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Farmers of the Future: Market Segmentation and Buying Behavior

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Abstract

Dramatic structural changes are occurring in U.S. and world agriculture. These changes have important implications for the customer base and marketing strategy of input supply manufacturers, distributors and retailers. The framework and model presented can and is being used to understand structural change in production agriculture on a global basis.

Keywords: Structural change, buying behavior, marketing strategy, farm size

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Introduction

Farming is in the midst of a major transformation—not only in technology and production practices, but also in size of business, resource (land) control and operation, business model and linkages with buyers and suppliers. The forces driving this transformation are many and widespread including increased quality, safety and traceability demands of processors and consumers of food products; implementation of information and process control technologies that facilitate biological manufacturing of crop and livestock products; adoption of technologies and business practices that exploit economies of size; increased use of leasing and other outsourcing strategies to foster growth and expand options for resource control; and wider adoption of contracting, strategic alliance and cooperative business models to facilitate more effective and efficient vertical coordination with buyers and suppliers in the production/distribution value chain among others. Both the livestock and the grain sectors are changing from an industry dominated by family-based, small and modest size, relatively independent firms to one of generally larger businesses that are more tightly aligned across the value chain.

So what do the dramatic changes in farming mean for the future? How will the farmer customer base change in the future in terms of size, resource control and buying/selling behavior? How might the customer segments be characterized in terms of typical size, numbers and volume by segment? How might attributes (i.e. price, service, convenience, product performance, etc.) be considered and valued in the producer's purchasing and selling behavior? Obtaining concrete answers to these questions and equally importantly, understanding the drivers and determinants of this transformation process, is critical to a successful marketing strategy to serve the farm customer of the future. This discussion summarizes work on the systematic modeling of structural change in the U.S. farm production sector; the framework and model presented can and is also being used to understanding structural change in production agriculture on a global basis.

Analysis Framework

The analysis begins with the classification of producers into specific categories—customer segmentation. The customer segmentation is based on a two-dimensional characterization of the producer market (Figure 1). The characterization is defined in terms of; 1) size measured by gross sales, and 2) purchasing behavior. Characterization of the farming production sector in the U.S. on these two dimensions is based on the 1987 and 1997 Census of Agriculture and 2001 USDA ARMS data, and a 2003 survey of commercial producers completed by the Center for Food and Agricultural Business at Purdue University. Simulation modeling is used to project farm numbers and acreage for each of these segments for the year 2016.

The analysis framework for the projection activity is summarized in Figure 1. The current market is described by number of businesses and size/acreage/volume for each customer segment. Future projections are based on historical trends modified by the transition drivers to obtain the future market characterization and potential. The influence that the transition drivers identified in Figure 1 have on accelerating or decelerating historical trends will be summarized shortly.

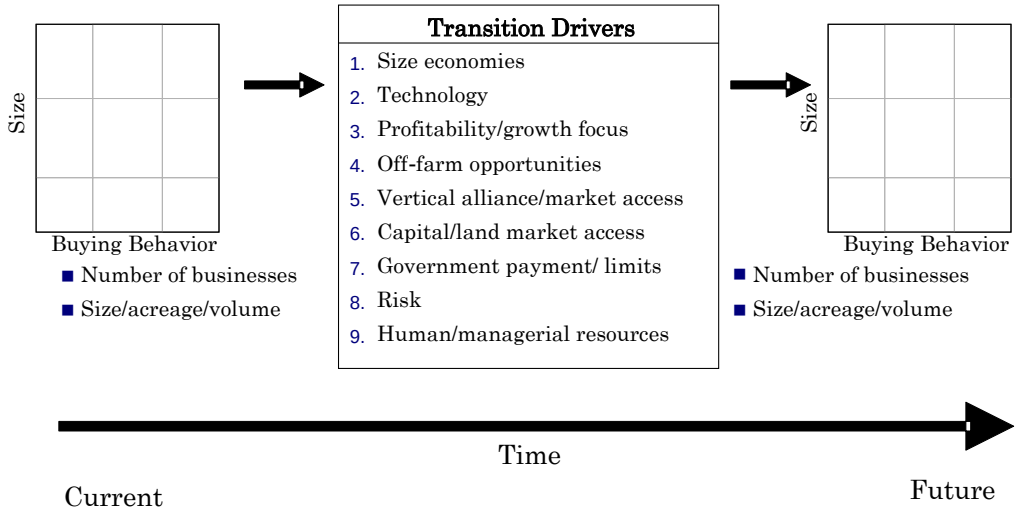


Figure 1: The Projection Model

Because of the uncertainty associated with using historical information to inform the future, as well as different perspectives of how the transition drivers will shape future trends, the analysis framework incorporates scenario planning as an integral component of the analysis process. Scenario analysis, or scenario planning, arises from the observation that forecasting the future is a difficult, almost impossible task in certain circumstances. But managers still have to make decisions, often in a short timeframe. Scenario planning is a tool that helps in making this kind of decision. According to Wilkinson (1998), the co-founder and managing director of the Global Business Network: "Given the impossibility of knowing precisely how the future will play out, a good decision or strategy to adopt is one that plays out well across several possible futures." Schnaars and Ziamou (2001) state that use of scenarios is a more realistic tool compared to traditional forecasting: "Scenarios offer an attractive alternative to the false precision promised by point-estimate forecasts…. This softer, qualitative character of scenarios is more in keeping with the messy future encountered in real-world forecasting."

