |
| Average of All Alternatives | 34.7 | |

4.3.2. Attributes Considered When Selecting a New Feed Source

In making their broiler feed purchase decision, producers compare alternative brands along several dimensions. An attempt was made in this research to measure the overall importance of eight of these factors: supplier reputation, brand reputation, feed conversion, feed cost per pound of meat produced, cost per ton of feed, feed mill service, salesman service, and return per bird.

To measure the relative importance of the above factors, a purchase criteria scale was developed using the comparative judgment technique (Green and Tull, 1970). This procedure involves deriving an interval scale from comparative judgments of the type "price is more important than service." Scale values are estimated from data in which respondents make comparative judgments for each possible pair of a set of factors.

To develop scale values the proportion of times factor i is preferred to factor j is observed, and this frequency data used in the following expression:

$$S_i - S_j = Z_{ij} \sqrt{2} \quad (1)$$

where $S_i - S_j$ = a linear distance on the scale between factor i and factor j .

Z_{ij} = the sigma value of observed proportions in which factor i is preferred to factor j .

Summing over all factors this expression becomes:

$$nS_i - \sum S_j = \sqrt{2} \sum Z_{ij} \quad (2)$$

Since only an interval scale is assumed, it is possible to set the mean of all factors arbitrarily at zero.

$$S_j = 0 \quad (3)$$

then
$$nS_i = \sqrt{2} \sum Z_{ij} \quad (4)$$

$$S_i = \sqrt{2} \sum Z_{ij} \quad (5)$$

The observed proportion of producers preferring one factor over another for each possible pair of the eight factors is shown in Table 4.8. Table 4.9 summarizes the Z-values associated with each proportion. If the proportion is less than 0.5, the Z-value carries a negative sign; if the proportion is greater than 0.5, the Z-value has a positive sign. The Z-values are merely taken from a standard unit normal curve and are associated with a given proportion of the total area under the curve.

The column totals in Table 4.9 are the values $\sum Z_{ij}$ in expression (5) above. As a result, to obtain the scale value S_i for each factor, these column totals must be multiplied by

$$\frac{\sqrt{2}}{n} = \frac{1.414}{8} = 0.177$$

The resulting scale values for each factor are plotted on a scale in Factor 4.1.

The purchase attributes scale shows that growers consider potential return per bird, feed cost per pound of meat produced, feed conversion, and feed cost per ton to be the major criteria in selecting a source of supply. Other less objective characteristics were determined to be of secondary importance.

A similar analysis was performed by constructing separate evaluation scales for small, medium, and large producers (see Section 4.1.3.). The resulting scales were virtually identical to the scale

TABLE 4.8. Observed Proportion of Growers Preferring Criterion (Top of Table) to Criterion (Side of Table)

| Purchase Criteria | Suppliers Reputation | Brand Reputation | Feed Conversion | Feed Cost Per lb. of Meat | Feed Cost Per Ton | Feed Mill Service | Salesman Service | Return Per Bird |
|---------------------------|----------------------|------------------|-----------------|---------------------------|-------------------|-------------------|------------------|-----------------|
| Suppliers Reputation | 0.00 | 0.54 | 0.96 | 0.96 | 0.90 | 0.77 | 0.49 | 0.97 |
| Brand Reputation | 0.46 | 0.00 | 0.95 | 0.98 | 0.86 | 0.79 | 0.32 | 0.98 |
| Feed Conversion | 0.04 | 0.05 | 0.00 | 00.78 | 0.33 | 0.02 | 0.02 | 0.92 |
| Feed Cost Per lb. of Meat | 0.04 | 0.02 | 0.22 | 0.00 | 0.08 | 0.02 | 0.00 | 0.68 |
| Feed Cost Per Ton | 0.10 | 0.14 | 0.67 | 0.92 | 0.00 | 0.16 | 0.01 | 0.97 |
| Feed Mill Service | 0.23 | 0.21 | 0.98 | 0.98 | 0.84 | 0.00 | 0.18 | 0.97 |
| Salesman Service | 0.51 | 0.68 | 0.98 | 1.00 | 0.99 | 0.82 | 0.00 | 1.00 |
| Return Per Bird | 0.03 | 0.02 | 0.08 | 0.32 | 0.03 | 0.03 | 0.00 | 0.00 |

