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Important Performance Analysis for Fertilizer Dealers

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IMPORTANT PERFORMANCE ANALYSIS
FOR
FERTILIZER DEALERS

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IMPORTANT PERFORMANCE ANALYSIS

FOR

FERTILIZER DEALERS

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FOREWORD

This report is the first in a series of three reports which focuses on the fertilizer product/service needs, buying behavior, attitudes, and preferences of farmers and the manner in which this information can be used in developing product, price, promotion, and distribution policies for manufacturers and dealers. Attention is also given to identifying and evaluating segments in the fertilizer market and variations in the market programs for those segments.

The titles of all the reports in this current series are:

1) IMPORTANCE PERFORMANCE ANALYSIS FOR FERTILIZER DEALERS
2) USE OF FERTILIZER PRODUCTS AND SERVICES BY INDIANA FARMERS
3) INDIANA FARMERS' BEHAVIOR AND PREFERENCES IN PURCHASING FERTILIZER

This report was made possible with the cooperation and assistance of many people and organizations. To all we are most grateful.
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<td>11</td>
</tr>
</tbody>
</table>
1.0 INTRODUCTION

Recent agricultural statistics estimate that Indiana farmers spend in excess of $300 million annually on fertilizers for various crops. In terms of total farm operating expenses, the expenditure on fertilizer is exceeded only by machinery and purchased feeds. Thus, the fertilizer purchase represents a major cost component for most Indiana farmers, and as a consequence, has supported the development of an important industry to supply fertilizer products and services to farmers.

The objective of the research reported in this paper, and others in the series, is to develop information to assist fertilizer manufacturers and dealers to develop effective marketing programs to serve the farm market. The study, therefore, focuses on the fertilizer product/service needs, buying behavior, attitudes, and preferences of farmers, and the manner in which this information can be used to develop product, price, promotion, and distribution policies for manufacturers and dealers. In addition, attention is given to identifying and evaluating segments in the fertilizer market, and variations in marketing programs for each segment.

The objective of this report is to discuss a new method fertilizer organizations can use to evaluate the marketing performance of their operations. The method, which is called Importance-Performance Analysis, endeavors to measure the importance farmers attach to a number of dealership attributes, and their perceptions of the extent to which different organizations possess these attributes. Results can be used to determine areas of strengths and weaknesses in an organization's marketing program as well as providing guidelines to aid in making modifications to marketing efforts.
1.1 RESEARCH DESIGN

The data for this study was obtained through a survey of Indiana farmers. This section describes the survey methodology in terms of (1) questionnaire design, (2) interviewing procedures, and (3) sampling procedures. In addition, a section is included describing the general characteristics of the sample.

1.2 Questionnaire Design

The primary objective in the organization and design of the questionnaire was to procure information relating to the product and service needs of farmers, their buying habits and preferences, and various farm and farmer characteristics to be used in defining market segments. Prior to final use, the questionnaire was pretested thoroughly under actual field conditions.

1.3 Interviewing Procedures

Agricultural students from Purdue University were hired to carry out the field work for this study. Selection of prospective interviewers was based on such factors as working knowledge of fertilizer, personality, previous interviewing experience, and location. All interviewers were trained in the general techniques of interviewing and the specific requirements of this project prior to making farm calls.

Before the farmers in the sample were interviewed, they received a letter explaining the nature of the project and seeking their cooperation. The interviewers were instructed to call each farmer on their list, arrange for an appointment, and visit the farmer for an interview. The interviews were conducted at the respondent's farm during the months of June and July, 1979. The average time for completing an interview was approximately one hour, with some taking as long as two and one-half hours and a few as short as thirty minutes. During the period when interviews were being conducted, regular telephone contact was maintained with the interviewers to provide additional farmer names when required, and to help solve any difficulties experienced by the interviewers.

1.4 Sampling Procedures

The sampling plan used in this research consisted of four steps: determination of sample size, selection of primary sampling units, allocation of the sample to sampling units, and respondent selection.

1.4.1 Sample Size

An overall sample of 150 respondents, or 75 per county, was chosen for this research. The primary basis for this number was an assessment of the estimated cost per interview in relation
to the funds available for data collection. Although, from a statistical point of view, 75 observations per sampling unit is not excessive, it does provide reasonable accuracy at a reasonable cost. The counties were Jasper and Decatur.