Scenario analysis is not a learning tool for the future, but for the present. Wilkinson (1998) writes: "The purpose of scenario planning is not to pinpoint future events but to highlight large-scale forces that push the future in different directions. It's about

making these forces visible, so that if they do happen, the planner will at least recognize them. It's about helping make better decisions today." Schwartz (1996) states that scenarios are not about predicting the future, rather they are about perceiving futures in the present. Schnaars and Ziamou (2001) define scenario analysis as a combination of the three following characteristics: they are stylized stories, they come in sets, and they trace the progression of the present to the future, rather than just providing a single, point-estimate forecast.

Transition Drivers

The transition drivers used to modify historical trends and their expected impacts by farm size/type are summarized in Figure 2.

	Size/Type				
Driver	(1) Limited resource, lifestyle, retirement	(2) Farming occupation, low-sales	(3) Farming occupation, high-sales	(4) Large family farms	(5) Very large family and non-family farms
1. Size economics	0	0	0	+	++
2. Technology	0	0	0	+	++
3. Profitability/growth focus	0	-	-	+	++
4. Off-farm opportunities	++	+	+	0	0
5. Vertical alliance/market access	0	-	-	+	++
6. Capital/land market access	0	-	-	+	++
7. Government payments/limits	+	+	+	+	-
8. Risk	0	0	0	-	+
9. Human/managerial resources	0	0	0	+	++

Key:
-- Rapidly decelerate trend
- Decelerate trend
0 Trend
+ Accelerate trend
++ Rapidly accelerate trend

Figure 2: Impact of Transition Drivers by Size/Type Farm

Size Economies

Larger scale operations will increasingly exploit size economies that are not just technology driven, but are market/pricing driven (i.e. higher selling prices and lower purchasing prices as a function of volume). Lifestyle/retirement farms do not consider cost and thus size economies as a major determinant of their business operation decisions.

Technology

New automation technology (auto steer) combined with monitoring/measuring technology (remote sensing) increases the labor efficiency and reduces the "labor constraint" on larger scale operations. Furthermore, this technology also facilitates the adoption of the replication strategy for expansion where farms increase their size by building or acquiring optimal size plants (i.e. a 3,400 head sow unit or a 3,000 cow dairy unit or a 3,500 acre corn/soybean unit) by facilitating coordination of these plants as part of a multiple plant business. In essence, this technology increases the span of control of a successful farm business manager. Again, technology is not a major driver in the decision nexus of lifestyle/retirement producers.

Profitability/Growth Focus

A combination of a business management/profitability mentality combined with reinvested earnings from successful operations enables large scale operators to expand rapidly. Traditional/mid-size operators generally do not have adequate earnings for reinvestment nor a growth oriented focus. Lifestyle producers have other motivations for being in farming, and thus do not consider profitability/growth as major driving forces for their operation.

Off-farm Opportunities

The availability of off-farm jobs provides significant potential for lifestyle/retirement and traditional producers to not only remain in business, but in some cases enter the industry at a modest scale with the expectation of maintaining a permanent dual career that combines full time off-farm employment with a modest size (but not too large so it competes with their off-farm job) farming operation. Off-farm employment opportunities are not a major determinant of the expansion or entry and exit decisions of large scale/industrial producers.

Vertical Alliance/Market Access

With the increased focus of processors and other buyers of agricultural products on both volume and quality, they are implementing various forms of preferred or qualified supplier programs. In general, such programs are more readily available to larger-scale producers who have the potential to consistently provide adequate supply and cost effectively implement quality management, identity preservation and traceability programs. The implementation of such programs limits the market access of lower volume traditional and mid-size producers. Vertical alliance/market access concerns are not part of the decision nexus for lifestyle/retirement producers.

Capital Market and Land Access

Larger scale producers have increasingly broader access to capital markets—retained earnings are larger because of higher profitability, investor equity can be more readily accessed because of attractive financial performance, and a broader set of lenders is available because of the better financial performance and business orientation of these larger scale units. These larger scale units typically also have better access to rental markets because of their economies of size. Because of the increased competition particularly in the land rental market, and concerns on the part of lenders about dated and small-scale technology, traditional/mid-size producers have more limited access to capital markets. Since lifestyle/retirement farms are primarily self-funded, capital and land rental market access is not a major consideration in their decision making process.

