Psychographic Segmentation of the Farm Market

Thomas F. Funk
Maryse J. Hudon

This article uses psychographic clustering techniques to segment the market for farm supplies. Twenty-three psychographic dimensions produced four clusters: leading edge entrepreneurs, progressive farmers, traditionalists, and the marginal majority. The segments were found to differ in several important respects, but principally in terms of adoption behavior, opinion leadership, and management capabilities.

INTRODUCTION

The basic concept of market segmentation is that in any market there are likely to be important differences among buyers in terms of their product and service needs, buying behavior, and attitudes. These differences imply that different marketing programs may be needed to effectively meet the needs of different buyers. As a result, if buyers with similar needs, buying behavior, and attitudes can be identified and grouped into segments, marketers can focus on these specific groups by developing individualized programs for each group. The result often is a higher level of satisfaction among buyers, and greater effectiveness in company marketing and communication programs.

Over the years many segmentation schemes have been developed. For the most part these schemes fall into two distinct categories—a priori segmentation and cluster-based segmentation.[1] A priori segmentation starts by establishing groups

---

Thomas F. Funk is Professor of Agricultural Economics and Business, University of Guelph, Guelph, Ontario, Canada.

Maryse J. Hudon is Marketing Research Associate, Kraft Foods of Canada, Montreal, Quebec.

Agribusiness, Vol. 4, No. 2, 119-141 (1988)

CCC 0742-4477/88/020119-23$04.00

that differ with respect to some purchase characteristic such as frequency or size of purchase. Various demographics are then used to describe market segments. Although this approach can provide useful insights into the nature of most markets, its major problem is its lack of focus on the person making the purchase decision.

In contrast to the a priori method, the number and type of segments in cluster based segmentation are not known in advance. Rather, the segments evolve from clustering respondents according to similarities in personal variables such as attitudes, interests, opinions, and benefits sought. The latter approach provides considerable insight into the nature of the person making a purchase decision, and thus is particularly helpful in guiding the development of overall marketing and communication programs.

The research discussed in this article focuses on segmenting the overall market for farm supplies in Ontario. Major emphasis is placed on developing procedures for cluster based segmentation using psychographics. The specific objectives are to:

(1) Determine the relevant psychographic dimensions which can be used to segment the market for farm supplies.
(2) Develop descriptions of the major psychographic clusters in the market.
(3) Determine the relative sizes, media habits, and other characteristics of each segment.
(4) To the extent possible, given the general nature of the research, determine the implications for farm input marketers.

METHODOLOGY

The basic approach used in this research is survey methodology. Four aspects of methodology are discussed in this section—questionnaire design, data collection, sample design, and data analysis.

Questionnaire Design

The first step in this research involved determining relevant psychographic dimensions to be used in market segmentation. These dimensions were developed through consultation with key industry managers and the authors' previous experience in agricultural marketing research. The final list of dimensions included the following factors:

- purchasing criteria
- switching
- sales people
- independence
- work
- adoption
- personal characteristics
- knowledge
- shopping activities
- information sources
- risk
- education
- safety
- opinion leadership
- leadership
- management

- success
- political interest
- social activities
- recreation
- farming philosophy
- status
- family

Once the psychographic dimensions were determined, a suitable questionnaire was developed to measure these factors among farmers. The structured questionnaire consisted of two parts:

(1) One hundred and fifteen psychographic statements carefully designed to measure the above factors.
(2) Demographic information including farm size, farm type, educational level, gross income, sex, marital status, years farming, age, and off-farm work.

Data Collection

Three methods of data collection were considered—mail questionnaire, personal interview, and self-admin:èóEbetter than advice

The actual data collection was performed at various agricultural meetings throughout Ontario during the winter months of 1985. Arrangements were made with meeting organizers to allow agricultural students to visit the meetings, explain the project and questionnaire, distribute questionnaires to farmers, and collect the completed copies. A total of 430 questionnaires were completed in this manner. On average, questionnaire completion took 20 minutes.

Sample Design

The method of sampling had to tie in with the method of data collection. As a result, meetings became the sampling unit instead of respondents. The total population of meetings was developed from information supplied by the Ontario Ministry of Agriculture and Food and various marketing boards and farm organizations. The meetings on the list were classified in terms of geographical area, expected age distribution of attending farmers, the number of farmers expected to attend, and the type of industry (hog, corn, dairy, etc.). The meetings included in the sample were selected subjectively by the authors to be representative of Ontario agriculture. Midway through the data collection period, the sample was compared to the latest Census of Agriculture statistics to determine any discrepancies in key demographic characteristics. Adjustments were then made in the second half to improve the representativeness of the sample.

Once all data collection was completed, the sample demographics were compared to the 1981 Census of Agriculture using chi-square analysis. Results of this analysis are shown in Figures 1, 2, and 3 for type of farm, size of farm, and age.

