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## **Assessing Input Brand Loyalty among U.S. Agricultural Producers<sup>1</sup>**

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### **Abstract**

This study explores the prevalence and determinants of brand loyalty for agricultural input products. Results suggest that loyalty for both expendable and capital inputs is high among commercial agricultural producers in the United States. Producer attitudes, beliefs, and some demographic characteristics are useful identifiers of brand loyalty among commercial producers.

**Keywords:** brand loyalty, dealer loyalty, capital inputs, expendable inputs, farmer purchase decisions

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## **Introduction**

U. S. agricultural input suppliers currently face a number of marketing challenges. For many agribusiness input suppliers, large commercial farm enterprises have replaced traditional smaller farms as their primary customers. Understanding changing relationship dynamics in this emerging market environment has become important for input supplier success.

In many instances, smaller farms behave like retail consumers. Relatively speaking, they wield little individual market power. On the other hand, larger farms have the ability to interact with input and output markets in a more business-like manner, taking advantage of powers of negotiation, economies of scale, and increased market access. As a result, the relationship between agribusinesses and their commercial farm customers is much different from that between agricultural firms and those operations that fit the historical farm profile (Akridge, et al., 2003).

The market interaction between commercial agricultural producers and their input suppliers has become similar to that observed in a non-farm business-to-business (B2B) environment. With this in mind, and given the changing structure of the U.S. agricultural sector, this study explores the prevalence and determinants of brand loyalty for agricultural input products.

In this study, brand loyalty is the commitment of a customer to choose to purchase a preferred branded agricultural input product or service now and in the future, despite situational changes and marketing efforts that may have the potential to cause switching. This definition is adapted from the description of brand loyalty proposed by Oliver, 1997. Brand loyalty should prove important to agricultural input firms because the literature suggests loyalty is prevalent among large businesses in general, the literature indicates loyalty is common among farm enterprises, and because loyalty has been found to be a determinant of, or at least correlated with, farm input purchase decisions (discussed below).

The market environment in which agricultural input suppliers operate is characterized by the following dynamics: 1) an evolving customer base resulting from structural change in the agricultural sector (increased concentration leading to fewer farmer customers managing larger commercial farms (2002 Census of Agriculture)); 2) continued consolidation within the agricultural input supply sector (King, 2001; MacDonald, 2000); 3) rapid technological advancements that allow for the frequent introduction of new products/techniques each year; and 4) a relatively high incidence of loyalty to input suppliers as well as to input brands (Akridge, et al., 2003). These market dynamics can present marketing challenges for agribusinesses that supply inputs.

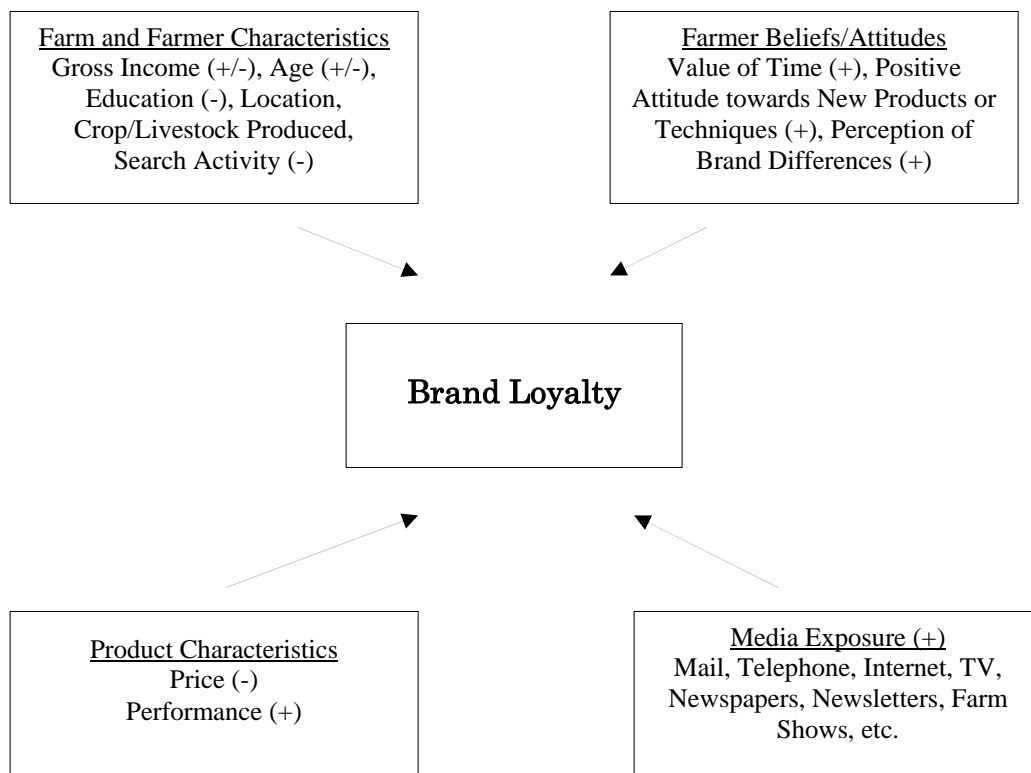
One important strategy employed by these firms is the development of a strong brand for their products. Here, agricultural input suppliers face the problem of understanding the underlying determinants of brand loyalty and identifying effective marketing strategies to reach brand loyal customers. The objective of this paper is to assess the nature of brand loyalty for capital and expendable inputs among commercial agricultural producers in the United States. Specifically, the study seeks to: 1) determine and define who among U.S. commercial agricultural producers is brand loyal, and 2) offer insights to input suppliers or agribusinesses seeking to meet business objectives through effective branding.