Government Payments/Limits

Through their impact on the income and cash flow of grain operations, government payments maintain or enhance the competitive position of commercial, traditional/mid-size and even lifestyle/retirement farmers. It is becoming increasingly difficult for larger scale farmers to develop business arrangements that are not subject to government payment limitations, and if grain farmers in particular cannot receive government payments for additional acreage, they cannot be as aggressive in the purchase or rental of that acreage. Government payments/limits have little impact on different size livestock operations with the exception of small-scale dairy farmers that receive modest payments which may enhance their staying power in the agricultural industry.

Risk

Increased focus on instruments to manage operating risk (hedging, forward pricing, crop insurance, share rental, etc.), including new net income contracts, increase the growth potential for larger scale operations because lenders and the capital markets in general provide more funds to those who manage operating risk. In general, because of their more business oriented approach, large-scale/industrial farmers will be more likely to adopt such risk management practices compared to commercial farmers. Lifestyle/retirement farmers are unlikely to be significantly impacted by risk considerations.

Human/Managerial Resources

Managerial resources (both general manager and operations manager) are becoming more important to successful farm businesses. The enhanced managerial capacity and business orientation of large-scale/industrial farmers combined with the technology which increases their span of control will enable them to grow their

businesses at a much more rapid pace than in the past. In particular, personnel management skills will become relatively more important as the size and scale of operation increases, and larger scale operators that acquire these resources will have increased capacity to grow compared to traditional/mid-size and commercial producers who in many cases will continue to grow by substituting capital for labor which will limit their ability to implement replication/multiple plant and other growth strategies.

Numerical Model and Data

A simple (or naïve) exponential growth/decay and reallocation simulation model tracks the movement of farms and land among five different farm types (or typologies) and five different buying behavior classifications for the years 2001 to 2016. The model relies on historical trends, computed from USDA Census of Agriculture data, to simulate future possible changes in land allocation and number of farms by farm type.

The data sources used to populate the model are:

1. 2001 USDA ARMS data—estimates of land allocation by farm type for all farms in the US for the year 2001.
2. 1997 and 1987 USDA Census of Agriculture data—census data of farm population and acreage allocation.
3. 2003 Purdue University Customer Segmentation Study—producer buying behavior data

ARMS and Census Data

For purposes of this simulation model data was aggregated around five farm typologies. Table 1 shows the initial distribution of farm acreage and farm numbers. Note the first three farm types operate 58.5% of the land while the last two farm types operate 41.5 percent of the land. It is interesting to contrast the acreage distribution with farm population where the first three farm types represent 90.5% of farmers while the remaining two farm types represent 9.5% of farmers.

Table 1: Distribution of U.S. Acreage and Farm Number by Simulation Farm Type

	Limited resource, lifestyle, retirement	Farming occupation, low-sales	Farming occupation, high-sales	Large family farms	Very large family and non-family farms
Acreage	20.2%	20.4%	18.0%	17.3%	24.2%
Farm Numbers	59.8%	23.0%	7.7%	4.0%	5.5%

Source: USDA ARMS, 2001.

The exponential growth/decay and reallocation model uses the historical trend for each farm type to compute the change in the number of acres operated by each farm type for the simulation period, 2001 to 2016. To establish these historical trends, an annualized change in acreage was computed for each of the five farm types with data from the 1987 and 1997 Ag Census. Table 2 presents the number of acres operated by each of the five farm types in 1987 and 1997 and the computed annualized change in acres operated. This annualized change becomes the historical trend in determining whether the farm types grow or shrink in the number of acres operated. Average farm size is assumed constant for each farm type over the simulation time period and consequently farm numbers are calculated each period as farm acreage divided by the constant farm size.

Table 2: Computation of Annual Change in Acreage Base by Farm Type

Farm Types	1987	1997	Annualized Change
Limited resource, lifestyle, retirement	204,785,844	227,739,232	-1.1%
Farming occupation, low-sales	200,035,072	272,531,904	-3.0%
Farming occupation, high-sales	207,457,041	225,037,526	-0.8%
Large family farms	138,414,406	113,610,290	2.0%
Very large family and non-family farms	181,102,892	125,551,673	3.7%

Source: USDA 1987 and 1997 Census of Ag.

The simulation model combines the initial seed values of the distribution of U.S. acreage by farm type (as shown in Table 1) with growth rates for each year of the simulation (as shown in Table 2). Because the simulation is allocating a fixed amount of land each period, adjustments are required to prevent the model from "creating" land. In fact, without adjusting the above growth rates, land acreage would grow over three percent in just the first year alone. To prevent land creation, a reallocation step is included in the model which allocates the total land base to each of the farm types to avoid allocations in excess of 950 million acres.