Figure 1 shows a high degree of similarity between the actual and sample distributions with respect to type of farm. The small observed differences are not significant at the one percent level. Figure 2 shows a fairly pronounced difference between actual and sample distributions with respect to farm size. It is fairly clear

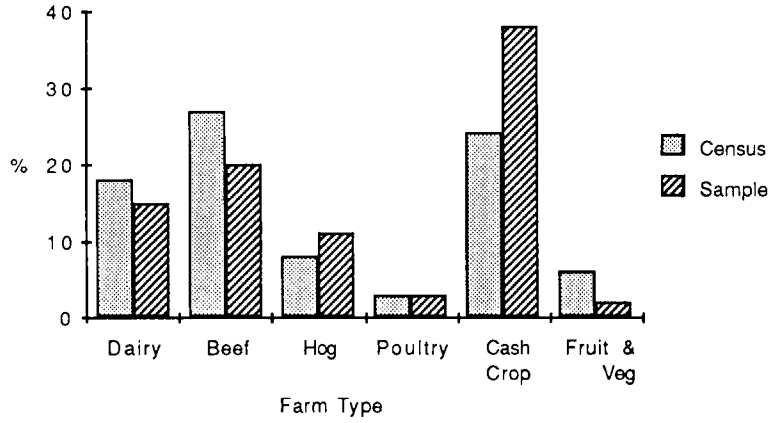

Figure 1. Comparison of Census and Sample Distributions by Farm Type.

that there is a definite under representation of small and medium size farms, and a corresponding over representation of large farms in the sample. This is probably due to the fact that operators of larger farms are more likely to attend farm meetings than operators of smaller farms. Finally, Figure 3 shows that the sample farmers are significantly younger than the total population of Ontario farmers. These differences are significant at the one percent level.

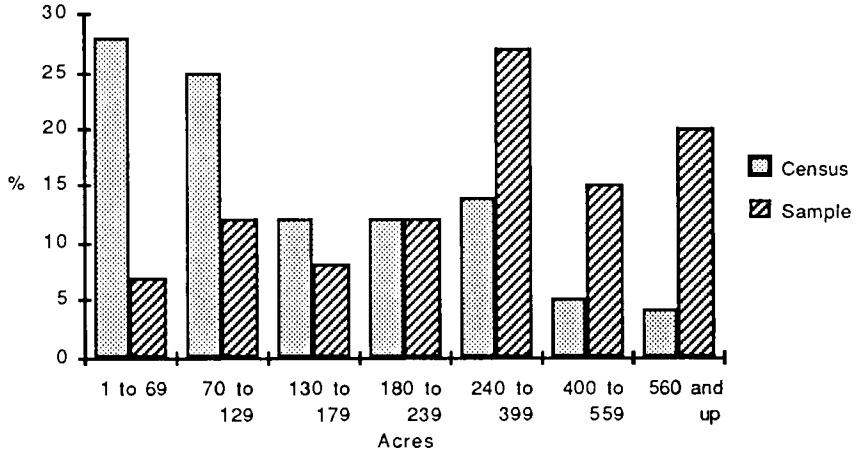

Figure 2. Comparison of Census and Sample Distributions by Farm Size.

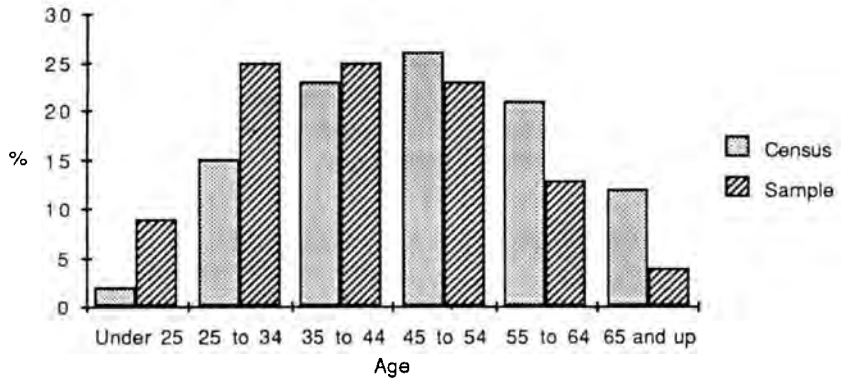

Figure 3. Comparison of Census and Sample Distributions by Age Categories.

Data Analysis

Data analysis consisted of using cluster analysis to form market segments and crosstabulation analysis to investigate differences among segments. The specific type of clustering used in this study was an agglomerative hierarchical technique called Ward's Minimum Variance Method. The Ward method is recommended for many marketing research applications.[2]

The basic idea of the Ward's method is that at any stage in a cluster analysis the loss of information which may result from clustering can be measured by the total sum of squared deviations of every observation from the mean of the cluster to which it belongs. At each step of the analysis union of every pair of clusters is considered, and the two groups whose fusion results in the minimum increase in the error sum of squares are combined. In other words, Ward's method is based on within group variance as opposed to linkage; the two groups whose union gives the least possible increase in pooled within group variance are joined. More specifically:

(1) The procedure begins with N groups, each group comprised of one entity,
(2) At each iteration the number of groups decreases by one through fusion of the two groups whose union represents the least possible increase in within group variance (total within group error sum of squares),
(3) The procedure continues until only one group remains.

In following the above procedure, the researcher can select cluster solutions containing various numbers of groups. The exact number of groups to select is a rather arbitrary decision based on two major factors: the total number of observations in the sample, and the distinctiveness of the profiles which are produced. In terms of the first consideration, a widely used rule-of-thumb is that the maximum number of clusters should be equal to or less than the total sample size divided by 100.[3] In this study the total sample size was 430, therefore the maximum number of clusters which could be interpreted is four. In terms of the second consideration, solutions containing more clusters are only of value if they produce groups which are quite distinct from solutions with smaller numbers of clusters. For example, if in a four cluster solution two of the groups are very similar, then a three

cluster solution would be preferred. Both three and four cluster solutions were computed in this research. The four cluster solution was selected as the most appropriate because it appeared to contain very distinct groups. Only the four cluster solution is reported in the remainder of this paper.