Jasper County was selected to represent the cash crop area of Indiana. This county is a major producer of corn and soybeans in the State. Decatur County, on the other hand, was chosen to represent a mixed farming area. In addition to its relatively heavy concentration of livestock, this county is also an important producer of corn and soybeans.

1.4.2 Allocation to Sampling Units

The sample of 150 farmers was allocated equally to the two counties. This decision was based on the fundamental principle that a sample should be allocated in such a way that sampling units with greater variability receive a larger number of observations. Since no reliable information exists on the variability of fertilizer purchasing in the two counties, it was felt that an equal allocation would maximize the amount of accuracy of information obtained.

1.4.3 Respondent Selection

Within the two representative counties the population of interest was defined as all farmers who purchased some fertilizer and grew at least 100 acres of crops in 1979. These restrictions were imposed to insure that the sample did not contain farmers who were either very small fertilizer users, or farmers who used no fertilizer at all.

The population of farmers that satisfied the above requirements were stratified into the following acreage groups: 100 to 259 acres, 260 to 499 acres, and greater than 500 acres. Within the counties, a quota was established for each stratum: 25 percent of the 75 farmers to be interviewed in each county were to be from the 100 to 259 acre group; 25 percent from the 260 to 499 acre group; and 50 percent from the greater than 500 acre category.

Given the above population definition, a listing of farmers divided into the desired acreage strata was obtained from local ASCS offices. Strict random selection procedures were then used to select samples in the two counties. Although the research plan specified 75 interviews per county, larger samples were selected to be contacted for personal interviews. The larger samples were drawn so that each interviewer had more names than required in the event certain farmers could not be reached or would not cooperate.

1.5 Sample Profile

Table 1.1 presents a description of the sample in terms of size of purchase, farm size (acres and gross income), farm
TABLE 1.1
SAMPLE PROFILE, INDIANA, 1979

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Percent of Farmers</th>
<th>Characteristics</th>
<th>Percent of Farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE OF PURCHASE 1</td>
<td></td>
<td>FARM TYPE 2</td>
<td></td>
</tr>
<tr>
<td>Under 50 Tons</td>
<td>21</td>
<td>Cash Crop</td>
<td>30</td>
</tr>
<tr>
<td>51 - 100 Tons</td>
<td>28</td>
<td>Livestock</td>
<td>17</td>
</tr>
<tr>
<td>101 - 200 Tons</td>
<td>22</td>
<td>Mixed</td>
<td>53</td>
</tr>
<tr>
<td>Over 200 Tons</td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL ACRES</td>
<td></td>
<td>AGE</td>
<td></td>
</tr>
<tr>
<td>100 - 400 Acres</td>
<td>41</td>
<td>Under 35</td>
<td>23</td>
</tr>
<tr>
<td>400 - 700 Acres</td>
<td>34</td>
<td>35 - 44</td>
<td>24</td>
</tr>
<tr>
<td>Over 700 Acres</td>
<td>24</td>
<td>45 - 54</td>
<td>25</td>
</tr>
<tr>
<td>GROSS INCOME</td>
<td></td>
<td>Over 55</td>
<td>27</td>
</tr>
<tr>
<td>Less than $50,000</td>
<td>17</td>
<td>COUNTY</td>
<td></td>
</tr>
<tr>
<td>$50,000 - $100,000</td>
<td>33</td>
<td>Jasper</td>
<td>50</td>
</tr>
<tr>
<td>$100,000 - $200,000</td>
<td>26</td>
<td>Decatur</td>
<td>50</td>
</tr>
<tr>
<td>$ Over $200,000</td>
<td>24</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 All purchase quantities are reported in short tons.
2 Farmers were placed into farm type categories based on the percentage of gross income derived from different enterprises. Cash crop farmers were those who reported 100 percent of their gross income from the sale of various crops; livestock farmers were those who reported 75 to 100 percent of their gross income from the sale of livestock; mixed farmers were those who reported some income from the sale of crops and some from the sale of livestock, but less than 75 percent
type, age of the farmer, and location (county). To evaluate
the representativeness of the sample, the distributions shown
in this profile should be compared with similar distributions
for the entire population of Indiana fertilizer purchasers.
This is not possible, however, because the type of information
required is not available. As a result, there is no objective
basis on which the representativeness of the sample can be determined.
Instead, this can be done only on the basis of any individual's
intuitive estimate of the "reasonableness" of the obtained distributions.
2.0 FARMER EVALUATION PROCESS