CAB Customer Segmentation and Buying Behavior

The five buying behaviors as determined and defined by the CAB's customer segmentation study are indicated below:

- Convenience – Producers in the Convenience segment choose input suppliers based on their location and service.
- Performance – Producers in the Performance segment choose input suppliers based on the quality of products and information and consider which product will perform the best.
- Service – Producers in the Service segment choose input suppliers based on the level of service and information from the local dealer.
- Price – Producers in the Price segment choose input suppliers simply based on price.

- Balance – Producers in the Balance segment consider all input supplier criteria to be of equal importance.

Table 3 shows the distribution of buying behavior in aggregate and for three size categories identified in the CAB study. Mid-size, commercial, and extra-large farms were the categories identified as providing similar buying behaviors. The mid-size farms align to the first two farm types identified in Table 2, commercial farms align with the third and fourth farm types, and extra-large farm with the fifth farm type. These percentages are used to allocate the simulated future acres and numbers of farms by farm size/type category to buying behavior segments.

Table 3: Aggregate and Segmented Buying Behavior

		Categories		
	Aggregate	Mid-size Farms	Commercial Farms	Extra-large Farms
Convenience	13.8%	17.0%	12.0%	13.0%
Performance	16.3%	15.0%	17.0%	16.0%
Service	17.3%	17.0%	16.0%	6.0%
Price	18.5%	18.0%	20.0%	30.0%
Balance	34.1%	33.0%	35.0%	35.0%

Source: 2003 Commercial Producers Study by the Center for Food and Agricultural Business.

Results

This section will present illustrative results from application of the simulation-based model. Consistent with the scenario philosophy, these results are not offered as predictions of the future. Rather these results provide insights regarding the interrelationships between the distribution of acreage and farm numbers by farm typology relative to buying behavior of farmers. Although numerous alternative specifications can be investigated by the simulation tool, only three will be evaluated here:

- Scenario 1—the annual rate of growth in acreage that occurred from 1987 to 1997 for each of the five typologies is assumed to continue.
- Scenario 2—the annual rate of growth in acreage is the same as in Scenario 1; the distribution of five buying behaviors uses the segmented distribution percentages as defined in Table 3.
- Scenario 3—driven by the economies of size and technology transition drivers, the annual rate of growth for the large family farm typology is set to be 50 percent greater than it was over the 1987-1997 period, the growth rate for the very large family farms and the non-family farm typology are set to be double that which occurred from 1987 to 1997, and the annual growth rate for the other

three typologies are set at the 1987 to 1997 rate; the distribution of five buying behaviors across farm types is the same as in Scenario 2.

Scenario 1

For all three scenarios, the initial distribution of farm acreages and farm numbers is set equal to that in 2001 (ARMS). As shown in Table 4, the 2001 distribution of farm numbers and of farmland acreage differs considerably across the five typologies. For example, the "Limited resource, lifestyle, retirement" category has almost 1,160,000 farms, about 63 percent of the farms in that year. The acreage in that category, however, accounted for only 20 percent of the 950 million total acres in farms. The "Farming occupation, low-sales" category accounted for about 17 percent of the farms and almost 20 percent of the total acres in farms. The "Very large family and non-family farms" category accounted for about 24 percent of the acreage, but only five percent of all farms were in that type classification.

Table 4: Scenario 1, Initial and Ending Distribution of Acreage and Farm Numbers by Farm Type

	Limited resource, lifestyle, retirement	Farming occupation, low-sales	Farming occupation, high-sales	Large family farms	Very large family and non-family farms	Total
Acreage						
Initial	191,614,074	193,569,666	170,803,499	164,164,757	229,848,005	950,000,000
Ending	147,091,673	109,581,706	136,105,030	198,743,497	358,478,095	950,000,000
Farm Numbers						
Initial	1,157,442	318,236	155,951	104,107	87,310	1,823,046
Ending	888,505	180,156	124,270	126,035	136,172	1,455,138

Based upon the assumptions noted previously, the simulation tool calculates future distributions of farm acreage and numbers for 15 years in the future. Table 4 compares the 2001 farm acreage and numbers distribution just described to ending year results from the simulation model for Scenario 1. The farmland acreage distribution shifts markedly in this scenario. Two farm types show increases in acreage; the "Large family farms" type and the "Very large family and non-family farms" type. The amount of the increase exceeds 160 million acres, as the proportion of the total acreage of farms within these two types would reach almost three out of every five acres. In the initial year of the simulation, these two farm types accounted for only two out of five acres. The greatest decline in acreage, over 80 million acres, would occur in the "Farming occupation, low-sales" type.