CLUSTER ANALYSIS RESULTS

The four cluster solution is shown in Table I. The descriptive information in this table was developed from cluster means and F-ratios for each of the 115 psychographic statements.[4] Within each major grouping, the statements are arranged in declining order of importance as determined by the F-ratios. The remainder of this section highlights the important characteristics of each cluster.

Cluster Interpretation

One of the more difficult and subjective parts of cluster analysis is interpreting and naming the segments. This can be done only by very carefully reviewing the information with an eye toward generalizing over all the details to form some composite whole. The reader should keep in mind that different people with different backgrounds and experiences can come to somewhat different conclusions. As a result, it is important for each person to review the detailed data in forming an impression or image of the type of farmer included in the segment.

The following discussion highlights the important characteristics of each cluster.

Cluster 1. Cluster 1 is the smallest of the four clusters accounting for just 10% of the total sample. Service and personal knowledge of the dealers are very important purchasing criteria for farmers in this cluster. Farmers in cluster 1 are the most likely to see important quality differences among brands.

Cluster 1 farmers enjoy shopping and do more of it than other farmers. As a result, they are very up-to-date in terms of their product knowledge. Despite their tendency to shop extensively, they are fairly loyal to products which perform well.

In terms of information sources, cluster 1 farmers rate all sources high with the exception of fellow farmers. Information from farm magazines is rated particularly high. Farmers in this group know several salespeople in their community and enjoy visiting with these people.

Cluster 1 farmers are risk takers; they like the uncertainty associated with farming. They do, however, tend to seek confirmation that their decisions are good, and they hold the opinion that they have considerable influence over the things that happen to them. They have very positive attitudes toward education, but also value experience very highly. They definitely do not consider physical work to be the most productive and feel as though their work is very demanding. They are only fairly safety conscious.

In terms of adoption behavior, it is clear that cluster 1 farmers are innovators. They also have all the necessary characteristics to be opinion leaders. They are very well-organized people and very knowledgeable about agriculture.

Cluster 1 farmers are "superior" managers. They frequently seek management advice from accountants, keep excellent records, almost always do a detailed cost analysis before making a major decision, and are very computer-oriented. Most

farmers in cluster 1 have a definite long term plan for their farm. Although there was some feeling in the group that success is associated with owning a lot of assets, there was no support for the idea that success is measured by minimal long term debt. Farmers in cluster 1 consider themselves to be very successful. They are very optimistic about the future and consider farming to be more a business than a way of life.

Table I. Cluster Profile

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Purchasing Criteria				
Importance of price versus service	*Service* more important than price in many cases	*Price* more important than service in many cases	*Service* more important than price in many cases	*Price* more important than service in many cases
Comfort	Some preference for comfort	Some preference for comfort	*Strong* preference for comfort	Some preference for comfort
Dealer a friend	Dealer also a friend	Dealer *not* necessarily a friend	Dealer also a friend	Dealer *not* necessarily a friend
Know dealer well	*Very* important	Important	*Very* important	Important
Closeness	Important	Important	Important	Important
See quality differences among brands	See *major* quality differences among brands	See some quality differences among brands	See some quality differences among brands	See some quality differences among brands
Shopping Activities				
Keep up-to-date on new products	*Very* up-to-date	*Fairly* up-to-date	*Fairly* up-to-date	*Not very* up-to-date
Enjoy shopping	Basically *yes*	More or less	More or less	*Not really*
Visit farm equipment dealers	Fairly *often*	Some	Some	*Seldom*
Clip ads from farm magazines	*Sometimes*	Not very often	*Sometimes*	Not very often
Like to bargain for best deal	Yes	Yes	Yes	*Not really*
Have difficulty in keeping up-to-date	Some	Some	*Not as much*	Some
Make an effort to shop for low cost items	*More* effort	Some effort	Some effort	Some effort

Table I. Cluster Profile *(Continued)*

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Switching				
Do not look for alternatives if satisfied	Will not look if satisfied	Will not look if satisfied	*Will look* around even if satisfied	Will not look if satisfied
Change brands	Mainly when something goes wrong	Mainly when something goes wrong	*Not necessarily only* when something goes wrong	Mainly when something goes wrong
Switch more often than other farmers	Some *Agreement*	Basically disagree	Basically disagree	Basically disagree
Information Sources				
Contact company	*Very often*	Sometimes	Sometimes	*Not very* often
Read government technical publications	*Very often*	Sometimes	Sometimes	*Not very* often
Attend farm shows	*Very often*	Often	Often	Often
Contact university researchers	*Often*	Sometimes	Sometimes	*Not very* often
Get better information from company salesmen than extension people	Basically disagree	Basically disagree	Basically *agree*	Basically disagree
Most information comes from fellow farmers	More strongly disagree	Basically disagree	Basically *agree*	Basically disagree
Get information from radio and TV	Basically disagree	Basically disagree	Basically *agree*	Basically disagree
Get information from farm magazines	*A lot*	Some	Some	Some
Sales People				
Know sales people in area	Some	Some	Some	*Not as many*