TABLE 4.9 Z-Values Related to Preference Proportions

| Purchase Criteria | Suppliers Reputation | Brand Reputation | Feed Conversion | Feed Cost Per lb. of Meat | Feed Cost Per Ton | Feed Mill Service | Salesman Service | Return Per Bird |
|---------------------------|----------------------|------------------|-----------------|---------------------------|-------------------|-------------------|------------------|-----------------|
| Suppliers Reputation | -- | 1.00 | 1.75 | 1.75 | 1.28 | 0.74 | -0.03 | 1.88 |
| Brand Reputation | -1.00 | -- | 1.65 | 2.05 | 1.08 | 0.81 | -0.47 | 2.05 |
| Feed Conversion | -1.75 | -1.65 | -- | -0.77 | -0.44 | -2.05 | -2.05 | 1.41 |
| Feed Cost Per lb. of Meat | -1.75 | -2.05 | -0.77 | -- | -1.41 | -2.05 | -1.00 | 0.47 |
| Feed Cost Per Ton | -1.28 | -1.08 | 0.44 | 1.41 | -- | -0.99 | -2.43 | 1.88 |
| Feed Mill Service | -0.74 | -0.81 | 2.05 | 2.05 | 0.99 | -- | -0.92 | 1.88 |
| Salesman Service | 0.03 | 0.47 | 2.05 | 3.50 | 2.43 | 0.92 | -- | 3.50 |
| Return Per Bird | -1.88 | -2.05 | -1.41 | -0.42 | -1.83 | -1.83 | -3.50 | -- |
| Σ Z | -8.37 | -6.17 | 5.76 | 11.06 | 2.05 | -4.50 | -10.40 | 13.07 |

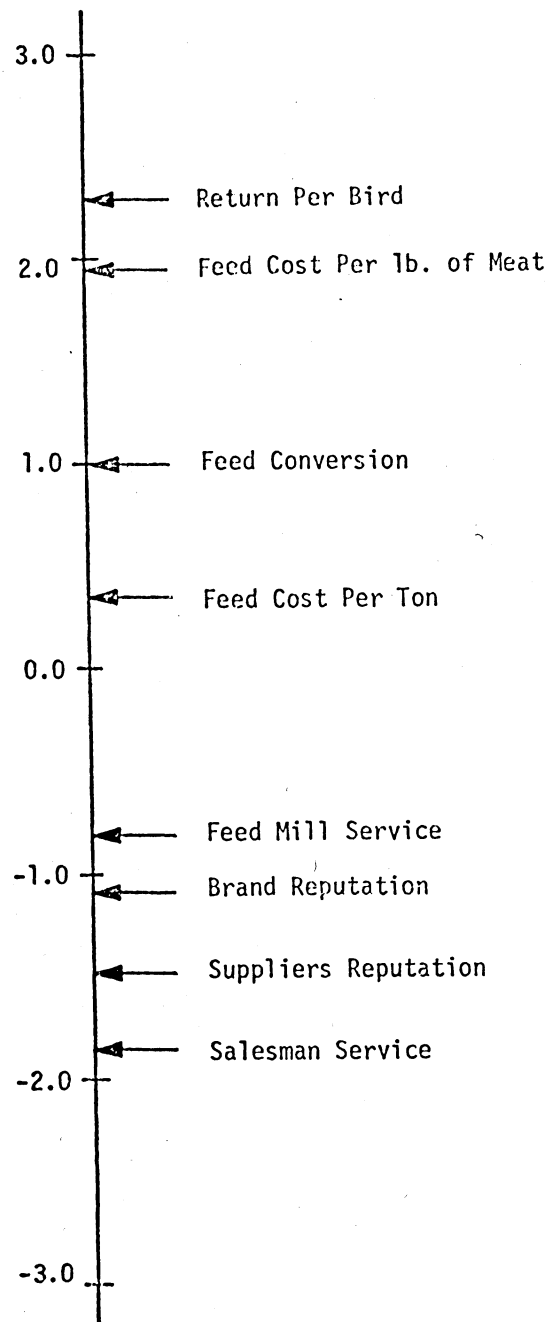


FIGURE 4.1. Evaluation of Purchase Criteria for Total Sample

plotted in Figure 4.1. Thus grower size apparently has little or no effect on the ranking of purchase attributes in evaluation.

4.3.3. Feed Source Profiles

A major step in the evaluation stage is the direct comparison of present dealer characteristics with those of alternatives. Although previous analysis indicated that the average producer considers four feed sources to be alternatives, limited interview time did not permit a separate evaluation of each of these suppliers. Instead, it was decided to consider only each grower's most likely alternative feed source.

To make this evaluation, growers were asked to rate both their present and first alternative feed source using a twenty-two item semantic differential scale. The twenty-two bipolar semantic adjectives used in this evaluation are shown in Figure 4.2. Seven equal intervals were used between the adjective pairs.