## **Conceptual Model**

For expendables and capital items, the buying process for agricultural producers includes those steps or activities undertaken in order to prepare for the purchase of the input. In this process, farmers also take into account a myriad of other factors, including their own perceptions, attitudes, and beliefs associated with the purchase. The decision-making process, or buying process, ultimately influences buying behaviors (observed as actual or reported purchases). Exhibiting brand loyalty illustrates a buying behavior, as certain producers choose to consistently buy particular brands of expendable or capital inputs. Understanding the factors that are part of the process that leads up to this behavior is a goal of this research. Unfortunately, the dissemination of research covering farmers' purchase decisions has largely been limited to extension publications, working papers, and a few theses from various universities. Many of these papers focus only on major farm machinery purchases, and very few specifically focus on the importance of brands and brand loyalty. Most public research in this area is quite dated. During the 1950's and 1960's, studies that addressed brand loyalty in agriculture were primarily conducted by researchers in the Midwest and Canada. The results of these studies were typically released through extension education departments or were contained within a Master's or Ph.D. thesis. The bulk of these publications were reviewed and summarized by Funk (1972). More recent work includes studies by Funk and Tarte (1978) on broiler feed purchases; Funk and Vincent (1978) on corn herbicide purchases; and Foxall (1979) on tractor purchases. The latest publication identified was published in 1997 by Kool, et al., and covered brand loyalty for capital and expendable inputs.

Although dated, previous research is relevant because it helps to form the basis for the paper's research model and for selecting variables found to be significant in determining agricultural input brand loyalty. The conceptual model of brand loyalty shown in Figure 1 is developed based on a review of the literature. The model is not all-inclusive, that is, not every factor that influences brand loyalty could be modeled given data and information availability. However, it does reflect a wide variety of factors suggested by previous research as important determinants of brand loyalty.

Historically, brand loyal farmer customers could be grouped based on demographic variables such as age, income, farm size, and education. Depending on the study, income negatively or positively impacted brand loyalty (Funk, 1972). Generally, it appears that age (also a proxy for farming experience or years farming) positively impacts expendable input brand loyalty (Funk and Tarte, 1976; Funk and Vincent, 1978; Funk and Tarte, 1978), but negatively impacts capital input brand loyalty (Gifford, 1956; Kohls et al., 1957). In a study that reported the impact of farm size and education, both variables appeared to negatively impact brand loyalty (Funk and Vincent, 1978).