Table I. Cluster Profile *(Continued)*

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Sales people should participate in community	Basically agree	Neutral	Basically agree	Neutral
Enjoy visiting with salespeople	Basically *agree*	Neutral	Neutral	Neutral
Women can be good salespeople	Agree	Agree	*Not as much agreement*	Agree
Younger salesmen are better information sources	More disagreement	Disagree	Disagree	Disagree
Risk				
Uncertainty in farming is challenging	Agree to a greater extent	Agree to some extent	Agree to some extent	Agree to a *lesser* extent
Wonder whether decisions were right	Sometimes	Sometimes	*Fairly often*	Sometimes
Attitude toward chores	Do not mind chores	Do not mind chores	Do not mind chores	Do not mind chores
Safety				
Call someone for help if don't understand warning label	Very likely to call someone for help	Might call someone for help	Probably call someone for help	Might call someone for help
Agricultural chemicals are dangerous	Some agreement	Some agreement	*Strong* agreement	Some agreement
Shut engine off before getting off tractor	Seldom	Seldom	*Sometimes*	Seldon
Wear gloves and mask when handling chemicals	Sometimes	Sometimes	Sometimes	*Seldom*
Stress safety to hired help	Strongly agree	Agree	Strongly agree	Agree
Read labels on	Almost always	Almost always	Almost always	Almost always
Adjust machinery while it is running	Almost never	Seldom	Seldom	Seldom

Table I. Cluster Profile *(Continued)*

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Adoption				
Experiment every year with new products/techniques	*Frequent* experimentation	Some experimentation	Very little experimentation	Very little experimentation
Approached by agricultural companies to use products on trial basis	*Quite often*	Very seldom	Very seldom	*Not at all*
Time of adoption	*Quite early*	*Relatively early*	*Later*	*Later*
Hesitate to use new variety before used by others	Some hesitation	Some hesitation	*Less* hesitation	Some hesitation
Go outside area for information	*Frequently*	Occasionally	Occasionally	*Almost never*
Remodel or redesign equipment	*Often*	Occasionally	Occasionally	*Seldom*
Opinon Leadership				
Other farmers classify me as	*Very* progressive	*Somewhat* progressive	*Somewhat* progressive	*Not very* progressive
Other farmers like to see methods and products used	*Often*	Sometimes	Sometimes	*Not often*
Get confirmation of decisions from other people	Fairly often	Sometimes	*More often*	Sometimes
Gut feel decisions better than those based on fact	Disagree	Disagree	*Some agreement*	Disagree
Independence				
Influence over the things that happen to me	Have *a Lot* over the important over the important things that happen to me	Have some important things important things that happen to me.	Have *very* little the important the important things that happen to me.	Have some important things important things that happen to me.
Own judgment better than advice from others	Fairly neutral	Fairly neutral	Basically *agree*	Fairly neutral

Table I. Cluster Profile *(Continued)*

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Farmers should not be restricted in making production decisions	Fairly neutral	Fairly neutral	Basically *agree*	Fairly neutral
Education				
Education should be pursued only if it will help in work	Basically agree	Basically agree	*Disagree*	Neutral
Attitude toward short courses	Really enjoy taking short courses	Basically enjoy taking short courses	Basically enjoy taking short courses	Short courses not that important
Need for education in the future	Consider education very important to success	Consider education important to success	Consider education important to success	Consider education important to success
Experience is the best education	Strongly agree	Agree	*Very strongly* agree	Agree
Work				
Physical work is the only productive work	*Very strongly* disagree	*Strongly* disagree	Fairly neutral	*Strongly* disagree
Importance of work	People do not put too much emphasis on work	People do not put too much emphasis on work	People do not put too much emphasis on work	People do not put too much emphasis on work
Need for regular routine	Do not want a regular routine	Do not want a a regular routine	*Some desire* for regular routine	Do not want a regular routine
Attitude toward outdoor work	Enjoy outdoor work	Enjoy outdoor work	*Really* enjoy work	Enjoy outdoor work
Work demanding	Consider work *very* demanding	Consider work demanding	Consider work demanding	Consider work demanding
Ag Reps keep in touch with farm	*Quite often*	Not often	Not often	*Not at all*
Farm included on tours	*Often*	Not often	Not often	*Never*
Personal Characteristics				
Organization	*Well* organized	Fairly well organized	Fairly well organized	*Not* as well organized

Table I. Cluster Profile *(Continued)*

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Neatness	Very neat and tidy	Fairly neat and tidy	Quite neat and tidy	Fairly neat and tidy
Helping other people	Very important	Fairly important	Fairly important	Fairly important
Religious	Moderately religious	Moderately religious	Moderately religious	Moderately religious
Trust	Usually trust others	Usually trust others	Usually trust others	Usually trust others
Get tense when think of all I have to do	Not often	Not often	Not often	Not often
Leadership				
Take a lead in organizing community events	*Quite often*	Sometimes	Sometimes	*Not often*
Knowledge				
Amount of knowledge	*More* than other farmers	*Same* as other farmers	*Same* as other farmers	*Less* than other farmer
There is a lot about farming I don't know, but would like to know	*Strongly* agree	Agree	Agree	Agree
Management				
Seek management advice from accountant	*Frequently*	Occasionally	Occasionally	*Almost never*
Farming records	*Very good* records	*Good* records	*Average* records	*Poor* records
Cash flow statements	*Very good* cash flow statements	*Good* cash flow statements	*Average* cash flow statements	*Poor* cash flow statements
Enjoy keeping records	Basically *yes*	Basically *yes*	Basically *no*	Basically *no*
Do detailed cost analysis before making change	Almost *always*	*Frequently*	Occasionally	Occasionally