In making a fertilizer dealer choice, farmers evaluate alternatives in terms of various dealer characteristics or attributes. For instance, a farmer may compare alternative suppliers in terms of such attributes as: price, location, product availability, and certain personal characteristics of the dealer himself. To do this the farmer actually goes through a mental process which consists of three interrelated steps. First, the farmer determines which criteria will be used in the evaluation process, and the relative importance of each in arriving at a purchasing decision. Second, the farmer evaluates alternative dealers in terms of these criteria and forms what are called dealer beliefs. Finally, the farmer ranks the alternatives and selects the dealer with the highest overall performance.

To illustrate the evaluation process, an example is provided in Figure 2.1. For simplicity of presentation, only five attributes and two dealers are considered whereas in reality many more may be involved.

In this example, the farmer used the attributes of fertilizer prices, dealer location, custom application services, sales and service staff, and product availability in his evaluation process. He also determined the relative importance of each in making a dealer selection decision. This is shown by the numbers associated with each attribute, and indicated that for this farmer price is the most important attribute followed by sales and service staff, custom application services, product availability, and dealer location.

The second part of Figure 2.1 illustrates the formation of dealer beliefs. As mentioned before, dealer beliefs are simply the farmer's perceptions of the extent to which alternative dealers possess each attribute. In the figure this is shown for Dealer A and Dealer B by their location between two descriptive statements. For example, it is apparent that the farmer felt
FIGURE 2.1 DEALER EVALUATION PROCESS

ATTRIBUTE IMPORTANCE:

<table>
<thead>
<tr>
<th>ATTRIBUTES</th>
<th>RATINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prices Paid</td>
<td>135</td>
</tr>
<tr>
<td>Proximity to Farm</td>
<td>85</td>
</tr>
<tr>
<td>Custom Application Service</td>
<td>105</td>
</tr>
<tr>
<td>Interested and Informed Staff</td>
<td>110</td>
</tr>
<tr>
<td>Product Availability</td>
<td>100</td>
</tr>
</tbody>
</table>

DEALER BELIEFS:

1 2 3 4 5 6 7

High Prices A B Low Prices
Not Close To Farm B A Close To Farm
Poor Custom Application Job A B Good Custom Application Job
Staff Not Interested Or Informed B A Staff Interested And Informed
Product/Service Seldom Available When Needed A B Product/Service Always Available When Needed

PREFERENCES:

Dealer A = 4(135) + 6(85) + 1(105) + 7(110) + 4(100) = 2325
Dealer B = 6(135) + 5(85) + 2(105) + 6(110) + 6(100) + 2705
that Dealer B was superior in terms of prices, custom application services, and product/service availability, while Dealer A was superior in terms of location and sales and service staff.

The final part of Figure 2.1 illustrates the formation of dealer preferences. The point of view taken here is that a farmer's overall preference is determined by both attribute importance and dealer beliefs. In this example, overall preferences for each dealer are calculated by multiplying the importance ratings by the dealer beliefs and summing over all attributes. Because the overall preference for Dealer B is larger than the Dealer A, we would expect the farmer to select Dealer B as his major supplier.

Importance-Performance Analysis is based on the evaluation process just described. It attempts to measure the relative importance farmers attach to evaluation criteria and the extent to which they perceive various organizations possess these criteria. The remainder of this report discusses an application of this technique to fertilizer dealers. Data for this application were obtained in a survey of 150 Indiana farmers in June, 1979. Details of this survey are presented in an earlier paper in this series.

2.1 **Attribute Importance**

Each farmer was asked to evaluate the importance of nine dealer attributes in making a dealer selection decision. The attributes considered, and their relative importance, are shown in Figure 2.2.