4.3.4. Factor Analysis of Semantic Differential Items

Factor analysis was used to identify the major characteristics considered by growers in the evaluation of the present and first alternative sources of supply. In both cases factors were extracted using principal components solution with varimax rotation. The factors accepted for interpretation and further analysis were those having an eigenvalue greater than one. Using this procedure, seven factors were identified for

- | | |
|---|---|
| 1. A small feed company | - A large feed company |
| 2. Poor company reputation | - Excellent company reputation |
| 3. Does not care if I make money | - Interested that I make money |
| 4. Not a known company | - Well known company |
| 5. Not willing to cooperate with producers in solving problems | - Willing to cooperate with producers in solving problems |
| 6. Average research program | - Excellent research program |
| 7. Provides average feed ingredient information | - Provides excellent feed ingredient information |
| 8. Hesitant to trust farmers | - Very willing to trust farmers |
| 9. Poor brand reputation | - Excellent brand reputation |
| 10. Inadequate cash discounts | - Adequate cash discounts |
| 11. Average feed mill service | - Excellent feed mill service |
| 12. Poor hatchery arrangements | - Excellent hatchery arrangements |
| 13. Poor processing arrangements | - Excellent processing arrangements |
| 14. High feed price | - Low feed price |
| 15. High feed conversion | - Low feed conversion |
| 16. High cost of feed per lb. of meat produced | - Low cost of feed per lb. of meat produced |
| 17. Not concerned with producer needs | - Concerned with producer needs |
| 18. Salesman - fair knowledge of disease problems | - Salesman - excellent knowledge of disease problems |
| 19. Salesman - average knowledge of general growing problems | - Salesman - excellent knowledge of general growing problems |
| 20. Salesman hesitant to take birds to the laboratory | - Salesman willing to take birds to the laboratory |
| 21. Salesman provides average service | - Salesman provides excellent service |
| 22. Salesman, when asked, provides inadequate information on the "results" of other producers | - Salesman, when asked, provides adequate information on the "results" of other producers |

FIGURE 4.2. Semantic Differential Scale

the present supplier and six for the first alternative. The factor names and variables loading high on each factor are shown in Table 4.10. for the present supplier and in Table 4.11. for the first alternative.

Development of the factor names was, as always, an arbitrary procedure. In the case of the present feed source high loadings existed on attributes related to the feed operation of most firms, hence the term related operations has been assigned to Factor 1. Factor 2 was more difficult to interpret. It seems to represent a rather weak definition of company reputation. The remaining factors were clearly defined and named as shown.

Analysis of factors related to the alternative firms shows that two factors are common to both evaluations -- performance and salesman knowledge. Of particular interest here is the lack of a price factor with respect to the alternative supplier. Also it appears as though the company reputation and research factor defined for the alternative source is a more substantive indication of concern for these attributes than the company size well known factor of the present supplier. Feed mill service would appear to be of greater concern in the selection of a dealer than in an assessment of the present feed source. In both cases company concern for producer's needs is quite clearly defined.

4.3.5. Evaluation of Present and Alternative Feed Sources

A comparison of responses to the twenty-two semantic differential items was used to test for perceived differences between the present and

TABLE 4.10. Extracted Factors for Present Feed Supplier

| Factors and Variables | Factor Loadings |
|--|-----------------|
| <u>Factor 1. Related Operations</u> | |
| Excellent Hatchery Arrangements | .62 |
| Excellent Processing Arrangements | .84 |
| <u>Factor 2. Company Size/Well Known</u> | |
| Company Size | .71 |
| Company Well Known | .61 |
| Salesmen willing to take birds to lab. | .71 |
| <u>Factor 3. Concern for Producer's Needs</u> | |
| Interested that I make money | .59 |
| Willing to cooperate with producers | .67 |
| Concerned with producer's needs | .73 |
| <u>Factor 4. Performance</u> | |
| Low feed conversion | .77 |
| Low cost of feed per pound of meat | .75 |
| <u>Factor 5. Price</u> | |
| Low feed price | .72 |
| <u>Factor 6. Salesmen's knowledge</u> | |
| Salesman knowledge of disease problems | .82 |
| Salesman knowledge of general growing problems | .84 |
| <u>Factor 7. Scientific Information</u> | |
| Excellent research program | .64 |
| Excellent feed ingredient information | .51 |

TABLE 4.11. Extracted Factors for Alternative Feed Supplier

| Factor and Variables | Factor Loadings |
|---|-----------------|
| <u>Factor 1. Company Reputation</u> | |
| Company Size | .76 |
| Excellent Company Reputation | .63 |
| Well Known Company | .70 |
| Excellent Research Program | .75 |
| Excellent Brand Reputation | .66 |
| <u>Factor 2. Company Concern/Information</u> | |
| Interested that I make money | .54 |
| Provides excellent feed ingredient information | .54 |
| Very willing to trust farmers | .63 |
| Concerned with producer's needs | .61 |
| Salesman provides adequate information | .64 |
| <u>Factor 3. Salesman Knowledge</u> | |
| Salesman knowledge of disease problems | .84 |
| Salesman knowledge of general growing problems | .91 |
| <u>Factor 4. Performance</u> | |
| Low feed conversion | .74 |
| Low cost of feed per pound of meat | .80 |
| <u>Factor 5. Feed Mill Service</u> | |
| Excellent Feed Mill Service | .81 |
| <u>Factor 6. Salesman Service</u> | |
| Salesmen willing to take birds to lab. | .87 |
| Salesmen provide excellent service | .62 |

first alternative suppliers. The procedure used was the paired sample t-test which tests the inequality of means given two treatments -- in this case, present and first alternative suppliers. Results are shown in Table 4.12.