Table I. Cluster Profile *(Continued)*

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Now using, or will be using computer soon	*Agreement*	Some agreement	Disagreement	Disagreement
Need more information on the economics of using farm inputs	*Agree*	Basically agree	Basically agree	Some agreement
Success				
I feel as though I am a very successful farmer	*Strong* agreement	*Weak* agreement	*Strong* agreement	*Disagreement*
Have long-term plans for farm	*Definitely*	Basically yes	Basically yes	Basically no
Achieving most of my goals	Achieving some, but not all goals	Achieving some, but not all goals	Achieving some, but not all goals	*Not achieving* most goals
Success is having minimal debt	Disagree	Disagree	*Agree*	Neutral
Success is owning lots of assets	Disagree	Strongly disagree	Disagree	Strongly disagree
Farming Philosophy				
Farming is more a way of life than a business	Definitely disagree	Basically disagree	Basically *agree*	Basically disagree
Optimistic about the future	Quite optimistic	Slightly optimistic	Quite optimistic	Somewhat *pessimistic*
Wish I were doing something other than farming	Strong disagreement	Strong disagreement	*Mild* disagreement	Strong disagreement
Political Interests				
Contact MP on issues related to agriculture	Quite *often*	Not often	Not often	*Almost never*
Take an active part in political affairs related to agriculture	Quite *often*	Not often	Not often	*Almost never*

Table I. Cluster Profile *(Continued)*

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
The government has become too involved in agriculture	Neutral	Basically disagree	*Agree*	Basically disagree
Marketing boards should not have supply management powers	Strongly disagree	Disagree	Neutral	Disagree
Status				
Farm is most attractive in neighborhood	Neutral	Some disagreement	Neutral	*Disagree*
A farmer's reputation can be judged by the type and quality of products he buys	Neutral	Basically disagree	Basically *agree*	Basically disagree
Enjoy being featured in testimonial	*Perhaps*	No	No	No
Selective with respect to which organizations I join	*Absolutely*	Yes	Yes	Yes
Buy a new car every couple of years	No	No	No	No
Social Activities				
Active member of community organizations	*Quite active*	Not really	Not really	Not active at all
Know most people in my community	To some extent	Not really	To some extent	Not really
Entertain at home	*Frequently*	Not very often	Some	Not very often
Like to stay home	Neutral	Neutral	Neutral	Neutral
Family				
Important that farm remains in family	*Strong* agreement	Some agreement	*Strong* agreement	Neutral
Set aside time to	Neutral	Neutral	Neutral	*Disagree*

Table I. Cluster Profile *(Continued)*

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Set aside time to spend with my family	Neutral	Neutral	Neutral	*Disagree*
Involvement of wife	*Involved*	Not very involved	*Some* involvement	Not very involved
Time spent with family	*Considerable*	Some	*Considerable*	Some
Recreation				
Take a vacation	Every couple of years	Every couple of years	Every couple of years	*Not very often*
Spend recreation time alone	Disagree	Disagree	Disagree	Disagree
Time is more important than money in planning recreation	Some *agreement*	Neutral	Neutral	Neutral
Rather watch sports than participate	Disagree	Disagree	Disagree	Disagree
TV is primary source of entertainment	Neutral	Neutral	Neutral	Neutral
Demographics				
Marital Status	Most married	Most married	Somewhat higher percentage of single men	Most married
Age	Fairly even distribution	Fairly even distribution	Fairly even distribution	Fairly even distribution
Education	Generally *higher* education	Medium amounts of education	Generally *lower* education	Medium amounts of education
Gross income	*High* levels of gross income	*Medium* to high levels of gross income	*Lower* levels of gross income	*Lower* levels of gross income
Farm type	Higher percentage of *mixed* farms	Higher percentage of *cash crop* farms	Higher percentage of *livestock* farms	Higher percentage of *livestock* farms

Table I. Cluster Profile *(Continued)*

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Segment Size				
Percentage of total	*10%*	*36%*	*14%*	*40%*

Cluster 1 farmers are the only ones who are politically active. They believe that some government involvement in agriculture is desirable. They have the most attractive farms of all the groups, and believe that their reputation can, at least in part, be determined by the products they purchase and use. Many would enjoy being featured in testimonial advertising.

Although cluster 1 farmers claim that they are not very active in community organizations, they do entertain quite a bit at home. They spend a lot of time with their families, and in most cases the wife is highly involved in the operation of the farm. It is very important for farmers in this cluster that their farm remains in the family. In planning recreation, they are more concerned with the time involved than the cost.

Cluster 1 farmers are evenly distributed across all age groups. They tend to have the highest level of education and gross income of all the groups. Cluster 1 farmers are most likely to come from mixed farms.

Cluster 2. Over one-third of the sample farmers were categorized in cluster 2. For these farmers price is a fairly major purchasing criteria. They tend to be average shoppers and keep fairly up-to-date on new products. They do not tend to switch from one brand to another unless something goes wrong with the product they are using. In fact, they do not tend to look around very much if they are satisfied with the products they are using.