The scale illustrated in Figure 2.2 is an interval scale developed by having respondent assign points to various attributes in relation to a fixed position. Operationally, this was done by asking the respondent the following question:
FIGURE 2.2  IMPORTANCE OF DEALER ATTRIBUTES, INDIANA, 1979

140
130
QUALITY OF CUSTOM APPLICATION SERVICE
120
CONDITION OF DEALER OWNED APPLICATION EQUIPMENT
CONCERN FOR FARMER NEEDS
110
GOOD WORKING RELATIONSHIP WITH DEALER
PRICES PAID
100
INTERESTED AND INFORMED STAFF
PRODUCT/SERVICES AVAILABLE WHEN NEEDED
90
PROXIMITY TO FARM
80
70
APPEARANCE OF FACILITIES
60
<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>ALL FARMERS</th>
<th>SIZE OF PURCHASE (tons)</th>
<th>TOTAL ACRES</th>
<th>GROSS INCOME ($000)</th>
<th>FARM TYPE</th>
<th>AGE</th>
<th>COUNTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROXIMITY TO FARM</td>
<td>86</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>GOOD WORKING RELATIONSHIP WITH SUPPLIER</td>
<td>112</td>
<td>100-200 over 200</td>
<td>400-700 over 700</td>
<td>50-100 100-200 over 200</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APPEARANCE OF FACILITIES</td>
<td>72</td>
<td>*</td>
<td>*</td>
<td>35-44 45-54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRICES PAID</td>
<td>111</td>
<td>over 200 over 700</td>
<td></td>
<td>50-100 100-200 over 200</td>
<td>**</td>
<td></td>
<td>COUNTY &quot;A&quot;</td>
</tr>
</tbody>
</table>
TABLE 2.1 (continued)
FARMER DIFFERENCES IN THE IMPORTANCE OF DEALER
ATTRIBUTES, INDIANA, 1979

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>ALL FARMERS</th>
<th>SIZE OF PURCHASE (tons)</th>
<th>TOTAL ACRES</th>
<th>GROSS INCOME ($000)</th>
<th>FARM TYPE</th>
<th>AGE</th>
<th>COUNTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCERN FOR FARMER NEEDS</td>
<td>116</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>35-44</td>
<td>45-54</td>
</tr>
<tr>
<td>CONDITION OF APPLICATION</td>
<td>117</td>
<td>Under 400</td>
<td>Under 400</td>
<td></td>
<td></td>
<td>35-44</td>
<td>45-54</td>
</tr>
<tr>
<td>EQUIPMENT</td>
<td></td>
<td>400-700</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTERESTED AND INFORMED STAFF</td>
<td>104</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>35-44</td>
<td>45-54</td>
</tr>
<tr>
<td>QUALITY OF CUSTOM SERVICE</td>
<td>126</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>35-44</td>
<td>45-54</td>
</tr>
</tbody>
</table>
Listed in the Exhibit are several factors farmers look for in selecting a fertilizer supplier. To determine the relative importance of these factors I would like for you to compare each of them to the first factor "product/service available when needed." To do this, start by assigning 100 points to "product/service available when needed," then if you feel one of the other factors is twice as important as "product/service available when needed," you would assign 200 points to that factor; if half as important, 50 points; or if slightly more important, 105 points. Now remembering that the first factor is worth 100 points, please assign points to the other factors based on their relative importance to you in selecting a fertilizer supplier.

When averaged over all farmers, the results of this procedure clearly show that farmers consider the quality of custom application services to be the most important factor in selecting a fertilizer supplier. This is followed at some length by a group of factors covering application equipment, prices paid, and personal characteristics of the dealer and his staff. Of considerably less importance are proximity to the farm and appearance of facilities.

Table 2.1 considers farmer differences in the importance of dealer attributes. Results here show that larger farmers rate working relationship with supplier, appearance of facilities, and price competitiveness to be more important in making their dealer selection decision than other farmers. Likewise, farmers in the 35-44 and 45-54 age categories consider appearance of facilities, concern for farmer needs, condition of application equipment, interested and informed staff, and quality of custom application services to be significantly more important than other farmers.