**Figure 1:** Conceptual Model of Brand Loyalty

**Note:** Expected signs of the relationship between variables and brand loyalty in parentheses.

Other demographic variables that might be important are geographic location and type of commodity produced. Within the United States, there is a concentration of specific production in particular regions. For example, corn and soybeans are prevalent in the Corn Belt states, while cotton production tends to be concentrated in warmer, Southern states. Inputs required for production by corn farmers differ from those of livestock or cotton producers. Thus, differences among purchase decisions may lead to differences in observed loyalty.

The current relevance of demographic variables is important to assess because of the evolving nature and structure of U.S. agriculture, changes in buyer and seller dynamics, and changes in behavioral and attitudinal characteristics of farmer customers. Farm size and income are reaching unprecedented levels, advanced education is much more easily accessible, and individuals are farming longer. Farm and farmer demographic characteristics may continue to play a role in predicting brand loyalty, but their role may not be as prominent as observed in the past. Further, the effect that these farm and farmer demographic characteristics may have on brand loyalty may differ from that observed previously.

Brand loyal farmers can also be characterized by those actions that are part of the buying process. For instance, those farmers who are willing to engage in search activities (for input purchase alternatives, lower prices, etc.) may be less likely to be brand loyal if their experience with their current brand has led them to search for alternatives. In previous studies, search activity consistently negatively impacted brand loyalty for expendable as well as capital inputs (Funk and Tarte, 1978; Funk and Vincent, 1978; Foxall, 1979; Kool, et al., 1997). The amount of time spent shopping for a capital input product is also negatively associated with loyalty (Kohls et al., 1957). Advances in information technology are important here. For example, if it is found that brand loyal producers more often search the Internet for information or alternatives, then the web can be used as an effective tool for communication, advertisements, orders, and the like.

Planned growth in farm size over the last two decades has created much interest in the purchase decisions of these commercial farmers. On the one hand, growth expectations can coincide with an increased focus on reducing costs, which could reduce interest in brands. Alternatively, as farm size increases, so does the value of a manager's time and making purchases based on brand name may reduce the time spent shopping. Because of these two opposing effects, no assumptions are made concerning the effect expected growth has on brand loyalty. In short, observing what farmers do or plan to do can be important when trying to predict loyalty. Farmer attitudes and beliefs can often indicate brand loyalty. For example, if time is perceived to be valuable, then producers who think that shopping or purchasing inputs is time consuming will more likely be brand loyal given that brands act as a signal for past experience and performance.

Other variables that capture farmer perceptions might include opinions about farming and the environment and the expressed willingness to try new technologies. The ability to relate to customers means that agribusiness must in a meaningful sense know and understand their customers. It is important to know what their customers value and in a sense support or validate their values. For instance, if customers are particularly concerned about the environment and are brand loyal, a business can exploit that opportunity by developing products that are environmentally friendly, or promoting those attributes which are environmentally

friendly to producers. Further, if farmers hold particular opinions about their managerial ability or the quality of information provided by suppliers, agribusinesses can cater to these concerns (product or not) through information services, meetings, etc. to meet the needs of their customers. For new product introductions, having a frame of reference about those producers who are likely to try the new products could prove useful for marketing programs. Early adopters may be more willing to take on the risk of trying a new product or technique and thus may be less inclined to be loyal to brands. Conversely, if brands convey information about quality, then early adopters may be more brand loyal. Product characteristics and/or favorable product experiences can impact the decision to consistently purchase a particular brand. Quality and service (Funk and Tarte, 1976), and performance (Funk and Vincent, 1978) have been shown to impact loyalty. Perceived brand differences often encourage brand loyalty (Funk and Tarte, 1976; Funk and Vincent, 1978; Kohls et al., 1957). For expendable inputs, cost (price) negatively impacts loyalty (Kool, et al., 1997), while for capital inputs, price positively impacts loyalty (Gifford, 1956). It is expected that quality, service, perceived brand differences, and input price should continue to have similar impacts on brand loyalty.

Farm managers operate in an age where media exposure is very high and the use of information technology for production, information, and other management activities continues to rise. There is much research covering the impact of advertising and media exposure on purchase behavior and general brand loyalty. Media exposure may prove to be an effective avenue for creating brand loyal customers and for enhancing relationships in agricultural markets. Research (very dated) has shown that loyalty tends to increase with a farmer's exposure to radio, television, and printed materials (Kohls, et al., 1957).