Cluster 2 farmers do not have any information source that they rate extremely high; instead, they use several different sources. They know several salespeople in their community, but are not as anxious to visit these people as are farmers in some of the other groups.

The farmers in cluster 2 can be said to tolerate the uncertainty of farming, but do not really thrive on it. They feel as though they have some influence over the things that happen to them. They have fairly positive attitudes toward education, mental work, and safety.

In terms of adoption behavior, cluster 2 farmers can quite confidently be placed in the early majority category. They exhibit some characteristics of opinion leadership, but not as many as some other groups. They are well organized and knowledgeable.

Cluster 2 farmers can be classified as "good" managers. They occasionally seek management advice from accountants, have good records, do some detailed cost analysis, and are computer-oriented. Many have long term plans for their farms and consider farming to be more a business than a way of life. They consider themselves to be moderately successful and are optimistic about the future. Most

farmers in cluster 2 are not politically active. They do desire some government involvement in agriculture.

Cluster 2 farmers have attractive farms. Most farmers in this group are not very active in community organizations. They spend time with their families, but not as much as many other farmers. Their wives are not that involved in the farming operation.

In terms of demographics, most cluster 2 farmers are married, they have medium levels of education, medium to high gross incomes, and tend to come from cash crop farms. Cluster 2 farmers are evenly distributed in all age groups.

Cluster 3. The farmers in cluster 3 exhibit many differences from those in either clusters 1 or 2. The 14% of all farmers who fall into this category consider service to be an important factor in making purchasing decisions. They also look for other factors such as comfort, ease of use, and dealer friendship. As a result, they are not as price sensitive as many other farmers. As was true with cluster 2 farmers, those in cluster 3 are average shoppers and consider themselves to be fairly up-to-date. Moreover, they are very confident in their ability to stay up-to-date. Of all the groups, cluster 3 farmers are the most willing to change brands and are always on the lookout for better products even if they are satisfied with what they are currently using.

In terms of information sources, cluster 3 farmers rate company salesmen, radio and TV, and fellow farmers higher that other groups. They know several salespeople in their community, and of all the groups they are the least likely to accept women as agricultural salespeople.

Cluster 3 farmers can tolerate some risk involved in farming, but worry about the decisions they make. Many seek some type of confirmation that the decisions they made are good ones. Cluster 3 farmers are the most independent of all the groups. They tend to rely a lot on their own judgment, and do not want to be restricted by government in making production decisions on their farms. Although they have fairly positive attitudes toward education, they are the most likely to rate experience as being more important. Farmers in this cluster really enjoy outdoor work and consider physical work to be more important than mental work. They would like to have a regular routine and are the most safety conscious of all the groups.

In terms of adoption behavior, cluster 3 farmers can be classified as the late majority. They have some opinion leadership characteristics, but less than some of the other groups. They consider themselves to be fairly well-organized and knowledgeable.

Cluster 3 farmers can be classified as "average" managers. They occasionally seek advice from accountants, keep average records, and occasionally do some detailed cost analysis. They are not computer-oriented.

Success to a farmer in cluster 3 is mainly measured by having minimal debt, but to some extent by owning a lot of assets. Many cluster 3 farmers consider themselves to be very successful. They are very optimistic about the future and stand alone among all the groups in believing that farming is more a way of life than it is a business.

Cluster 3 farmers are not politically active and hold a fairly strong belief that government should not be involved in agriculture. They feel as though they have attractive farms and believe that their reputation in the community is judged to

some extent by the products they use. They are not very active socially, but spend a lot of time with their families. It is very important to farmers in this group that their farm stays in the family. Their wives are involved in the farming operation.

In terms of demographics, cluster 3 farmers tend to have generally lower levels of education, lower gross farm incomes, and come from predominantly livestock farms.

Cluster 4. The largest group (40% of all farmers) is cluster 4. As in the case of cluster 2, farmers in this group tend to be fairly price conscious in making purchasing decisions. They are not active shoppers and, as a result, they have the feeling that they are not very up-to-date. They tend to make product changes only when something goes wrong with the product they are using. They do not use many information sources and rate certain sources such as companies, government publications, and university researchers lower than the other groups. They do not know many agricultural salespeople in their area.

Cluster 4 farmers do not like the uncertainty associated with farming. They have less positive attitudes toward education than all the other groups, and are among the least safety conscious.

In terms of adoption behavior, farmers in cluster 4 can be categorized as the late majority and laggards. They are not considered opinion leaders and consider themselves to be poorly organized.

Cluster 4 farmers are basically "poor" managers. They almost never consult with accountants, keep poor records, only occasionally do any cost analysis, and are not computer-oriented. For the most part, they do not have long term plans for their farms, and basically consider themselves as being not successful. They are fairly pessimistic about the future of agriculture. Of all the groups they are the least socially active and the least family oriented. For most farmers in cluster 4 it is not very important that the farm stays in the family. Cluster 4 farmers seldom take a vacation.

In terms of demographics, cluster 4 farmers have medium levels of education, low levels of gross income, and tend to operate livestock farms.

Cluster Names

Establishing cluster names can be a difficult and subjective task, especially when there is a large number of dimensions involved. Yet, despite the difficulties associated with this task, it is useful to develop some conclusions regarding the basic type of farmer described by each segment.