Continuing the actual long term trends in U.S. agriculture, farm numbers would be significantly lower, about 368,000 fewer, in the last year of the simulation period than they were at the start of the period. This would be a decline of almost 20 percent. The largest decline in absolute farm numbers would occur in the "Limited

resource, lifestyle, retirement" type. The proportion of farms in the "Large family farms" type and the "Very large family and non-family farms" type would increase from less than 10 percent in the first year of the simulation to more than 18 percent in year 15 of the simulation.

Scenario 2

Scenario 2 adds buying behavior to the analysis, specifying that the pattern of buying behavior differs across the five farm types. Table 5 presents initial and ending year estimates for the five buying behaviors in terms of the farm acreage and numbers in each category. Relative to acreages, little change between the initial and ending year is shown for the performance and balance categories. Acreage controlled by producers who ascribe to a convenience buying behavior would decline by slightly more than five million acres or about four percent of the initial year acreage. However, a major shift would occur between the acreage controlled by producers in the service category versus the acreage controlled by producers with a price buying behavior. Acreage controlled by price conscious producers would increase by more than 15 million acres over the 15 years of the simulation period. Conversely acreage controlled by service-oriented producers would decline abruptly, by over 14 million acres or more than 11 percent.

Table 5: Scenario 2, Initial and Ending Distribution of Acreage and Farm Numbers by Buying Behavior

Buying Behavior	Acreage		Farm Numbers	
	Initial	Ending	Initial	Ending
Convenience	135,557,667	130,418,450	293,422	229,411
Performance	151,497,845	152,781,751	279,531	224,639
Service	132,867,037	118,718,924	297,713	229,892
Price	205,281,126	220,714,342	343,827	283,272
Balance	324,796,325	327,366,532	608,552	487,925
Total	**950,000,000**	**950,000,000**	**1,823,046**	**1,455,138**

Interestingly, the distribution of farm numbers relative to buying behaviors does not change significantly over the simulation period. Farm numbers in total would decline by about 20 percent. The decline in farm numbers within each buying behavior category would fluctuate only slightly from that 20 percent average. This result differs markedly from the change in acreage distribution across the buying behavior categories discussed previously.

Scenario 3

Scenario 3 is designed to explore the implications of intensification of technology and scale economy effects in the future. Accelerated growth rates in acreage are

stipulated for the "Large family farms" type (50 percent greater than trend) and much accelerated growth rates (100 percent greater than trend) are specified for the "Very large family and non-family farms" type for this scenario. Relative to the initial year conditions, the proportion of farm acreage in the "Large family farms" type and the "Very large family and non-family farms" type would expand by over 250 million acres (Table 6). Acreage declines would occur across the other three farm types, as only slightly more than 30 percent of the total acreage would be in those farm types.

Table 6: Scenario 3, Initial and Ending Distribution of Acreage and Farm Numbers by Farm Type

	Limited resource, lifestyle, retirement	Farming occupation, low-sales	Farming occupation, high-sales	Large family farms	Very large family and non-family farms	Total
Acreage						
Initial	191,614,074	193,569,666	170,803,499	164,164,757	229,848,005	950,000,000
Ending	113,437,570	84,509,763	104,964,636	177,355,301	469,732,731	950,000,000
Farm Numbers						
Initial	1,157,442	318,236	155,951	104,107	87,310	1,823,046
Ending	685,218	138,937	95,837	112,472	178,433	1,455,138

As shown in Table 7, the farm acreage associated with the performance and balance buying behaviors would differ only slightly between the initial and ending years in the simulation. Also as was shown for Scenario 2, major change would occur between the service and price categories. The farm acreage associated with the service category would decline by nearly 26 million acres, a 19 percent decline from the initial year value. The acreage controlled by producers in the price category, however, would increase by almost 28 million acres, a 14 percent increase.

Table 7: Scenario 3, Initial and Ending Distribution of Acreage and Farm Numbers by Buying Behavior

Buying Behavior	Acreage		Farm Numbers	
	Initial	Ending	Initial	Ending
Convenience	135,557,667	128,594,694	293,422	188,300
Performance	151,497,845	152,843,726	279,531	187,585
Service	132,867,037	107,006,200	297,713	184,142
Price	205,281,126	233,014,326	343,827	243,540
Balance	324,796,325	328,541,053	608,552	407,331
Total	**950,000,000**	**950,000,000**	**1,823,046**	**1,210,897**

Graphical Synopsis

Figure 3 and Figure 4 provide a graphical synopsis of the simulation model results for acres and numbers of farms respectively for the three scenarios. Panel A of both figures presents the current distribution of acres and farms by modified ARMS size/type of farm and size segmented buying behavior based on the CAB survey data (Scenario 2, Year 2001). Panel B indicates the size/type and buying behavior distribution or segmentation in 15 years assuming historical trends (Scenario 2, Year 2016). Panel C summarizes that same size/type and buying behavior distribution or segmentation assuming the economies of size and technology transition drivers accelerate the growth trends for larger farms (Scenario 3, Year 2016). As to acres by customer segment, Figure 3 clearly illustrates the growth in acreage by the large and very large farms and the decline in the three smaller size/type categories with the continuation of current trends (Panel B of Figure 3). At the same time, the results suggest significant growth in the price and balance buying behavior categories. Consequently in 15 years the larger scale operations that are primarily driven by price and balance buying behavior are by far the dominant customer segments. If the technology and size economies transition drivers are allowed to accelerate past trends, this movement of acreage to customer segments characterized by large size and price or balance buying behavior is even more pronounced (Panel C of Figure 3).