As expected, for most of the items the responses show the evaluation of the present supplier to be higher than the alternative. This is particularly true in the case of the price and performance variables. Also, it appears that the present feed source is perceived as being more concerned about the grower and his success than the first alternative.

For some variables -- notably feed ingredient information and salesman knowledge -- the direction of the differences is not consistent with expectations. In these cases the alternative is evaluated more favourably than the present source. An explanation of this finding is possible and makes the results of significant interest. In meeting with prospective customers the alternative firm's salesman is more likely to discuss the technical aspects of his feed than the present source representative. In so doing he gives the grower more information and a greater impression of feed knowledge. The present supplier representative, on the other hand, does not bother to discuss the technical characteristics of his product since he spends most of his time with other matters -- taking orders, credit problems, checking disease outbreaks, and other problems his client may have. Thus he is viewed as providing less information and being less knowledgeable than competing salesmen.

TABLE 4.12 T-test of Difference Between Means of Present and First Alternative Feed Service

| | Present | First Alternative | Mean Difference | Standard Deviation | T Values | Degrees of Freedom | Significance |
|---|---------|-------------------|-----------------|--------------------|----------|--------------------|--------------|
| 1. Small - Large Feed Company | 5.06 | 5.38 | -0.32 | 0.30 | -1.07 | 80 | .140 |
| 2. Poor - Excellent Company Reputation | 6.35 | 6.19 | 0.17 | 0.13 | 1.35 | 80 | .090 |
| 3. Does Not Care - Interested that I make money | 6.28 | 6.06 | 0.22 | 0.14 | 1.60 | 77 | .060 |
| 5. Not Willing - Willing to cooperate with producers in solving problems | 6.46 | 6.24 | 0.21 | 0.14 | 1.60 | 77 | .060 |
| 6. Average - Excellent research program | 5.25 | 5.57 | -0.32 | 0.26 | -1.25 | 64 | .110 |
| 7. Provides average - Excellent feed ingredient information | 4.49 | 5.21 | -0.73 | 0.24 | -3.01 | 69 | .002 |
| 8. Hesitant - Very willing to trust farmers | 6.16 | 5.87 | 0.29 | 0.22 | 1.30 | 75 | .100 |
| 9. Poor - Excellent reputation | 6.01 | 6.24 | -0.23 | 0.18 | -1.27 | 79 | .110 |
| 11. Average - Excellent feed mill service | 6.24 | 6.00 | 0.24 | 0.19 | 1.27 | 73 | .110 |
| 13. Poor - Excellent processing arrangements | 6.23 | 6.05 | 0.28 | 0.21 | 1.30 | 64 | .100 |
| 14. High - Low feed price | 4.75 | 4.15 | 0.60 | 0.27 | 2.21 | 76 | .015 |
| 16. High - Low Cost of Feed per pound of meat | 5.35 | 4.94 | 0.41 | 0.22 | 1.84 | 67 | .035 |
| 18. Salesman fair - Excellent knowledge of disease problems | 4.70 | 5.29 | -0.60 | 0.27 | -2.18 | 65 | .015 |
| 22. Salesman provides inadequate Adequate information on results of other growers | 4.70 | 5.00 | -0.30 | 0.25 | -1.19 | 60 | .130 |

4.4. Purchase Decision

Following evaluation of alternatives, one of which usually is the present supplier, the producer must make a decision as to which source to use in the future. The result of this decision will be either to continue using the present source, or to switch to a new supplier. Although speculation on future changes is a difficult and uncertain matter, some insight into this process is possible by investigating past behaviour.

4.4.1. Reasons for Changing Suppliers

In order to gain an initial understanding of the purchase decision two open-ended questions were asked at the beginning at each interview session. The purpose of these questions was to probe the brand selection decision by letting the respondents answer on a free response basis. These questions were only asked to the 76 growers who had changed feed suppliers at least once since they started in business. The first of the unstructured questions was: "What were your reasons for leaving your former feed supplier?" The responses to this question are shown in Table 4.13.