In an attempt to reduce personal bias in establishing segment or cluster names, a group of three judges was recruited to review the cluster descriptions and attach names to each group. The judges were experienced people in agriculture with different backgrounds and perspectives. This diversity of backgrounds was considered useful in that each person would view the findings differently and add a new perspective on the results.

The interpretation and naming of the clusters proved to be an easier task than originally envisioned. All of the judges saw the same basic features in the various groups. The names given by the three judges are:

Cluster 1	Cluster 2	Cluster 3	Cluster 4
Leading Edge Entrepreneur	Strong Second Echelon	Traditionalist	Marginal Majority
Ultra Progressive	Progressive	Traditionalist	Average
Risk Taker	Risk Averter	Traditionalist	Passive

Based on the input from the judges and the authors own experience, the final names chosen for the segments are: Cluster 1—*Leading Edge Entrepreneurs*, Cluster 2—*Progressive*, Cluster 3—*Traditionalists*, and Cluster 4—*Marginal Majority*.

SUMMARY AND CONCLUSIONS

The basic purpose of this study has been to segment the overall market for farm inputs in Ontario using psychographic factors. Specific objectives include:

(1) Determine the relevant psychographic dimensions which can be used to segment the market for farm inputs.
(2) Develop descriptions of the major psychographic clusters in the market.
(3) Determine the relative sizes, media habits, and other characteristics of each segment.
(4) Determine the marketing implications for farm input marketers.

Relevant Dimensions

Overall 23 dimensions and 115 individual statements were used to produce the psychographic segments. Although most of the dimensions and statements were of some value in producing and describing clusters, a few were of considerably greater value than others. In the cluster solution, 19 statements resulted in *F*-Ratios greater than 25, indicating that they were quite important in differentiating among the four groups. These statements are shown in Table II and illustrate that although many factors are important in defining market segments, the most useful relate to three broad dimensions: adoption, opinion leadership, and management. Factors outside these categories are useful in enriching the cluster descriptions, but are not of primary importance in actually differentiating among groups.

Cluster Descriptions

Four clusters or segments were defined in this research. These were: leading edge entrepreneurs, progressive farmers, traditionalists, and the marginal majority. The characteristics of these groups are shown in detail in Table II. In reviewing these characteristics, special consideration should be given to those factors listed above which are most responsible for differentiating among segments.

Table II. Statements with Greatest Ability to Differentiate among Segments.[a]

Purchasing Criteria
- Service is usually more important than price when purchasing farm supplies such as feed and fertilizer (27.1).

Shopping Activities
- I keep close tabs on most new farm inputs that come on the market (34.9).

Information Sources
- I frequently contact company technical representatives to obtain information (27.9).

Independence
- I have little influence over the important things that happen to me. (25.7).

Work
- The only productive work is physical work (24.9).

Adoption
- I set aside a few acres almost every year to experiment with different products and/or techniques (29.1).
- I am often approached by agricultural companies to use their products on a trial basis (26.2).

Opinion Leadership
- Ag. Reps. like to keep in touch with my farming practices (24.7).
- Others farmers like to see the methods and products I use (26.8).
- Most other farmers would classify me as being very progressive (27.1).

Leadership
- I take a lead in organizing community events (32.9).

Knowledge
- I feel I am more knowledgeable about agriculture than most farmers (25.9).

Management
- Projected cash flow statements are a management tool that I use on a regular basis (27.2).
- I seek management advice from my chartered accountant (37.3).
- I keep detailed records of my farming operation (26.4).

Success
- I feel as though I am a very successful farmer (34.4).

Political Interest
- I have contacted my MP on issues related to agriculture (36.7).

Social Activities
- I am an active member of many community organizations (28.7).

[a]The numbers in parentheses represent the *F*-ratio associated with each statement.

Size and Media Habits

The four segments and their respective sizes are shown graphically in Figure 4. It should be remembered that the percentages in this chart refer to number of farmers, not number or proportion of acres or gross sales. When coupled with farm size measures, it is quite clear that the leading edge entrepreneurs, although only 10% of the farmers, represent a much greater proportion of farm sales. The same is true of farmers in the progressive segment. The traditionalist and marginal majority segments together account for over 50% of the farmers, but be-

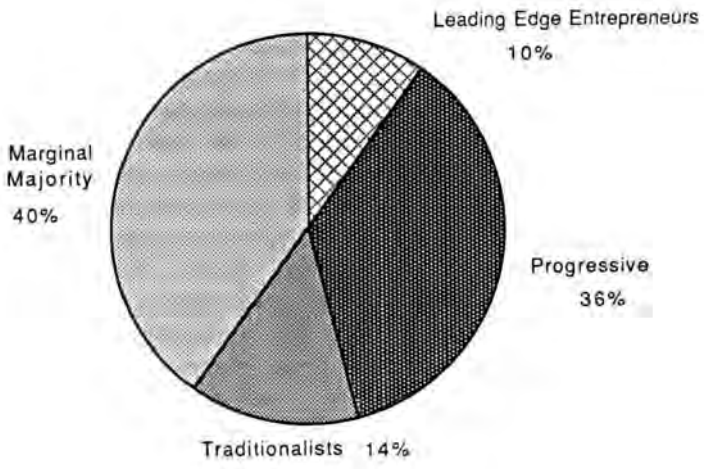

Figure 4. Relative Sizes of Psychographic Segments.

cause they tend to have lower levels of gross income, they must account for substantially less than 50% of farm sales. It is very interesting to observe other demographic characteristics of the four groups. All the groups have essentially similar age distributions, but differ with respect to education. The leading edge entrepreneurs tend to have the highest levels of education followed by the progressive farmers and the marginal majority. The traditionalists have the lowest levels of education of any of the groups. In terms of farm type, there is a distinct tendency for leading edge entrepreneurs to come from mixed farms, while the progressive farmers come from predominantly cash crop farms, and the traditionalists and marginal majority come from livestock farms.