## **Data and Methodology**

Data for the study were obtained from the 2003 Commercial Producer Project conducted by the Center for Food and Agricultural Business (CAB) at Purdue University. The survey was mailed to, e-mailed to, or conducted over the phone with a total of 14,301 producers across the United States during February 2003, and specifically targeted midsize and large commercial producers with annual gross sales in at least one enterprise of \$100,000 or more. The database of producers was obtained from Farm Journal, Inc. Data used in this study covered six crop and livestock enterprise classes including corn/soybeans, wheat/barley/canola, cotton, dairy, swine, and beef. Over 2,100 surveys were returned, representing a response rate of 15%.

Of particular interest to this study are farmer responses to statements (discussed below) concerning their own perceived loyalty to purchasing branded capital and

expendable products. Loyalty to branded capital items may differ from that of expendable products given that service (repair and maintenance) is a major selling point for capital items. Also, capital items represent major purchases and are used for years while expendables are primarily used once. Information also was collected on farm and farmer characteristics, buying preferences, attitudes and behaviors, and management plans and activities.

Survey respondents were asked to respond to the following statements:

- I consider myself loyal to the brands of expendable items I buy, and
- I consider myself loyal to the brands of capital items I buy.

Producers responded to these statements using a 5-point Likert scale. Respondents indicated that they: 1) strongly disagreed, 2) disagreed, 3) neither disagreed nor agreed (undecided), 4) agreed, or 5) strongly agreed with each statement. Responses to each statement represent a discrete variable with five response categories. Responses to the brand and loyalty statements are collapsed into two categories. Strongly agree and agree responses are treated as one response. Strongly disagreeing, disagreeing, and neither agreeing nor disagreeing comprise the second (reference) category. This classification allows for a dependent variable with two discrete response categories. The binomial logistic model (BLM) is ideal for estimating and testing hypothesized relationships. Separate models are estimated for each dependent variable (as represented by the two statements of interest).

## Dependent Variables

Dependent variables for this study are reflective of the focus statements described above. A total of 2,112 responses were obtained for the statement measuring expendable input brand loyalty. About 39% of respondents reported that they agreed or strongly agreed with the statement that they considered themselves loyal to the brands of expendable items that they buy (Table 1). A total of 2,069 individuals responded to the statement measuring capital input brand loyalty. Well over half (58%) of the individuals who responded to the question covering

**Table 1: Dependent Variable List for BLMs Estimating Brand and Supplier Loyalty**

Variable	Definition	Mean	Std Dev
BLOYALCAP	=1 if strongly agreed or agreed with statement that they are loyal to capital input brands purchased; =0 otherwise	0.5814	0.4934
BLOYALEXP	=1 if strongly agreed or agreed with statement that they are loyal to expendable input brands purchased; =0 otherwise	0.3902	0.4880

## Explanatory Variables

Data obtained in the commercial producer survey that measures income, age, and education are very similar to those variables measured in previous studies. Selecting comparable measures for search activity, perceived brand differences, media exposure, shopping time, and risk aversion is not as straightforward. However, several variables from the commercial producer project survey reasonably capture the inherent meaning and intent of the non-demographic factors that have been found in the literature to influence input brand and/or dealer loyalty.

Explanatory variables (Table 2) are reflective of the factors proposed to influence loyalty in the conceptual model outlined. Demographic variables are self reported and the remaining variables are based on survey responses. Brand loyalty-related variables are captured in a binary manner with the exception of the variables measuring media exposure and dealer influence on purchase decisions.

Fifteen variables measure farm and farmer characteristics including: farm size, age, education, type of commodity produced, expected growth over the next five years, and use of the Internet to place online orders for agricultural inputs (see Table 2 for related statistics). Variables that measure farmer beliefs and attitudes captured respondents' perceptions of brand differentiation, the time needed to purchase