Results indicate that dissatisfaction with a feed source is strongly related to the price, profit, and performance attributes of the feed currently being used. Some growers have changed feeds when they became dissatisfied with a related operation, and a few changed because of hatchery or processor pressure. Poor salesman service, inadequate dealer services, location, and feed appearance appear to be less important

factors in the decision to switch sources.

The second unstructured question was "What were your reasons for selecting your present feed supplier?" Although the selection of a new source of supply is directly related to the decision to drop a certain brand or dealer, the reasons can be different. For example, a grower may leave a particular brand because of poor feed conversion, and then select a new brand primarily on the basis of the influence of a salesman, assuming of course that the feed conversion of the new brand is acceptable.

The data in Table 4.14, shows that while the choice of a new source of supply is highly related to price considerations, the choice process is also a function of four other major variables: influence of salesmen, confidence in company reputation, relationship to a package deal, and the influence of other growers.

4.4.2. Brand Loyalty

Over time, producers make a number of purchase decisions. Often the outcome of these decisions is to continue using the same brand or supplier; however, on some occasions this decision results in a change to a new brand or supplier. The extent to which a grower does, or does not change brands is a measure of brand loyalty.

To investigate the extent of brand loyalty for broiler feeds, growers were asked to give a complete history of feed brands and suppliers used since beginning their present broiler business. All purchases were recorded on a crop basis. Analysis indicated that 43 different feed

TABLE 4.13. Reasons for Leaving Farmer Feed Supplier or Brand

| Reason | Primary (percent) | Secondary (percent) |
|---|----------------------|------------------------|
| High Feed Price | 34 | 26 |
| Low Return per bird | 14 | -- |
| Poor Feed Conversion | 9 | 11 |
| Dissatisfied with Hatchery or Processor | 7 | -- |
| Hatchery or Processor Applies Pressure to Change | 5 | -- |
| Financial Considerations Such As Financing of Buildings or Equipment | 5 | -- |
| Feed Appearance and Consistency | 4 | 9 |
| Location | 4 | -- |
| To Avoid Three-Way Package | 3 | 11 |
| High Cost of Feed Per Pound of Meat | 3 | -- |
| Poor Dealer Service | 1 | 14 |
| Inadequate Salesman Service | -- | 9 |
| Other | 10 | 20 |

TABLE 4.14. Reasons for Selecting Present Feed Supplier
or Brand

| Reason | Primary (percent) | Secondary (percent) |
|---------------------------------------|----------------------|------------------------|
| Lower Feed Price | 33 | 11 |
| Influence of Salesman | 12 | 7 |
| More Confidence in Company Reputation | 8 | 15 |
| Part of a Package Deal | 8 | -- |
| Influence of Other Growers | 7 | 16 |
| Financial Considerations | 6 | -- |
| Better Dealer Service | 6 | 11 |
| Dealt With Firm Before | 5 | -- |
| Trial Basis | 3 | -- |
| Better Feed Conversion | 2 | 20 |
| Location | 2 | 8 |
| Other | 8 | 11 |

sources were used by sample growers. Most of these sources were independent dealers selling complete broiler feeds using a pre-mix supplied by a national brand manufacturer. Of the 43 sources used, a further analysis showed that only 10 supplied 80 percent of the growers.

Additional analysis of the feed purchasing history data revealed that the average grower had completed 35 crops, or had been in business slightly under 9 years. During this time the average producer used 2.5 different brands of feed. Dividing the number of crops by the number of brands gives an average number of crops per brand of approximately 14. Thus the average farmer in the sample would switch brands every 14 crops, or approximately every three and one-half years.

An analysis of brand and supplier changes revealed that almost all changes involved suppliers as well as brands. Only eight growers changed to a different brand supplied by the same dealer, and only two changed dealers while continuing with the same brand. Thus it was decided not to investigate brand and dealer loyalty separately, but rather to consider them together under the general heading of brand loyalty.

Using previously established categories the sample producers were classified according to their level of brand loyalty. The categories and percentage of farmers classified in each are shown in Table 4.15. Given that almost half of the growers used only one source of feed during the past 5 year period or since they started in the broiler business, these results indicate a substantial level of loyalty to feed brands by

broiler producers.¹

4.4.3. Brand Loyalty Definition

A check of growers who had been in business 20 crops or more revealed that 27 had made at least one switch during the first 10 broiler crops while 14 had made switches during the last 10 crops produced. From this it appears that many growers pass through a type of exploratory period during the first years of operation where they try more feed sources than they do in later years.

With the above information in mind, a measure of source loyalty had to be found that would classify those growers of unproven loyalty into a non-loyal group. The measure selected was the average number of crops grown per source used. The larger the average number of crops grown per source, the greater the loyalty exemplified.