2.2 Dealer Beliefs

Information on dealer beliefs was obtained by having each respondent evaluate the dealer he was currently using as well as one other dealer he was familiar with in the area. The evaluations were made on a series of
FIGURE 2.3 DEALER BELIEFS FOR FERTILIZER ORGANIZATIONS
INDIANA, 1979

PRODUCT/SERVICES
SELDOM AVAILABLE
WHEN NEEDED

3 4 5 6 7

NOT CLOSE TO FARM
CLOSE TO FARM

GOOD WORKING
RELATIONSHIP
WITH DEALER

FACILITIES HAVE
POOR APPEARANCE
FACILITIES HAVE
GOOD APPEARANCE

HIGH PRICES
LOW PRICES

NOT CONCERNED
WITH FARMER
NEEDS
CONCERNED
WITH FARMER
NEEDS

POOR APPLICATION
EQUIPMENT
GOOD APPLICATION
EQUIPMENT

STAFF NOT
INTERESTED OR
INFORMED
STAFF INTERESTED
AND INFORMED

POOR CUSTOM
APPLICATION JOB
GOOD CUSTOM
APPLICATION JOB

Dealer A
Dealer B
Dealer C
Dealer D
scales such as shown in Figure 2.1 using the same nine factors discussed in the previous section.

Summary results of the dealer evaluations are shown in Figure 2.3 for the retail outlets of four major fertilizer organizations operating in the survey area. These organizations were selected for individual analysis because each was evaluated by at least 20 farmers. Organizations evaluated by less than 20 farmers were not included because it was felt that the results might be misleading.¹

The results in Figure 2.3 show many similarities in farmers' evaluations of four suppliers. The only differences which are statistically significant are in the areas of proximity, appearance of facilities, prices paid, concern for farmer needs, and condition of dealer supplied application equipment. In general, all four suppliers were rated favorably on each attribute except prices paid and condition of application equipment.

2.3 Formation of Preferences

The third step in the evaluation process consists of ranking alternatives and selecting the dealer with the highest overall preference. Although various ranking procedures have been proposed, the most widely held view of this process is that depicted by the expectancy-value model. This model states that "the consumer gives weight to every brand (dealer) belief and its attribute importance in arriving at a global attitude (preference) toward each brand (dealer)". This process is depicted in the lower portion of Figures 2.1 which shows the manner in which dealer beliefs are weighted by attribute importance ratings to obtain overall attitudes on preferences for each dealer.

¹ In fact, twenty observations per company is not a large sample size. The reader should therefore interpret the results for those organizations with smaller sample sizes with a great deal of caution. The number of observations per company is: Dealer A, 75; Dealer B, 28; Dealer C, 20; Dealer D, 34.
Because of time limitations, it was not possible to have farmers evaluate more than two dealers during the personal interviews. As a result, data is available only for the dealer currently being used and one alternative. Using this information, and the procedure outlined above, overall attitude scores were calculated for both dealers. If the process described by the expectancy-value model is indeed correct, and farmers do make dealer selection decisions based on overall attitudes or preferences, then the calculated attitude score for the dealer currently being used should be larger than the corresponding score for any alternative. These two scores were calculated and compared for each farmer with the result that in 80 percent of the instances, the calculated attitude score for the dealer currently being used was larger than for the alternative. This result provides important evidence to suggest that farmers do make dealer selection decisions based on their overall attitudes or preferences. It further suggests that efforts to change attitudes can be important because of the close relationship between attitudes and purchasing behavior.

3.0 DECISION-MAKING FRAMEWORK

Although the information presented in the previous section is useful to management in making marketing decisions, it can be difficult to simultaneously consider the importance farmers attach to attributes and their evaluation of the performance of individual organizations on these attributes. Consequently, a manager needs a framework which considers these two dimensions at the same time, and provides a systematic method to evaluate changes in marketing programs. Such a framework is provided by an Importance-Performance Chart.

Figures 3.1 through 3.4 are Importance-Performance Charts for the four Indiana fertilizer organizations discussed in the previous section. The purpose of these charts is to present the importance and performance ratings for each organization simultaneously in order to develop priorities for changes
in marketing programs.