Figure 4 provides similar visualization of farm numbers. Not surprisingly, current characterization of the market by number of farms is dominated by the limited resource/lifestyle/retirement size/type category with balance buying behavior predominant, but significant numbers of farm customers in the other four buying behavior categories (Panel A of Figure 4). Continuation of trends as reflected in Panel B of Figure 4 reduces modestly the number of farms in the smaller size categories and disperses them across the larger farm size/type market segments. Trend acceleration capturing additional economies of size and technological advances (Panel C of Figure 4) accelerates the movement to farmers who are larger scale but continue to be characterized as price or balance buyers.

Visualizing the changes over time in acres controlled (Figure 3) and number of farms (Figure 4) provides an interesting contrast. The transitions reflected by Figure 4 in numbers of farms reflects a modest steady growth in large scale operations, a modest steady decline in small scale operations, and little change in the distribution of all farms by buying behavior with balance and price buyers continuing to grow modestly as a function of the modest changes in farm numbers by size categories. In contrast, the shift in acres is much more dramatic with a relatively rapid movement from smaller scale operations to larger scale operations, and simultaneously a relatively rapid movement to balance and price driven buying behaviors. In essence, segmentation by farm numbers gives a very different message concerning the future importance of various customer segments compared to segmentation by acres.

Figure 3: Acres

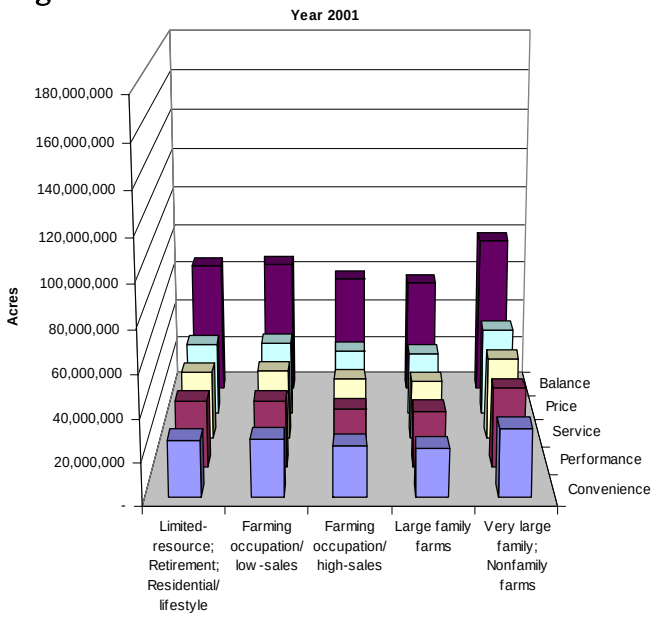
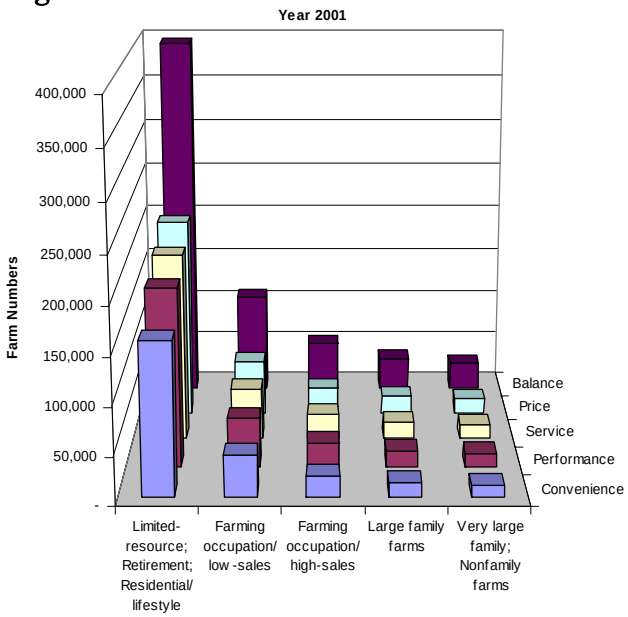