Some reservation existed that the crops per source approach might be too historically biased for use as a measure of loyalty since marketers are primarily interested in current loyalty behaviour. Adjustment of this index by the addition of the number of crops completed with the present feed source classified 94 percent of the growers in the same manner as the crops per source approach. It was concluded that the weighted score did not alter the classifications to any large extent, and that the

¹ This distribution of farmers into brand loyalty categories is very similar to the distribution found in two earlier studies of feed buying behaviour. See (Funk, 1971 and Rooke, 1965).

TABLE 4.15. Distribution of Growers Into Loyalty Categories

| Loyalty Groups | Percent of Farmers |
|--|-----------------------|
| <u>High Brand Loyalty</u> | |
| Growers who used only one feed source during the past 20 crops or since starting to operate their present business | 45 |
| <u>High Medium Brand Loyalty</u> | |
| Growers farming for 20 crops or more using only one source of feed last year, but switching sources once in the last 20 crops | 19 |
| <u>Low Medium Brand Loyalty</u> | |
| Growers farming for 20 crops or more using only one source last year but changing sources more than once in the past five years; or growers farming more than two years, but less than five years buying one source of feed last year, but changing once since starting to operate their present business | 16 |
| <u>Low Brand Loyalty</u> | |
| Growers using two or more sources during the last four crops; or growers in business for more than eight crops but less than 20 crops who bought from only one source last year, but who have changed two or more times since starting their present business | 20 |

crops per source approach adequately measures loyalty in the case of broiler growers.

4.4.4. Regression Analysis of Brand Loyalty

The relationship between loyalty and all the previous socioeconomic and determinant variables was analyzed using ordinary least squares multiple regression analysis. For this analysis the following equation was estimated.

$$\begin{aligned}
 L_i = & B_0 + B_1 PD_i + B_2 IMP_i + B_3 RA_i + B_4 S_i + B_5 OG_i \\
 & + B_6 MA_i + B_7 QS_i + B_8 EXP_i + B_9 CP_i + B_{10} AGE1_i \\
 & + B_{11} AGE2_i + B_{12} ORIG1_i + B_{13} ORIG2_i + B_{14} TP1_i \\
 & + B_{15} TP2_i
 \end{aligned}$$

where L = Brand loyalty score

PD = Perceived brand difference

IMP = Importance of the purchase (broiler quota)

RA = Risk attitude

S = Searching participation

OG = Influence of Marketing Action

QS = Concern for quality and service

EXP = Reliance of experience

CP = Concern for Cost and Performance

AGE1 = Dummy variable for age

AGE1 = 1 if age is less than 35; otherwise zero

- AGE2 = Dummy variable for age
AGE2 = 1 if age is 35 - 54; otherwise zero
- ORIG1 = Dummy variable for country of origin
ORIG1 = 1 if country of origin is Canada;
otherwise zero
- ORIG2 = Dummy variable for country of origin
ORIG2 = 1 if country of origin is from Western
Europe; otherwise zero
- TP1 = Dummy variable for target profits
TP1 = 1 if target profits are 25¢ or less;
otherwise zero
- TP2 = Dummy variable for target profits
TP2 = 1 if target profits are 26¢ to 33¢;
otherwise zero

In the above equation the variables OG, MA, QS, EXP, and CP are the problem recognition source categories discussed in Section 4.1.1. Scale values were calculated for each of these variables using the procedure shown in Table 4.3. All other variables were measured using previously discussed methods.

The results of this analysis are shown in Table 4.16. The first significant variable is perceived brand difference. Although the sign of this variable is positive, because of the manner in which this variable was measured, this indicates that higher levels of perceived brand difference are associated with lower levels of brand loyalty. Thus growers who perceive larger differences among brands tend to switch feed sources more often than growers who perceive smaller differences.

Also related to brand loyalty is the risk attitude of the farmer. The positive sign on the risk attitude variable indicates that growers

TABLE 4.16. Results of Regression Analysis on Loyalty

| Variable | Variable Name | Unstand- ardized Coefficient | Stand- ardized Coefficient | Standard Error | "t" Value (a) |
|----------|-----------------------------------|------------------------------------|----------------------------------|-------------------|---------------|
| PD | Perceived Difference | 2.718 | 0.216 | 1.223 | 2.222* |
| IMP | Importance of Purchase | 0.062 | 0.077 | 0.074 | 0.837 |
| RA | Risk Attitude | 2.180 | 0.154 | 1.293 | 1.686* |
| S | Extent of Searching | -0.434 | -0.141 | 0.313 | 1.386 |
| OG | Other Growers | 1.958 | 0.126 | 1.945 | 1.006 |
| MA | Marketing Action | -2.396 | -0.099 | 3.240 | 0.739 |
| QS | Quality and Service | 4.175 | 0.226 | 1.964 | 2.125* |
| EXP | Reliance on Experience | -0.338 | -0.023 | 1.586 | 0.213 |
| CP | Cost and Performance | -- | -- | -- | -- |
| AGE1 | Age Dummy (Less than 35) | -11.189 | -0.233 | 5.104 | 2.192* |
| AGE2 | Age Dummy (35 - 54) | -2.998 | -0.085 | 3.678 | 0.815 |
| ORIG1 | Origin Dummy (Canada) | 8.812 | 0.247 | 3.286 | 2.681** |
| ORIG2 | Origin Dummy (Western Europe) | -- | -- | -- | -- |
| TP1 | Target Profit Dummy (25¢ or less) | 8.084 | 0.198 | 3.673 | 2.201* |
| TP2 | Target Profit Dummy (26¢ to 33¢) | -- | -- | -- | -- |