Construction of an Importance-Performance Chart involves the following simple procedure: (1) determine the mean importance and performance ratings for all organizations included in the analysis, (2) locate the intersecting lines at the industry means, and (3) plot each attribute on the graph at the point corresponding to its importance rating and performance evaluation.

The result of this procedure is a chart containing four quadrants, each of which has different implications for marketers. The upper right-hand quadrant contains those attributes which are considered important to farmers and for which the organization has received relatively low ratings. Considering both of these dimensions together, this quadrant isolates attributes which are candidates for High Priority Improvements. The upper left-hand quadrant also contains attributes for which the organization has received fair to poor ratings, but which are not as important to farmers. As a result, this quadrant contains attributes which should be considered for Low Priority Improvements. The two lower quadrants represent situations where the organization is rated high on attributes which are considered either relatively important or relatively unimportant. In the first case, the quadrant is called Maintain Performance, while in the second case it is described as Possible Overkill.

To illustrate how an Importance-Performance Chart can be used to facilitate marketing decision-making, consider Figure 3.1 which summarizes the analysis for Dealer A. This chart shows that three characteristics of Dealer A retail outlets fall into the High Priority Improvements area. These three characteristics, prices, application equipment, and custom application services, are in this area because they are considered important by farmers, and farmers evaluated Dealer A retail outlets as having relatively poor performance on these attributes. As a
FIGURE 3.1 IMPORTANCE – PERFORMANCE CHART FOR DEALER "A"

LOW PRIORITY IMPROVEMENTS

FAIR TO POOR PERFORMANCE

HIGH PRIORITY IMPROVEMENTS

・Prices

CUSTOM APPLICATION

Application Equipment

IMPORTANT

UNIMPORTANT

・Facilities

・Proximity

・Staff

・Concern for Needs

・Working Relationship

・Product/Service Available

POSSIBLE OVERKILL

EXCELLENT PERFORMANCE

MAINTAIN PERFORMANCE
FIGURE 3.2  IMPORTANCE - PERFORMANCE CHART FOR DEALER "B"

LOW PRIORITY IMPROVEMENTS

● Facilities

UNIMPORTANT

FAIR TO POOR PERFORMANCE

● Staff

CUSTOM APPLICATION

HIGH PRIORITY IMPROVEMENTS

● Prices

CONCERN FOR NEEDS

EXCELLENT PERFORMANCE

● Proximity

● Product/Service Available

APPLICATION EQUIPMENT

● Working Relationship

POSSIBLE OVERKILL

MAINTAIN PERFORMANCE
FIGURE 3.3 IMPORTANCE - PERFORMANCE CHART FOR DEALER "C"

LOW PRIORITY IMPROVEMENTS

FAIR TO POOR PERFORMANCE

HIGH PRIORITY IMPROVEMENTS

UNIMPORTANT

• Facilities

IMPORTANT

• Prices
• Application Equipment
• Staff
• Custom Application

• Proximity

PRODUCT/SERVICE AVAILABLE

• Product/Service Available

• Concern for Need

POSSIBLE OVERKILL

EXCELLENT PERFORMANCE

MAINTAIN PERFORMANCE

WORKING RELATIONSHIP
result, efforts to change the location of these attributes on the chart can be considered high priority changes.

An important issue arises in considering how to change the location of any attribute on the chart. Considering the attribute prices paid, for example, it is obvious that management can attempt to move this attribute to the left into the low priority improvements area, or down into the maintain performance area. To move to the left requires convincing farmers that the attribute itself is not so important, while to move the attribute down requires changing farmers' perceptions of the performance of a particular organization on the attribute. In the case of prices paid this amounts either to changing farmers' general perception that prices are a very important attribute in selecting a fertilizer dealer, or to lowering prices. Obviously, management must carefully consider all the consequences of either approach prior to making any decision in this area.

Those attributes falling into the low priority improvements area are those for which the organizations received fair to poor performance ratings, but are relatively unimportant to farmers. As a result, efforts to improve performance on any attributes falling into this area can produce positive changes in overall attitudes which in some cases may be enough to cause farmers to make dealer changes. The impact of efforts in this area, however, will not be as great as in the high priority improvements area.