**Table 2:** Explanatory Variable List<sup>1</sup>

Variable	Definition	Mean	Std Dev
<i>-----Variables Measuring Farm and Farmer Characteristics-----</i>			
SALES	Total annual farm sales in dollars	1,519,240	4,657,841
AGE35	=1 if under age 35; =0 otherwise	0.1375	0.3443
AGE54	=1 if aged 35-54; =0 otherwise	0.5159	0.4998
AGE55plus*	=1 if over age 54; = 0 otherwise	0.3431	0.4749
EDUC1	=1 if attended high school; =0 otherwise	0.0319	0.1757
EDUC2	=1 if high school, associate degree, or trade program graduate; =0 otherwise	0.4249	0.4944
EDUC3*	=1 if 4-year college attendee or graduate; =0 otherwise	0.5423	0.4983
CORNBEAN	=1 if produce corn/soybeans; =0 otherwise	0.6822	0.46575
WHTBARL	=1 if produce wheat/barley; =0 otherwise	0.1949	0.3962
COTTON	=1 if produce cotton; =0 otherwise	0.1635	0.3699
DAIRY	=1 if dairy producer; = 0 otherwise	0.2013	0.4010

<sup>1</sup>(\*) indicates a reference category.



**Table 2:** Continued

<b>Variable</b>	<b>Definition</b>	<b>Mean</b>	<b>Std Dev</b>
<b>----- Variables Measuring Farm and Farmer Characteristics -----</b>			
PORK	=1 if pork producer; = 0 otherwise	0.2026	0.4020
CATTLE*	=1 if cattle producer; = 0 otherwise	0.2705	0.4443
GROWTH	Percentage change in primary operation size over next five years	0.254	0.491
ORDONLINE	=1 if place order for agricultural inputs online; =0 otherwise	0.1491	0.3562
<b>----- Variables Capturing Farmer Beliefs and Attitudes -----</b>			
EXPSAME	=1 if believe expendable brands are more or less the same; =0 otherwise	0.2662	0.4421
CAPSAME	=1 if perceive capital brands are more or less the same; =0 otherwise	0.2258	0.4182
TIMECONS	=1 if believe that purchasing inputs is time consuming; =0 otherwise	0.5811	0.4935
VIEWBUS	=1 if view farming more as business than way of life; =0 otherwise	0.3379	0.4731
ENVIR	=1 if environmental regulations are important when making input purchase decisions; =0 otherwise	0.5831	0.4931
FOOD	=1 if food/security regulations are important when making input purchase decisions; = 0 otherwise	0.5266	0.4994
FIRSTADOPT	=1 if very first or among first to try new products, techniques; =0 otherwise	0.5980	0.4904
<b>----- Variables Capturing the Importance of Product Characteristics -----</b>			
LOWPRICE1	=1 if buy lowest priced expendable products; =0 otherwise	0.2405	0.4275
PERFORM1	=1 if reported that branded expendable products offer a higher level of performance; =0 otherwise	0.3135	0.4640
LOWPRICE2	=1 if purchases the lowest priced capital input products; =0 otherwise	0.1928	0.3947
PERFORM2	=1 if reported that substantial differences exist across branded capital input products; =0 otherwise	0.5467	0.4979
<b>----- General Media Variable -----</b>			
MEDINDEX	Index measuring reported media exposure ranging from 0 to 1	0.5795	0.0993

1(\*) indicates a reference category.

inputs, and farming as a way of life. In addition, these variables measure the importance placed on environmental and food regulations and attitudes towards new products and techniques. For both capital and expendable inputs, two variables captured the importance of price and performance attributes. Finally, a media index variable is developed to measure reported media exposure among respondents.<sup>1</sup>

## **Capital Input Brand Loyalty**

Eight variables have statistically significant coefficients for the model predicting capital input brand loyalty (BLOYALCAP) (Table 3). Two “traditional” variables are statistically significant indicators of brand loyalty. Attending but not completing high school (EDUC1) and producing corn or soybeans (CORNBEAN) increases the likelihood of being brand loyal to capital inputs. Other variables that positively influence capital input brand loyalty include the reported use of media to obtain information useful for making input decisions (MEDINDEX), the perception that substantial differences in performance exist across branded capital input products (PERFORM2), and reporting that food safety/security regulations impact input purchase decisions (FOOD).

Respondents who perceive that capital input brands are more or less the same (CAPSAME) and respondents who report that they purchase the lowest priced inputs (LOWPRICE2) are less likely to be brand loyal. The same is true for respondents who report that they view farming more as a business than as a way of life (VIEWBUS).