(a) * = $P < .05$ ** = $P < .01$

with higher levels of risk aversion tend to exhibit more loyalty to feed sources, while growers with lower levels of risk aversion exhibit less loyalty.

Two problem recognition variables were also found to be related to brand loyalty. The first of these is the producer's concern for feed quality and service. The positive sign on this variable indicates that producers who are more prone to recognize problems as a result of quality and service considerations, exhibit a higher level of brand loyalty than other producers. The second problem recognition variable related to brand loyalty is the dummy variable for target profit levels of the producers. Results here indicate that producers with lower target profits tend to exhibit significantly higher levels of brand loyalty.

Finally, two socioeconomic variables were observed to be significantly related to brand loyalty. The first of these is the age of the producer. The negative sign on this variable indicates that younger growers tend to switch feed sources more often than older producers, hence are significantly less loyal. In terms of country of origin, the positive sign associated with the dummy variable for Canadian born producers indicates that these growers have a significantly higher level of brand loyalty than growers of Western or Eastern European origin.

5.0

SUMMARY AND IMPLICATIONS

The previous sections of this report have discussed a detailed model of the farmer decision process in purchasing feeds. The purpose of this final section is to summarize the research results dealing with this decision process, and then to develop some of the marketing implications derived from this research. Because of the specific orientation of this research to broiler growers, care should be exercised in extrapolating any conclusions or implications to other types of livestock producers.

5.1. Summary of the Model

The decision process begins when the farmer recognizes a problem with his broiler operation. Research results on this stage show that farmers have certain goals or objectives against which they evaluate the performance of their operations. If performance falls below their pre-established goals they will question the effectiveness of their feed input. In addition, the influence of other farmers and effective marketing action can have a similar effect by causing the goals themselves to be changed. In both cases the result will be the creation of a problem in the farmer's mind which will lead him to the second stage of the decision process, the search for information.

In the search stage the farmer seeks information he can use in evaluating available alternatives and the probable consequences of selecting each of these. Survey results in this area showed considerable

variation among farmers in the extent to which they engage in various searching activities. This variation can largely be explained by four factors: perceived difference among brands, attitudes toward searching, the importance of purchase, and country of origin.

As a consequence of his searching activities the farmer accumulates a considerable amount of information he will subsequently use in evaluating alternative product offerings to arrive at a purchase decision. In the evaluation stage he then compares this information with certain decision criteria, and depending on the outcome either re-establishes his original goals and continues to purchase his present brand, or switches to a different brand and supplier.

5.2. Marketing Implications

The results of this research have important implications for the development of effective programs in marketing to farmers. These implications will be discussed in the remainder of this paper. This discussion will be organized around the four major stages of the decision process model.

5.2.1. Problem Recognition

From a marketing point of view, problem recognition is the key stage in the farmer decision process. It is obvious that a farmer will not even consider a change until he first recognizes some problem with his present brand or supplier. Growth-oriented marketing programs must take this fact into account and contain elements which will stimulate

problem recognition on the part of potential customers. The results of this research provide some clues as to how this might be done.

To look at various methods which might be used to stimulate problem recognition we need to look first at the factors which cause problems to be recognized. Five such factors were identified and evaluated in this research. These were cost and performance, past experience, quality and service, other growers, and marketing action. In each case results showed that these factors were sources of problems for at least some farmers. As a result, it would appear that the marketer has a number of alternative ways to stimulate problem recognition. On the one hand he can motivate problem recognition directly by emphasizing the profit-making potential of his feed or through using the promise of lower feed cost and better feed conversion. On the other hand, he can use a more indirect approach by attempting to influence his present customers to promote his feed, or by trying to evoke problem recognition through sales force action.