In general, all the attributes falling into the bottom half of the graph are those for which the organization received better than average performance ratings. Those on the right side represent more important attributes, and therefore, are in the maintain performance quadrant. It should be pointed out, however, that despite the fact that performance is basically satisfactory in these areas does not mean that improvements cannot be made. Indeed, in the
case of Dealer A in Figure 3.1, the attribute, interested and informed staff in the maintain performance quadrant, is positioned very close to the high priority improvements area, and therefore, could easily become a problem if not carefully watched. Efforts to improve farmers evaluation of attributes in this quadrant, and in so doing move them lower on the chart, can be important.

Finally, the possible overkill quadrant, as the name implies, contains attributes which are relatively less important to farmers, but for which the company has received very favorable evaluations. In other words, in this area, the organization is doing very well on attributes farmers consider relatively less important. As a result, management may want to consider transferring resource from this area to any one of the other three areas. For example, in the case of Dealer A, if management had a certain amount of funds which could be spent improving facilities or application equipment, this analysis indicates that improving the condition of application equipment would result in the largest change in overall attitudes and ultimate purchase behavior.

4.0 SUMMARY AND CONCLUSIONS

The purpose of this paper has been to discuss Importance-Performance Analysis, a new method fertilizer organizations can use to evaluate the performance of their operations and plan new marketing programs. This was done by first discussing the farmer evaluation process upon which Importance-Performance Analysis is based, and then reporting an application of this technique to Indiana retail fertilizer dealer organizations. The major conclusions and their implications for the development of effective marketing programs are:

(1) In making a fertilizer dealer choice, farmers evaluate alternatives in terms of various dealer characteristics or attributes. This research showed quality of custom application services is the most important attribute
that farmers consider follow closely by the condition of application equipment, prices paid, and personal characteristics of the dealer and his staff.

(2) The relative importance of dealer attributes is similar for all types of farmers with the exception that larger farmers rate working relationship with supplier, appearance of facilities, and prices paid to be more important than other farmers.

(3) All of the dealer organizations received relatively favorable evaluations from farmers. The lowest ratings were for prices paid and condition of dealer application equipment, indicating that farmers perceive the industry as a whole can improve in these areas.

(4) Although most organizations received favorable overall evaluations, some differences emerged in specific attributes. The areas where the largest dealer differences occurred were in prices paid and condition of dealer application equipment as well as in certain personal characteristics of the dealer such as concern for farmer needs.

(5) Available evidence suggests that farmers do make dealer selection decisions based on their overall attitudes or preferences. This means that efforts to change attitudes can be important because these changes will be translated into changes in purchasing behavior.

(6) By establishing priorities, Importance-Performance Charts can be very useful tools to help marketing managers evaluate current efforts and plan new marketing programs. These charts also illustrate the basic idea that marketers can change the location of any attribute by changing either the importance farmers attach to the attribute, or farmers' evaluation of the performance of the organization on that attribute. Careful analysis is required to determine the best course of action. In an area such as prices
paid, the results of additional analysis may very well show that changing the
importance of this attribute is much preferred to actually changing prices,
whereas in an area such as custom application, the opposite may be the case.

(7) An Importance-Performance Chart also helps management determine the
types of tradeoffs he can make in his marketing program. Usually these trade-
offs involve shifting resources from attributes in the possible overkill
quadrant to either the high or low improvement quadrants of the chart.

(8) Importance-Performance Analysis can and should be used on an on-going
basis by any organization. After changes are made as a result of the first
analysis, a subsequent analysis should be undertaken to measure the effects of
the original changes. If, for example, the changes were designed to improve
the quality of custom application services, a follow-up study will show if
this had the desired impact. If this is done on a regular basis over a period
of time, it will help management learn the likely effects of alternative
courses of action, and therefore improve management's ability to plan effective
marketing programs.

(9) Finally, the results discussed in this paper summarize the evaluations
of farmers for entire dealer organizations. As long as there is a great deal of
similarity among outlets within dealer organizations, this is a useful approach.
If, however, this is not the case, and outlets within the same organization
differ in important ways, then the unit of analysis should be the local dealer
instead of the entire dealer organization. This would obviously be a more
costly approach, but a necessary approach in some circumstances.