Reporting the belief that shopping for inputs is time consuming (TIMECONS), reporting that they order products online (ORDONLINE), reporting that environmental regulations are important (ENVIR), reported growth (GROWTH), and being among the first to adopt new techniques and products (FIRSTADOPT) are not responses that distinguish capital input brand loyal producers from those who are not.

Marginal effects indicate education directly affects the likelihood of being brand loyal. Those who reported attending high school but did not graduate (EDUC1) are more than 15-percentage points more likely to be brand loyal. Corn and/or soybean

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<sup>1</sup> Because there are a number of potential variables that capture reported media use when collecting relevant information for purchasing decisions, a media index (MEDINDEX) was developed that captured the relative importance of media for obtaining information. Respondents were asked to report how often they obtained useful information from twelve media sources (suppliers’ meetings, direct mail, telephone contact, agricultural websites, television, radio programs, field days, general farm publications, newspapers, newsletters, and farm shows). Responses for each media source ranged from 1 (never) to 5 (always). The index is calculated by summing responses for the twelve media sources and then dividing by the highest possible sum. For example, if a producer reports a “1” for each media variable, their index assignment is 0.20 ((1x12)/60). This measurement provides the relative importance of media for individual respondents. The average index assignment is approximately 0.58.

**Table 3:** BLM Results Predicting Brand Loyalty for Capital Inputs (BLOYALCAP)<sup>1,2,3</sup>

	Coefficient (Standard Error)	T-Statistic	P-Value	Marginal Effect
CONSTANT	-1.3734 (0.3679)	-3.733	0.0002	
SALES	-0.0386 (0.0024)	-1.610	0.1073	
AGE35	0.1161 (0.1772)	0.656	0.5120	
AGE54	0.0041 (0.1279)	0.032	0.9744	
EDUC1	0.6870* (0.3768)	1.823	0.0682	0.1549
EDUC2	0.0044 (0.1133)	0.004	0.9969	
CORNBEAN	0.2839** (0.1253)	2.265	0.0235	0.0698
WHTBARL	0.1895 (0.1467)	1.292	0.1965	
COTTON	0.1457 (0.1672)	0.872	0.3832	
DAIRY	-0.0254 (0.1486)	-0.171	0.8642	
PORK	0.0174 (0.1390)	0.126	0.8999	
CAPSAME	-0.2402* (0.1306)	-1.838	0.0660	-0.0592
MEDINDEX	0.0204*** (0.0058)	3.513	0.0004	0.0050
TIMECONS	0.1821 (0.1124)	1.620	0.1053	
VIEWBUS	-0.2858** (0.1155)	-2.475	0.0133	-0.0702
ORDONLINE	-0.2397 (0.1498)	-1.601	0.1095	
ENVIR	-0.2703 (0.1321)	-2.195	0.0282	
FOOD	0.5162*** (0.1200)	4.302	0.0000	0.1258
LOWPRICE2	-0.2322* (0.1384)	-1.678	0.0934	-0.5727
PERFORM2	0.4261*** (0.1113)	3.827	0.0001	0.1040
GROWTH	-0.0007 (0.1121)	-0.619	0.5357	
FIRSTADOPT	0.6824 (0.1131)	0.603	0.5463	
Log Likelihood	-994.04			
Restricted L.L.	-1040.43			
Chi-squared	92.79***			
Predicted Correctly	61.46%			

<sup>1</sup>Estimates measuring the likelihood agreeing that respondents are brand loyal: Observations = 1523

<sup>2</sup>(\*), (\*\*), and (\*\*\*) indicate significance at the 0.10, 0.05, and 0.01 level of significance, respectively.

<sup>3</sup>Marginal effects for statistically significant coefficients shown only.

producers are the most likely to be brand loyal; they are nearly 7-percentage points more likely to report loyalty. If a respondent believes that capital input brands are more or less the same, they are 6-percentage points less likely to be brand loyal. Viewing farming more as a business than as a way of life, and favoring the lowest priced inputs reduces the probability of being brand loyal by 7- and 6-percentage points, respectively. Reporting a perceived difference in performance among capital brands and reporting that food safety regulations impact input decisions increases the probability of being brand loyal by nearly 10- and 13-percentage points, respectively. On average, a one-point increase in the media index (which is scaled up from “0 to 1” to “0 to 100”) increases the likelihood of being brand loyal by half a percentage point. Stated another way, an increase in the media index by 10-percentage points increases the brand loyal probability by about 5-percentage points.