Figure 4: Farm Numbers



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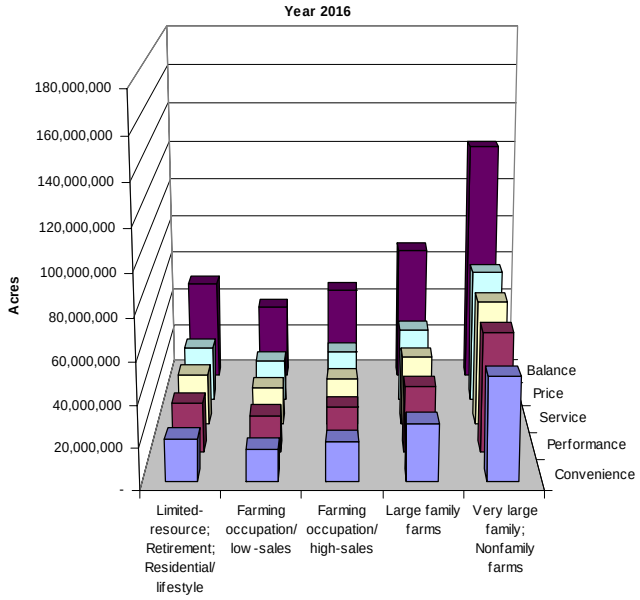

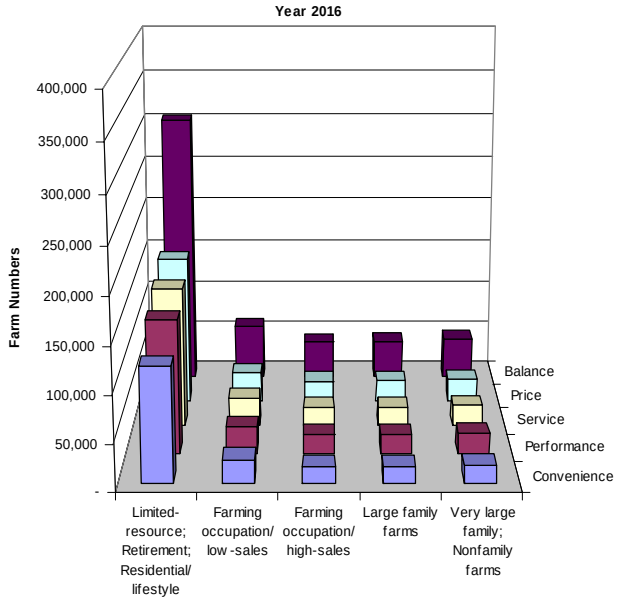

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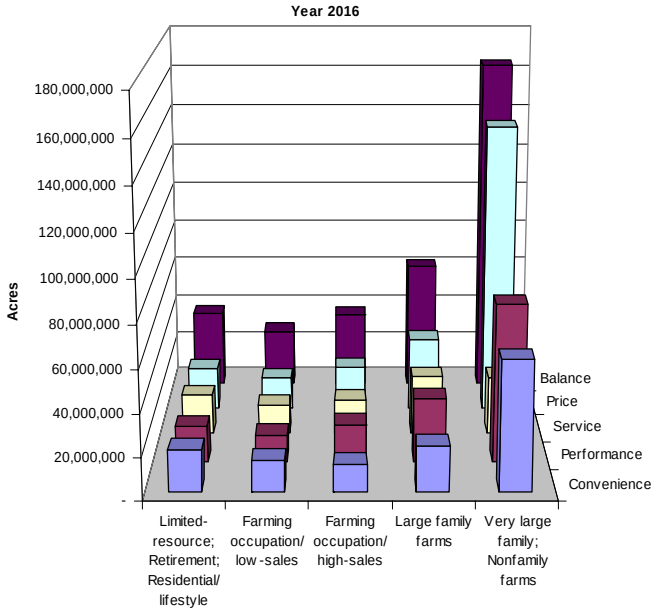

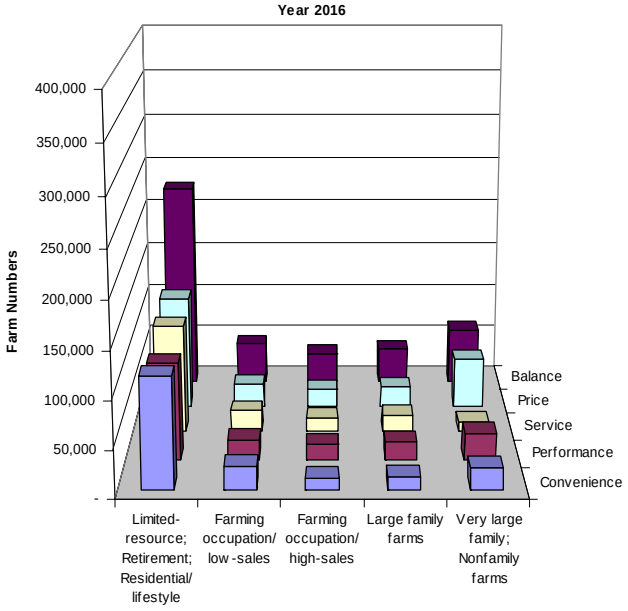

C

Informing Strategic Decisions

So what? How might information concerning customer segmentation inform strategic decision making? We cannot identify and describe the marketing strategy or the sales process that a specific firm might implement based on this customer segmentation, but we can identify the kinds of marketing, sales, distribution channel and product/service/information offering decisions that such information can and should inform.