Some useful differences emerged among the four groups in their media habits. Leading edge entrepreneurs used several sources to obtain information; farm supply companies, government technical publications, farm shows, university researchers, and farm magazines were all widely used by this group. Sources not used by leading edge entrepreneurs included other farmers and radio and TV. The progressive farmers tended to use the same sources as the leading edge entrepreneurs, but not as often. They were slightly more inclined to use other farmers as sources of information than the leading edge entrepreneurs. The traditionalists were found to be substantially different. They exhibited the strongest propensity to obtain information from salesmen, other farmers, and radio and TV. Farmers in the marginal majority category were found to be quite passive in terms of information gathering. With the exception of attending some farm shows and reading some farm magazines, farmers in this group did very little active information gathering.

Limitations

The reader should be aware of three important limitations of this research. The first is that the research is exploratory. Although there have been many psychographic studies of consumer markets, none have been carried out in farm

markets. As a result, much of the contribution of this work is simply pulling together an inventory of psychographic dimensions, and then narrowing these down to those which are the most useful in defining segments. The second limitation deals with the focus of the work. To be most useful to marketers, psychographics should be applied to specific product areas such as feeds, seeds, chemicals, machinery, etc. Again, because of the exploratory nature of this work, a more general focus was chosen. This restricts the number and type of conclusions which can be drawn from the results. Finally, the third limitation deals with sampling. Ideally, it would have been useful to have a larger sample and use a probability method of sampling. This was impossible given the budget constraints on the project. Consequently, the statistical results must be viewed as indicative of segment size and characteristics, and not as conclusive.

Marketing Implications

Despite the above limitations, the results of this research have important implications for companies and organizations dealing with farmers. Many of these implications are specific to individual organizations, and must be developed by these organizations through a careful evaluation of the four segments. Some of the broader implications are outlined below:

(1) There are four distinct groups of farmers with different needs, attitudes, interests, behavior, demographics, and media habits. These groups must be acknowledged when designing marketing and communication programs. The exact method in which this is done depends upon a careful evaluation of each segment, and undoubtedly will be somewhat different for different types of products.

(2) Because farmers in all four segments are exposed to essentially the same media, it becomes very important for advertisers to catch the attention of certain groups through the themes and copy tonality used. Results of this research show some overall themes which may be relevant to each segment. Some examples are:

> **Leading Edge Entrepreneurs.** This group is perhaps the most different of all four groups and would relate positively to several themes. Some of the more obvious are: service, personal attention, product quality, self-assurance, scientific, safety, innovativeness, management, planning, outdoors, family, wife, and achievement.
>
> **Progressive.** The progressive group is similar in type of attitudes, interests, opinions, and behavior to the leading edge entrepreneurs, but is different in the intensity with which these are possessed. As a result, many of the same themes can be used with this groups as with the leading edge entrepreneurs. One notable exception is in the area of price. This seems to be a more important concern to the progressive group than to the leading edge entrepreneurs.
>
> **Traditionalist.** The traditionalist group is substantially different from any of the other groups in attitudes, interests, opinions, and behavior. Some themes which may be useful in communicating with this group include: service, comfort, personal attention, independence, personal

experience, outdoors, safety, self-assurance, low-debt, status, family, achievement, and farming as a way of life.

Marginal Majority. The marginal majority group is probably the most difficult group to reach with selective messages because members of this group do not seem to have unique attitudes, interests, opinions, or behavior. Differences between this group and the others appear to be more a matter of intensity than substance.

(3) The results of this research are very consistent with the volumes of earlier work in the area of the adoption of new technology. The leading edge entrepreneurs consist of innovators and the early majority, the progressive farmers are the majority, and the traditionalists and marginal majority are the late majority and laggards. The present research confirms the existence of these groups and enriches our understanding of their characteristics and behavior.

(4) The large size (40%) of the marginal majority segment is alarming. These are farmers who are not good managers, have a poor self-image, and most likely operate the least viable farming units.

REFERENCES

1. J.E. Engel, H.F. Fiorillo, and M.A. Cayley (Eds.), *Market Segmentation: Concepts and Applications*, Holt, Rinehart, and Winston, New York, 1972.
2. G. Punj and D.W. Stewart, "Cluster Analysis in Marketing Research: Review and Suggestions for Application," *Journal of Marketing Research, 20*, 134–148.
3. B.B. Jackson, *Multivariate Data Analysis*, Richard D. Irwin Inc., Homewood, IL, 1983, p. 169.
4. T.F. Funk and M.J. Hudon, *Psychographic Segmentation of the Farm Market*, Research Bulletin AEB/87/10, Department of Agricultural Economics and Business, University of Guelph, August 1987.