In short, those who are more likely to be brand loyal to the capital inputs that they purchase are: 1) producers who attended high school but did not obtain a diploma; 2) corn and soybean producers; 3) producers who value information from media sources; 4) producers who believe food safety issues influence their capital input purchase decisions; and 5) producers who believe that substantial differences in performance exist across capital input brands.

Factors that influence brand non-loyalty are: 1) the perception that capital input brands are more or less the same; 2) viewing farming more as a business than a way of life; and 3) exhibiting a preference for the lowest priced capital input products.

What does this mean for agribusinesses that supply capital farm inputs? When multiple factors are considered, demographics are less meaningful characteristics that distinguish brand loyal customers. Behaviors (purchasing the lowest priced inputs), attitudes and beliefs (such as view of farming and a belief in brand differentiation), and individual purchase processes (use of media as source of information; considering food safety issues when making purchase decisions) are more significant indicators of loyalty.

## **Expendable Input Brand Loyalty**

A logit model was estimated to predict the likelihood of reporting brand loyalty for expendable products (Table 4). Three demographic characteristics have statistically significant, negative coefficients (SALES, AGE54 and COTTON). An increase in reported gross sales corresponds with a decrease in the likelihood of being brand loyal to expendables. (A \$1 million increase in reported gross sales decreases the probability of being brand loyal by about 1.35- percentage points.) Producers between 35 and 54 years old are less likely to be loyal to the expendable brands that

**Table 4:** BLM Results Predicting Brand Loyalty for Expendable Inputs (BLOYALEXP)<sup>1,2,3</sup>

	Coefficient (Standard Error)	T-Statistic	P-Value	Marginal Effect
CONSTANT	-2.0068*** (0.4536)	-4.424	0.0000	
SALES	-0.0578** (0.2844)	-2.035	0.0419	-0.0135
AGE35	-0.1145 (0.1794)	-0.639	0.5231	
AGE54	-0.3721*** (0.1292)	-2.880	0.0040	-0.0875
EDUC1	0.3787 (0.3363)	1.126	0.2601	
EDUC2	0.1616 (0.1161)	1.392	0.1640	
CORNBEAN	0.1799 (0.1297)	1.386	0.9513	
WHTBARL	0.0567 (0.1524)	0.373	0.7095	
COTTON	-0.3002* (0.1785)	-1.682	0.0926	-0.0681
DAIRY	0.0123 (0.1555)	0.080	0.9366	
PORK	0.1972 (0.1393)	1.416	0.1568	
EXPSAME	0.0140 (0.1280)	0.109	0.9129	
MEDINDEX	0.0167*** (0.0059)	2.789	0.0053	0.0039
TIMECONS	0.0070 (0.1151)	0.061	0.9513	
VIEWBUS	-0.4812 (0.1193)	-0.403	0.6867	
ORDONLINE	-0.4709*** (0.1616)	-2.914	0.0036	-0.1049
ENVIR	0.3499 (0.4064)	0.861	0.3893	
FOOD	0.4324*** (0.1225)	3.528	0.0004	0.1001
LOWPRICE1	-0.3633*** (0.1358)	-2.675	0.0075	-0.0827
TRADE	0.0250 (0.1192)	0.210	0.8337	
PERFORM1	0.9440*** (0.1179)	8.002	0.9440	0.2256
GROWTH	0.0006 (0.0011)	0.532	0.5944	
FIRSTADOPT	-0.0277 (0.1158)	-0.240	0.8106	
Log Likelihood	-965.25			
Restricted L.L.	-1044.16			
Chi-squared	157.83***			
Predicted Correctly	66.45%			

<sup>1</sup>Estimates measuring the likelihood of agreeing with being brand loyal; Number observations = 1565

<sup>2</sup>(\*), (\*\*), and (\*\*\*) indicate significance at the 0.10, 0.05, and 0.01 level of significance, respectively.