Most fundamentally, the market volume estimates provide information useful in developing and targeting marketing strategies for different size segments, but as importantly recognize different buying behaviors. Recognition of buying behavior differences should not only inform the marketing message and the focus of the sales call or contact, it also should influence the product/service/information offering. For example, a bundled offering that includes significant service at a higher price may not be attractive to the customer segment who is primarily price focused in their buying behavior. And recognizing that the relative importance of various customer segments is different if segmentation is defined by acres in contrast to number of farms provides useful information in determining which segments to target marketing and sales efforts. Clearly, the information provided here indicates that the larger scale price and balance buyers should be the focal point of these efforts if sales volume and market share is the prime focus of the marketing strategy. And this segment should be "booked" earlier rather later to take advantage of their expected rapid growth in sales volume as well as to pre-empt competitors from capturing such lucrative customers. So the initial set of critical questions that such information might inform are: 1) What size segments have the most volume potential?, 2) What buying behavior segments have the most volume potential?, 3) How many prospective customers are available by size segment?, 4) How many prospective customers are available by buying behavior segment?

But will these large scale price and balance customers provide profit opportunities? For example, one would expect that price buyers will be aggressive in negotiation, thus leaving little profit margin. Further, the loyalty of customers in these segments is likely to be low as well, implying a ready willingness to shift their business to other suppliers. If the volume of this segment expands as rapidly as the numbers of Figure 3 suggest, this segment will clearly be the dominant focus if the marketing strategy emphasizes market share. But if little profit potential is available from this segment because of their aggressive negotiation, it may be that the marketing strategy should focus on the other buying behavior segments for the larger scale customers, leaving the price buyers for the competitors. Possibly there is even more profit potential with the smaller and mid-size customer segments even though they will not generate as much volume, because they exhibit less price focused buying behavior and thus may provide more potential for adding value and differentiation on service, information and other attributes. So the second set of

strategic questions this information could inform are: 1) What size segments have the most profit potential?, 2) What buying behavior segments have the most profit potential?

But financial success isn't determined only by the marketing and sales strategy. Maybe it is as much the distribution channel for various segments, and/or the product/service/information offering for different segments. While it may be true that a firm's current distribution channel would not result in an acceptable profit margin for the larger scale price focused customer segment, a more streamlined distribution channel may in fact lower cost sufficiently to re-establish acceptable profit margins for this segment. Developing alternative distribution channels that exhibit different costs for different customer segments may be a critical and essential response to a better understanding of the current and rapidly changing future customer segments. Likewise, as has been suggested earlier, different segments may value different components of the product/service/information offering depending upon their buying behavior. Consequently the fundamental business model may need to be adapted and modified as a function of the changing customer base. So strategic decisions such as the following can also be informed with this information: 1) What are the changes in the distribution channel that must be made to profitably serve the various customer segments?, 2) What are the changes in product/service/information offering by customer segment that should be implemented to attain the optimal market share and sales volume relative to the capabilities of the individual firm?

In summary, a more complete understanding of customer segmentation on these and other critical dimensions noted earlier provides the basis for making important strategic choices concerning marketing strategy, pricing strategy, sales force deployment, distribution strategy, and product/service/information offering. In essence, such information is critical in answering some of the most important strategic questions and issues any agribusiness will face today and in the future.

Conclusions

Dramatic structural changes are occurring in U.S. and world agriculture. Significant shifts are occurring in both numbers and types of farming operations, and the structural changes of the past are expected to continue if not accelerate. These changes have important implications for the customer base of input supply manufacturers, distributors, and retailers, and increasingly such organizations are attempting to better understand their customer segments and develop marketing strategies to respond to future farmer buying behavior. This paper describes a methodology and a model to assess current customer segments by size/type category and buying behavior characteristics to more concisely define customer segments. The model is applied to the U.S. farm sector using a combination of Census, ARMS and CAB data. The simulation model encompasses transition drivers that allow

analysis of various scenarios concerning future market segments in terms of both acres and farm numbers. Numerical results illustrate the robustness of the model in assessing the implications of various transition drivers and the characterization of the future producer market by size/type and buying behavior segments. The results also illustrate the profound differences in segmentation by number of farms compared to acres impacted; the changes in acres over time by customer segment are much more dramatic than that in farm numbers.

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