Each of the above alternatives have advantages, disadvantages, and specific costs. Direct stimulation of profit motives appears to be an extremely viable choice, but given the perceived risk of a decision to change feeds, most growers will need to know why profits would be higher if they used another feed. This problem can be partially solved by providing customers with the results of other growers, but the problem here is that these reports are not always believed and they are expensive to collect and present. However, given the credibility and respect attributed to "other growers" any efforts to integrate these producers into a

company's overall marketing program should prove to be successful. Efforts in this direction, such as the use of testimonial advertising, are being made by some firms, but there appears to be much room for additional innovative approaches in this area.

5.2.2. Search for Information

Once a problem has been recognized the farmer seeks information which will help him evaluate alternative solutions to this problem. Like problem recognition, this stage is also critical from a marketing point of view, primarily because it is at this time that the farmer identifies the alternatives he will seriously evaluate. Unless a brand is among those identified, it will have no chance of being selected during the purchase decision stage. Thus despite the claims of farmers that they are not influenced by advertising, there is little doubt that, if properly timed and executed, advertising is essential in creating the type of awareness needed at this stage of the decision process.

Results of this research showed a great deal of variability among farmers in the extent to which they participated in various searching activities. While some farmers indicated substantial participation in these activities, the participation of other farmers was minimal. It is this latter group of farmers who are of particular interest. Although other factors are involved, in general it seems that their lack of interest in searching is a result of their basic attitude that there isn't enough difference among brands and suppliers to make it worthwhile to spend time,

and perhaps money, shopping around. For these farmers, the ultimate result is that much of their buying becomes habitual.

What can a firm do, if anything, about this situation? This of course depends upon the objectives and current situation of the firm. If the firm enjoys a large clientele of customers who continue to buy their product more or less habitually, and this firm is relatively happy with its present market position, the obvious answer is to do nothing. On the other hand, if the firm wishes to grow by causing farmers to switch from other brands to theirs, then it appears they will have to change the prevalent attitude among some farmers that all suppliers are about the same. To accomplish this, two courses of action appear to be possible. First, they could attempt to develop more innovative differences in their product and service offerings; or second, they could attempt to develop more effective methods of communication with farmers to make them more aware of differences which already exist. Regardless of the method chosen, it is clear that no growth-oriented marketing program will have much effect until this basic attitude is changed.

5.2.3. Evaluation of Alternatives

Using information obtained during the search stage, the farmer next evaluates the alternatives he has identified in light of certain decision criteria. Research results here have shown that economic or profit-oriented decision criteria are the most important and most commonly used. However, other criteria such as feed mill service and brand reputation

can also be important, particularly if the farmer considers the economic criteria to be more or less similar among brands and suppliers. Thus again we see the importance of establishing and communicating product and service differences as a basic element of any marketing program.

5.2.4. Purchase Decision

The outcome of any decision process is a purchase decision of some kind. Although this decision can result in the farmer switching to a new brand and supplier or continuing to use his present source, research results show that the latter course is the most frequently chosen.

In developing marketing plans careful attention should be given to the differences between loyal and non-loyal farmers. This distinction is important for two major reasons. First, there is an obvious difference between these groups in terms of the amount of marketing effort which will be required to persuade them to change feed sources. Because of their apparent satisfaction with their present supplier and their aversion to change, loyal farmers will require much greater marketing effort than non-loyal farmers. And second, because of other differences in attitudes and characteristics, the type of effort required may also be different.

Results of this research have shown substantial differences between loyalty groups in certain purchasing behaviour and socio-economic characteristics. These differences are important in determining the type of marketing programs which can be successfully used for each group.

Of all the differences, the most important were those associated

with target profit levels, and the operator's age and business experience. For each of these characteristics striking differences were observed between loyalty groups.

First in terms of target profit levels, the results showed that producers with higher level profit targets tended to be switchers, while those with lower level targets were in general fairly loyal to dealers and brands. This of course is an important finding, and not at all unexpected. From a marketing point of view it underscores the overriding importance of consistent product performance in retaining satisfied customers. Without this type of consistent performance, the large group of growers with high target profits will be quick to recognize a problem with their feed input and switch suppliers.

In terms of the two highly related characteristics, age and business experience, distinct differences were also found between the two loyalty groups. For these characteristics results showed that younger, less experienced farmers tended to switch frequently while older, more experienced farmers were fairly loyal to particular brands and suppliers.

As an additional part of this analysis the detailed purchasing records of the sample farmers were carefully analyzed to detect changes in brand loyalty over time. This analysis revealed that almost without exception, during the first few years of their careers, producers showed a definite tendency to switch frequently from one brand of feed to another. Then, after a period of time, supposedly after they had found the right dealer and brand, they tended to stick with this source of supply for a

long period of time. The significance of this finding is clear. Very simply it is that any marketing program designed to achieve sales growth must be attractive to, and oriented toward, the younger farmer with less experience. It is the farmers in this market segment more than any other who are not only more willing to change, but also who may become more loyal customers in the future.

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