<sup>3</sup>Marginal effects for statistically significant coefficients shown only.

they buy by about 9-percentage points. Respondents who grow cotton are 7-percentage points less likely than those who raise cattle to express loyalty. Five other variables have statistically significant coefficients. MEDINDEX, FOOD, and PERFORM1 all have statistically significant, positive coefficients. This suggests that agreeing with the corresponding statements increases the likelihood of being brand loyal. Placing a higher value on the media for input information, reporting the importance of food safety and security issues when making purchase decisions, and perceiving that expendable brands perform better than generics are all indicators of expendable brand loyalty. Marginal effects for the three variables are 0.0039, 0.1001, and 0.2256, respectively.

Ordering inputs and replacement products online (ORDONLINE) reduces the likelihood of loyalty by approximately 11-percentage points, while reporting that they purchase the lowest priced input products (LOWPRICE1) reduces the probability by about 8-percentage points.

In summary, respondents who are loyal to the expendable products that they buy likely possess the following characteristics: 1) they place a higher value on information from media sources; 2) they take food safety and security issues into account when making input purchase decisions; and 3) they perceive that brands perform better than generics. Reporting a higher than average level of sales, being between the age of 35 and 54, producing cotton, placing orders for agricultural inputs and products online, and valuing low prices are factors which tend to indicate brand non-loyalty for expendable inputs.

## **Conclusions**

The results of this study are obtained from analyzing information from a survey of producers responsible for making input purchase decisions. Respondents submitted information on their purchase habits, attitudes, preferences, and individual characteristics. Model results are consistent with those obtained in the literature covering consumer brand loyalty as well as those obtained in available (dated) literature covering farmer brand loyalty.

Results suggest that, unlike previous studies, demographic variables are not the strongest indicators of brand loyalty. Marketers should first assess what other factors are important in determining loyalty and subsequently determine if there is a link with demographic characteristics. What appear to be more important indicators of loyalty are those factors that influence the buying process – the attitudes, beliefs, and activities of respondents.

Based on empirical model results, it can be inferred that brand differentiation, media exposure, brand performance, and the ability to order online are issues that directly affect brand loyalty. These issues can be directly addressed by

agribusinesses seeking to build brand loyalty while operating in an evolving market environment. For example, this paper's results show that producers who order expendable inputs online are less likely to be brand loyal and are price sensitive. Expendable suppliers using online ordering and advertising should focus on building brand awareness and on stressing brand benefits in conjunction with offering price incentives.

The remaining factors that include attitudes and beliefs can be used as tools to identify potential brand loyal customers. These data can be obtained through the development of personal relationships or professional rapport with farmer customers, or assessed through market research. In addition, marketing strategies for building and reinforcing loyalty should focus less on price and more on the value that commercial producers can obtain through product quality, service, and providing relevant information.

As a practical application, agribusiness marketing managers can use this paper's results to develop profiles of those farmers most likely to be loyal to their specific products, and use one strategy to market to those farmers who fit the loyal profile and use another strategy to market to those who do not fit loyal profiles. For example, a strategy to build brand awareness and disseminate information about brand attributes would be useful when advertising to producers who do not fit the loyal profile. A strategy to maintain loyalty (a repeat purchase rewards program, for example) would be more useful when geared towards those customers that are loyal.

A limitation of this research is that the variables capturing loyalty were homogeneous measures of loyalty for an array of inputs. Capital inputs primarily cover farm machinery. A much larger number of input types are covered in the expendable input category (feed, seed, fertilizer, crop protection chemicals, fuel, etc.). In future studies it would be useful to have information that is brand or category specific. In addition, dependent variables captured a self-reported measure of loyalty. Data on survey respondents' actual purchase behavior was not available.

Little research specific to business-to-business relationships in the agricultural input sector exists in the literature. Previous studies that explored brand loyalty in the agricultural input sector are quite dated, with much work over two decades old. This research extends the current body of literature. The results from this study can aid agricultural input suppliers that operate in a B2B market environment to develop more effective marketing strategies. Hopefully, this research can also serve as a catalyst that leads to further research and discussion on the role of brand and dealer loyalty in U.S. agriculture.

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